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Abstract

Statement of Problem

> The rise of modern science and technology has radically transformed the relation between human beings and nature. Nature, which for millennia had seemed all powerful and immutable, has suddenly become an object for control and manipulation, something that can systematically be shaped to human ends. Yet throughout the dramatic upheavals of the modern era the fundamental constants of human nature—human mortality, a shared repertoire of emotions and moods, a range of basic perceptual and intellectual capacities—remained a relatively fixed reference point that could bridge cultural and ideological differences. But in recent decades, radical advances in genetics and the neurosciences, and in computing and other forms of technology, raise the possibility that we are on the brink of a further revolution, this time not in our relation to the natural world, but in our relation to ourselves. Our bodies, even our feelings, thoughts, and intellectual capacities, are also gradually entering the sphere of scientific control and manipulation.…Some aspects of this silent revolution are already around us, in the form of antidepressants or other drugs that control mood and attention, performance enhancing drugs illicitly used by athletes, or cosmetic surgery to correct the results of the genetic lottery or conceal the results of aging. Others are only in early stakes of speculative research: mind-machine interfaces, or neuropharmaceuticals that reduce aggression and increase cooperation. The use of pills to "brighten" mood, and the widespread diagnosis of controversial and pharmacologically treatable new psychiatric conditions such as attention deficit disorder, are putting into question the traditional conception of medicine as concerned only with the treatment and cure of disease. Traditional notions of human nature, normality, and flourishing seem increasingly inadequate.
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> "Enhancing Human Capacities" (Kahane et al. 2011:xv)

This extended quote, which I take from the preface to a volume edited by several leading scholars in academic bioethics, refers to the prospect of "human enhancement". According to a classic definition, this term refers to using biomedical interventions "to improve human form or functioning beyond what is necessary to sustain or restore good health" (Juengst 1998). Enhancement is achieved through what the literature terms "enhancement technologies". These are typically biomedical interventions[1] that can be used for improvement purposes: cosmetic surgery, sports doping, psychoactive medications (typically SSRI antidepressants, stimulants, anti-dementia drugs), anti-hypertensive beta-blockers, transcranial magnetic brain stimulation (in which a magnetic field outside of the skull influences brain activity), brain-computer interfaces,

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[1] Others would consider eyeglasses, coffee, or sports to be enhancements; or largely speculative prospects like expanded "ultraviolet" or "magnetic" sensation (Sandberg 2011).

and genetic engineering. Pharmaceutical enhancements—particularly those targeting "cognition"—are the most widely debated and used, and are the focus of this dissertation.

Kahane et al. refer to the potentials these technologies seem to promise as a whole, outlining a familiar trope about the contemporary moment, which goes something like this: what began as a modernist project to use "nature" for human ends, of the kind outlined by Francis Bacon, has been so successful that the material world can ostensibly now be engineered at will (cf. Rheinberger 2000). Superimposed on this remarkable change (the temporality is not quite clear) is the prospect of an epochal shift: biomedicine and biotechnology have apparently already given us pharmaceutical emissaries heralding the future, and have proclaimed that our own biological material, that most concrete and steadfast aspect of our existence, is about to fall under the same spell of inexorably progressing scientific control. Crucially, the values guiding what should be done—the ethics of the present—seem to be insufficient to the demands of the day. Thus, work to generate ethical pronouncements has become essential to navigate the future speeding towards us.

In this dissertation, I take up the observation that in the last decades, shifts in biomedical discourses and technologies have helped to reconfigure social life in far-reaching ways, though I view the diagnosis of profound ethical uncertainty as something that deserves further study. The perceived potentials of biomedicine and biotechnology have spawned wide-ranging assessments of "ethics", paralleling attention to the "ethics" of other fields like neuroscience, nanotechnology, or synthetic biology. In one sense, ethics seems to be the register in which we formulate troubling questions about hybrids, boundary crossings, and unstable categories of bodies and technology. In another sense, ethics is functioning as the mode through which questions about the "future" are being arbitrated, in which visions of un/desirable types of society or persons are articulated. For instance, a "discussion paper" intended to stimulate debate about pharmaceutical enhancements, published by the British Medical Association, notes that "[t]his paper focuses on attempts to improve cognition within normal species functioning. In other words to help people to achieve their full potential. These are very real issues that have implications for us all" (2007:3). To address the question of "why is this issue ethically important?", the authors answer that "particular concerns arise from interference with the brain precisely because it is intrinsically linked with our personality and individuality and because the long-term effects of interfering with this very complex system are unknown" (ibid.).

An assumption latent in the focus on ethics is that such novel technologies may profoundly change human beings, thereby raising new ethical questions. Writing about the last techno-visionary project of the preceding century, Paul Rabinow and Gaymon Bennett observe "[f]rom the outset, the genome projects and the bioethics programs affiliated with them traded on the notion that the genome contained the determinative essence of human identity....As such, a good deal of anthropological and ethical energy was spent working to imagine, understand, and critically evaluate the supposed capacities and threats introduced by massive genomic-sequencing projects" (2012:31). One can note a similar presumption in the examination of pharmaceutical enhancements, where ethical reflection hinges on the idea that neurobiology determines someone's subjectivity and capacities, which can effectively be altered by drugs. In short, the material potency of medications is new, and their extensive neurobiological transformations are what matter ethically.

But what if one were to resist ceding primacy over the ethical agenda to neurobiology—what would then be "new" about these drugs, and how could one understand the attendant "ethical" concerns? This dissertation proposes to reframe the ethical stakes of "pharmaceutical enhancement" through an ethnographic study of practices and discourses around using medications for self-improvement in contemporary Germany.

"Human Enhancement" in Bioethics

"Enhancement", as one might suspect, is difficult to define conclusively—how clear are boundaries delineating treatment? What is "normal"? Arguably, "enhancement", by defining the use of technology for increasing well-being outside of the ostensibly unproblematic biomedical frame of healing, could be seen as a term crystallizing the trope that ‘ethical questions arise because of new powers to redesign human beings’. It creates a recognizable problem that can be discussed and acted on by bioethicists, doctors, researchers, and lawmakers.

Schematically, one can track a history of “enhancement” in bioethics that begins in the late 1970s. In the middle of the Cold War, the risks of genetic research that had accompanied the developments in genetics and molecular biology of previous decades were being widely debated among scientists (culminating with the conference in Asilomar in 1975 to establish standards for research). Around the same time, some geneticists suggested that “enhancement” might be possible, most prominently the geneticist W. French Anderson. He defined “enhancement genetic engineering” as “no longer therapy of a genetic disorder; it is the insertion of an additional normal gene (or a gene modified in a specific way) to produce a change in some characteristic that the individual wants….for example, greater size through the insertion of an additional growth hormone gene into the cells of an infant” (1985). It was claimed that “enhancement” could result from attempted therapy, if a genetic intervention produced an unintended increase in function. This was believed to be possible because the effects of any given intervention could only be imperfectly predicted, and on account of the far-reaching effects of genetic interventions (e.g. replacing a defective gene could lead to above-average hormone production). At the same time, the *conceptual* difference between treatment and improvement was troubled, primarily by the widespread availability of genetically engineered growth hormone: at a molecular level, there is no difference between a "pathological" deficiency of growth hormone, and a level that is “below average” but still in the “normal” range (e.g. because of genetically short stature (Hogle 2005; Rothman and Rothman 2003)). Scholars like the sociologist Jonathan Glover (1984) wrote about the potential social and ethical consequences they saw for genetic engineering, and the topic was widely discussed in bioethics (Brock et al. 2001; Reiss and Straughan 2001).

Questions about genetic enhancement remained important until Peter Kramer's *Listening to Prozac* (1993) catalyzed a shift in focus. Eric Parens of the *Hastings Center for Bioethics* gives a history in which "Kramer rather enthusiastically exhorted his readers to accept that since we *can* now 'enhance' ourselves with new biotechnologies like Prozac, it is time to start thinking about how we *should* enhance ourselves….Thus late 1993 seemed like a good time to try to ask very basic questions about aiming new biotechnologies at enhancement purposes" (1998:viii, emphasis original).[2] Research on pharmaceutical enhancements eventually eclipsed work done on genetic enhancements, which is likely related to the seemingly pressing problem of pharmaceutical enhancement: while novel genetic enhancements had not been developed, epidemiological data about psychopharmaceutical use by college students for "non-medical purposes" (purportedly for performance) seemed to indicate that a pressing problem existed (Babcock and Byrne 2000).

Several of the most prominent texts on enhancement directly addressed the prospects of being "better than well" that Kramer laid out.[3] Writing at the beginning of the new millennium, some warned of an impending "'posthuman' stage of history" (Fukuyama 2002:7). The American "President's Council on Bioethics" opined that enhancement "raises some of the

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[2] Parens is referring to a workshop on "enhancement" the Hastings Center initiated, out of which the first and perhaps only canonical text about enhancements resulted (Parens 1998).

[3] They were also a response to another, more radical stream of thought about human improvement. This stream has been less important in bioethics (though it has prompted a range of responses), and plays hardly any role in Germany:

This strand can be traced back to the writings of British intellectuals in the 1920s, when noted scientists like John BS Haldane and John D Bernal advocated that social utopia could be brought about by controlling genetics or through implantable technologies, partly prompting Aldous Huxley's famous dystopic novel "Brave new World" (Coenen 2010; Bostrom 2005). The contemporary strand of the radical vision is claimed by "transhumanism", which "holds that current human nature is improvable through the use of applied science and other rational methods, which may make it possible to increase human health-span, extend our intellectual and physical capacities, and give us increased control over our own mental states and moods" (Bostrom 2005). It is closely related to claims made about computing from the middle of the last Century onward, that technology would soon lead to a revolution by expanding human capacities through powerful computers; as well as visions about transcending human capacities through artificial intelligence, often referred to as the "singularity", or the point at which technology would so radically reality that it is impossible to imagine the future beyond that point (popularized by Ray Kurzweil in his *New York Times* bestseller "The Singularity is Near"). Nanotechnology has also been credited with the potential to literally "re-build" the material world on a "nano" scale (Milburn 2008; Drexler 1986). These various strands of research were brought together in a report by the NSF in 2003 which promised that "we stand at the threshold of a new renaissance in science and technology, based on a comprehensive understanding of the structure and behavior of matter from the nanoscale up to the… human brain. Unification of science based on unity in nature and its holistic investigation will lead to technological convergence and a more efficient societal structure for reaching human goals" (2003:1).

weightiest questions in bioethics. It touches on the ends and goals to be served by the acquisition of biotechnical power, not just on the safety, efficacy, or morality of the means. It bears on the nature and meaning of human freedom and human flourishing.... And it is far from being simply futuristic: current trends make clear how the push "beyond therapy" and "toward perfection and happiness" is already upon us—witness the growing and increasingly acceptable uses of cosmetic surgery, performance- enhancing drugs, and mood- or attention-altering agents" (2003:8).

These well-known reflections on human enhancement considered the whole range of available technologies, and some authors (Sandel 2007; Habermas 2002) have continued to caution against enhancements. Medications have received most of the attention in the literature on enhancements, ranging from ethics pertaining to speculative scenarios and futuristic projections; to explorations of fundamental principles in philosophy; to position statements, reports, policy, and legal recommendations; to epidemiological research; to testing of substances and technologies' effectiveness (British Medical Association 2007; Larriviere et al. 2009; Graf et al. 2013; Singh and Kelleher 2013; DeJongh et al. 2008; Ilieva et al. 2013). However, a good deal of recent bioethical work has focused on existing drugs rather than speculative scenarios, and has taken a moderately optimistic stance, believing that these technologies will eventually become reality and will have desirable effects. In this dissertation I engage the most prominent texts in Anglophone bioethics about enhancements (Greeley et al. 2008; Harris 2007; Farah et al. 2004; Bostrom 2005; Savulescu et al. 2011), some of which take the form of position statements advocating for specific policies, and argue for a liberal stance towards pharmaceutical enhancements.

Many of these arguments valorize individual autonomy and self-realization: authors argue that legislation should protect individuals from physical risks, as well as from being coerced into taking a medication they did not freely decide to take, and individuals should be given fair access to these drugs, or at least not be at a disadvantage relative to others. The literature countenances limitations on enhancement use if they somehow fail to benefit individuals—for instance because of medical risks, or because not everyone has access to them. While the central claims made by much of the dominant literature about enhancements are important, I will show that ethical analysis could benefit from a more robust consideration the empirical context, and that any thorough ethical reflection should consider the broad range of concerns that are at stake in human enhancement.

Bioethics and Social Scientific Critique

My arguments engage with only a limited set of claims within the expansive field of "bioethics". My concern, put in terms of only a very tenuous and rudimentary categorization of the discipline, is not with that form of bioethics which is primarily concerned with patient care or clinical outcomes (e.g. (clinical) medical ethics); nor which is directly policy-oriented, for instance dealing with questions of research ethics (e.g. institutional review boards (IRBs) or research guidelines). I am most interested in the claims made by 'academic' bioethics, which is overwhelmingly oriented towards theoretical analysis. It generally attempts to delineate fundamental principles, and speculate on how these norms might be applied in practice. This kind of work often gestures towards the previous type, as theoretical reframing may support claims about changing policy (e.g. allowing organs to be bought and sold). Within this subfield, my attention is again limited to the vein of bioethics operating in a *visionary* or *speculative* mode, which tries to identify ethical concerns attending novel and emerging technologies. The recent history of bioethics suggests that there is growing currency to this research, as new subfields of 'neuro-' or 'nano'-ethics have been formed to address scientific developments, following the extensive efforts to chart the ethics of the human genome project.

Further, I do not intend to offer a wholesale critique of "bioethics". I follow other social scientists who have showed how bioethical research has frequently too narrowly focused on "ethical principles" and has ignored the concrete social interaction, power differentials, and meanings that are part of actually experienced ethical dilemmas (Kleinmann 1995; Hoffmaster 2001; Mueller and Koenig 2004; Rapp 2006). However, rather than revising bioethics, or call for what Hamdy (2012) terms “rebinding” it to its cultural context, I am interested in engaging those claims academic bioethics makes about technological self-improvement. While there has been widespread interest and an ever-growing body of literature about the ethics of enhancement, only a relatively small proportion of research has been empirical: most of the existing empirical data comes from quantitative surveys of drug use by public health scholars, or of the options of students or doctors. Very little empirical research about ethical aspects has been qualitative (see Frazzetto, Keenan, and Singh 2007; Singh 2005; Bolt and Schermer 2009; Schermer and Bolt 2011; Forlini and Racine 2009; Vrecko 2013). To my knowledge, the current study represents the first ethnography explicitly dealing with enhancement technologies.[4] Using my empirical data, I offer a re-articulation of the ethical aspects of human enhancement from an anthropological perspective. Importantly, my goal is not to push for a ‘different’ bioethics or claim that anthropology always offers a superior approach; I aim to provide a different vantage point on important questions about contemporary technological developments and visions from that offered by academic bioethics.

Thus, I also hope to expand the aperture of how the “ethics” of biotechnological advance more generally can be understood. My analysis is grounded in a characterization of ethics less in terms of a pre-determined corpus of fixed and abstracted norms, and more in terms of ethics as something that emerges out of shared practice and reflection in particular, concrete situations. This implies that ethical dilemmas entails must be understood with reference to the interplay between technological possibility, and concrete historical practices and discourses. I make this argument by drawing on the recent “turn” to ethics in anthropology (Laidlaw 2002; Lambek 2010; Zigon 2007), which has tried to delineate what might be specific about ethnographically studying ethical practice. This work characterizes ethical dilemmas as being responses to

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[4] But see Wagner (2013). Related technologies like cosmetic surgery or sexual dysfunction treatments have been ethnographically studied (see Edmonds 2010; Wentzell 2013).

situations in which the “good”, or the “right” course of action is unclear. The point here is *not* to eschew generality, but to insist that grasping the stakes of any given ethical problem entails an attention to its particulars. Thus, this dissertation is an argument for thinking about ethics in terms of “situated problems”, in which the interplay of meaning and material possibilities *in practice* produce ethical dilemmas, determine their stakes, and outline the resources available for resolution. I argue that a perspective underscoring the situated and emergent nature of ethical dilemmas is necessary to understand how new technologies put habitual forms of what it means to be “human” in question, and to more reflexively think about ethical dilemmas, both of which I see as being major contributions anthropology can make to contemporary ethical debates. I argue that such a perspective also casts a different light on popular narratives in which enhancements are harbingers of either utopias or dystopias, showing how enhancements are in fact the leading edge of deeper and long-standing ethical questions about medicine, health, and progress.

My specific critique of dominant approaches to enhancements follows from this expanded view of ‘ethics’. Many arguments in the literature seem to presume that enhancements, as the name suggests, are ostensibly self-evident goods, advancing liberal personhood pharmaceutically in the form of increased individual autonomy, personal choice, maximized individual capacity, and enlarged self-control. Nonetheless, while enhancements appear to be desirable because they promise the realization of significant social, political, and ethical ideals, they seem simultaneously profoundly troubling. Worries about the loss of a “human nature”, or “authenticity” have been voiced, as well as about the social ramifications of a population of pharmacologically altered individuals. Such concerns are generally dismissed as being due to “traditional” notions or unreasonable fears. Here, it seems that what I have called a trope about the new powers of technology indexes incomplete “enlightenment”: the fact that the trope exists means that there are some worries about technologically improving humans. But if the ethical concerns are primarily procedural, then there should not be major resistance—if opposition exists, it would be because of what Kahane and colleagues above called “traditional notions”.

The problem with these arguments is not that they advance "liberal" over "traditional" values; which to prefer in each case remains an open question. Rather, I suggest the form of ethics operating in the literature seems to be unable to reflect on the very values it arbitrates. Enhancements can be characterized as technologies that come out of a lineage of scientific research that has aimed at increasing mastery over the material world, which has its counterpart in discourses about subjects who create value through their work to transform that world, and who use technology "instrumentally" to serve their own ends (cf. Horkheimer and Adorno 2002). The ethical arguments above give the impression of merely accepting (or celebrating) the synergy between technological progress and desirable subjectivities, without interrogating that frame. In other words, they assume that technological progress necessarily serves individual or collective "progress."

I am advocating a double dislocation with regard to arguments about enhancements: first, by closely attending to several concrete settings, I want to re-frame familiar assumptions about what "ethical problems" enhancement raises. I trouble a self-evident fiction persuasive within the academic bioethics literature, that enhancements are an improvement.[5] Based on my research other interpretations are more common: enhancements are either a way to "keep up" if one is perpetually lacking, or a way to remove blockades on the path to expressing one's "true" capacities. In turn, this opens up a field of questions outside of these often posed about how and when the benefits of technological self-improvement should be made available. Second, I problematize the naturalized norms in the strands of academic bioethics I engage. I argue that "ethical problems" (like other disjuncts of understanding) are *co*-produced in a dialectic between empirical "reality" and the meanings that reality takes on. Certainly, new technologies may be "ethically troubling" because these interventions can unsettle naturalized categories of reality that are taken to be fundamental to social life (e.g. on kinship, see Strathern 1992). But a main

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[5] This is not to say that enhancements can't be beneficial but that a good deal of current reflection on enhancements has a very limited notion of, to use Eric Parens' phrase, "what does enhancement mean?" that elides other crucial concerns.

point I am trying to make is that ethical dilemmas may also arise because there are unresolved tensions *in the ideals* those technologies seem to realize. On my reading, the German debate raises concerns that trouble the (bio)ethical imagination that understands human "fullness" in terms of promoting (scientific and economic) "progress", the absolute primacy of expanding "freedom", and the unquestioned benefit of increases in productivity or function. Thus, I locate the concerns about pharmaceutical enhancement in both registers of meaning and technological possibility, rather than in a straightforward determination of ethical problems by new material possibilities, which would safeguard habitual norms of judgment from scrutiny.

In short, I am trying to use ethnography to think of ethics as being located at the interface between reasons for acting and the world those actions are imagined to respond to. By denaturalizing familiar ways of judging, I want to open up a window on some general assumptions made in arguments about enhancements, and indeed in claims about the ethics of new technology in general. These presume: individuals who are autonomous subjects, the largely determinative relationship of the "natural world" to humans and society"; and the (unrecognized) "overdetermination" (Sunder Rajan 2012:10) of political, social, and epistemic arrangements by economically-oriented rationales. These suppositions are essential to how the literature judges ethical problems. Denaturalizing these assumptions makes it possible to examine whether the ethics in play are self-evident, and possibly *re-envison* the ethical concerns.

The Object of Study: "Enhancement" in Germany

To move away from understanding enhancements in terms of an epochal shift in technological ability, I want to offer a characterization of enhancement oriented around those concerns I encountered in my fieldwork, which captures how these technologies intersect and are made meaningful in practice. A first clue that the ethical concerns around performance improvement in Germany are not necessarily the same as those around enhancement in the Anglophone academic literature was in how I encountered the terms: "enhancements" (or the practice of "enhancing") were often mentioned in the public discourse, but were frequently termed "performance-improving medications". A German bioethicist who was one of the first people in Germany to write about enhancements, pointed this out to me directly. Describing how the research had changed, he said:

> I noticed that there was an explosion of academic work about enhancements, and that might make it seem as though enhancement is a single topic. I've been thinking about this… [and] decided there is no such thing as a single debate about enhancements in Germany. I once called that enhancement debates—in the plural—because I think the links to the single topic of 'enhancement' are made on a reflexive level, in medical ethics and philosophical ethics. But there is no public 'enhancement debate' in the singular.

He went on to clarify what he thought was included:

> That means there is a debate about doping (including gene-doping) that is carried out publicly, in which cheating plays a large role. Then there is a debate about Ritalin, with teachers and parents. There are also debates about growth hormone, or the use of psychopharmaceuticals at work…But it's also about the changes in the job market and working conditions. So workers are suddenly in new situations of pressure to perform, and have new expectations of career and achievement than used to be the case. In other words, these different debates have very different foci. The idea that they are all about 'enhancement' [in the bioethics sense of the word] has remained an academic one.

As this bioethicist indicates, there are several sets of concerns at issue, having to do with changes in different areas like work and education. I want to take these comments as a point of departure to open up the space between the bioethical characterization of enhancement, and how these technologies are being discussed in Germany. This seems like an essential step, because a definition of enhancement that groups all different sorts of technology and problems under a single sign of improvement can end up erasing important differences. My sense is that in bioethics, "enhancement" is often laden with quasi-futuristic imaginations of extensive improvement and precise technological control that hinders more precise engagement with the concrete details.

Piecing together the worries I encountered during my fieldwork, which coalesced around questions about "improvement" through medicine that were considered to be somehow troubling, I suggest that in Germany enhancements are imagined not as a clearly demarcated technology, but as a flag for a constellation of elements that combine to form a particular kind of problem. The following elements capture a working definition of enhancements that became clear to me during my research:

1. Improvement, the necessary condition, since an intervention produces something that is "better" from some perspective. It is closely related to
2. Medical technology, which is often a problematic solution because it may not be appropriate to a given situation, or may indicate that *too much* improvement is called for. This in turn points to
3. Questionable conditions of life, i.e. norms and structures that demand certain levels of performance or kinds of people.
4. These norms have their counterpart in misplaced desires, which is to say that individuals may be implicated in *not* rejecting inordinate demands, or even identifying with them, and
5. Ethical stakes, often the loss of something (e.g. opportunities for self-development or humane working conditions and hours).

These components suggest thinking about ethics in terms practice and culture as being *constitutive* of the problems that arise. The "ethics" I am interested in, then, are the norms that are being articulated (explicitly or implicitly) and embodied in relation to biomedical improvement. To situate this object of study, I turn to a sketch of my field site.

Historical and Ethnographic Context

After World War II, much of Germany's infrastructure lay in ruins and its population was decimated. Nonetheless, from the 1950s until the early 1970s, during West Germany's "economic miracle" the economy grew at a rate in the high single digits, and unemployment was at times less than one percent. This allowed the state to raise the overall standard of living by expanding state services and welfare payments. Through a combination of regulations to protect workers and an extensive welfare system, the state redistributed the spoils of the economic miracle, and tried to guarantee at least a minimum of individual welfare for all. This highly regulated system was part of the "Ordo-Liberal" program, which Foucault argues was the economic response to the emergence of Nazism; Ordo-Liberals believed that the Nazis could seize power because a well-functioning market system had been absent (Lemke 2001; Foucault 2008:106-19).[6]

However, from the 1980s onward, the state began reducing its services and increasing privatization, initiating what could be termed "neoliberal" changes in the relationship of the state to citizens (Harvey 2005; Prasad 2006). Many of these changes were driven by European integration, which aimed to provide a pan-European market for goods and services. Integration also required the labor market to be de-regulated, which allowed an influx of (often cheaper) labor from other EU countries. Significantly, the combination of stagnating economic growth (mirroring other European countries and partly due to the worldwide economic crisis of the 1970s), high costs of state services, and enormous costs of reunification (in which West German transferred huge sums to "modernize" the East) led to gradual cuts in welfare services and the loosening of labor laws (Schmidt 1998; Butterwegge 2006).

By the early 2000s, low levels of economic growth and high unemployment were seen as an urgent political problem, which many argued was primarily due to high taxes and a bloated welfare system (Sinn 2007). In 2003, Chancellor Gerhard Schröder initiated the *Agenda 2010*. It called for de-regulating the labor market, and "demand[ed] individual achievement (*Leistung*)" (Schröder 2003) by reducing welfare payments. Many have credited changes wrought by reforms to the welfare state and labor market with Germany's economic strength in the last decade; others have argued that it prioritized individual achievement, making individuals responsible for their own welfare as the state withdrew and directly exposed them to "market demands". Media have attributed reported increases in sick days and rising rates of early retirement on account of psychological factors (which increased from 15% from 2006-09 (Kroll et al. 2011) to anxiety

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[6] This differed from the position of Frankfurt School theorists, who claimed that the capitalist system bred fascism.

about the felt pressure to perform at work. A condition known as “burnout” is seen as symptomatic of these excessive pressures, which dominated the airways during my fieldwork, with headlines like “the Exhausted Country (*Volk*)”[7] or book titles like “is the achievement society burning itself out?” (Dettmer 2011). Burnout, one psychologist told me, was “when you’re always at the limit of your capacities, or over that limit”, interpreted by many as an index of economic arrangements and pressures to achieve that have spiraled out of control.

A parallel narrative about the rising significance of “achievement” was voiced in education. German college graduates were typically in their late 20s when they received their first degree, much later than the European average. This was perceived to be an economic disadvantage, so politicians and educational leaders in Germany and across Europe harmonized standards for receiving and recognizing degrees, drawing on rhetoric about the importance of education for “global competition” and the “quality of life”. In Germany, this transformed what had only been a loosely structured curriculum into a more regimented system in which performance was regularly monitored and standardized. Reports of rising cases of depression among students and widespread protests indexed that many felt the standards for achievement had become too high. These critics were resisting what they felt was a reorganization of education along “neo-liberal” lines that they believed intended to prepare students for the workplace rather than enable self-development (*Bildung*). A similar situation has taken place in schools in the past decade: in 2001, the “PISA Study” was released, a triennial report comparing the performance of elementary through high-school students in OECD countries. Germany was below the international average in several areas, prompting the popular weekly *Der Spiegel* to ask if German students were “stupid” in an infamous cover headline, claiming that “Germany, the land of the poets and thinkers, has been left behind” (Darnstädt et al. 2001). In response, education was reformed, heavily emphasizing student achievement, and linking it with economic success: high school has traditionally had a nine-year curriculum, but it was shortened by one year, in large part on the

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[7] Markus Dettmer, Samiha Shafy, and Tietz, Janko, “Volk Der Erschöpften,” *Der Spiegel*, January 24, 2011.

grounds that it would allow graduates to enter the workforce or college sooner. While some parents and students praised the reforms, again protests ensued;[8] many parents worried about what they saw as an expansion of the pressure to achieve to lower grade-levels (which had also been reformed, e.g. introducing grades earlier in primary school). School, like work and university, were part of a narrative that emphasized the preeminence of achievement in response to economic changes and international competition.

Another legacy of war is Germany's response to the extent of the Nazi atrocities. The Allied forces nullified the Third Reich legal structure, even dismantling institutions like the public health service (Sperling 2013; Niehwöhner 2011). The founders of the modern German state wrote the constitution in direct response to national Socialism, enshrining an ethical counter-ideal in the very first sentences of Article One of the Constitution: "the dignity of the human being is inviolable". Further, while the previous regime had been responsible for war crimes, the modern state had as its duty to "respect and protect [dignity]". At the core of dignity is a prohibition on instrumentalization, or the idea that individual wellbeing may not be sacrificed for *any* reason. In public discourses, the danger of instrumentalization is commonly invoked to warn of perceived transgressions against individual welfare: for instance when scientists propose to create embryos and help potential parents-to-be select one that has not inherited a serious genetic disease, discarding the unused embryos or using them for research would instrumentalize them (in this case the fertilized egg is seen as standing in for human beings generally). Preventing instrumentalization, typically framed as protecting 'dignity', is part of the national project of overcoming the Nazi past, and like practices of public remembrance it demonstrates that modern Germany is a democratic state that respects and protects individual existence in all forms (Boyer 2005; Hogle 1999; Sperling 2013).

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[8] On account of widespread resistance to the reforms, many states rolled back the reforms and began offering the 9-year high school diploma again. Some politicians saw this as a " farewell to the idea of achievement" (cited in Roland Preuss and Marc Widmann, "Da Staunen Die Anderen," *Sueddeutsche Zeitung*, March 24, 2014, 13).

Particularly technology that threatens to instrumentalize some individuals is met with public debate and rebuke: in 1999, the philosopher Peter Sloterdijk gave a highly abstract lecture proposing how to govern the possible "genetic reform of the species" through a departure from classic forms of "humanism" (2009). Though not outlining a program for scientific intervention, Sloterdijk sparked a debate in which he was accused of advocating an essentially fascist project of "genetic breeding"[9], and wanting to create the *Übermensch* first proposed by Nietzsche's Zarathustra. Jürgen Habermas (2002) weighed in on the debate, arguing that "human nature" and "dignity" were essential boundaries that technological intervention should not cross. Habermas indexed widely held views about the relationship of individuals to technology that are inflected by Germany's WWII past, as well as the much longer significance of "nature". The "natural" marks a set of capacities thought to be arranged in a kind of harmonious whole that should be protected, and conditions the relationship to technology. As one of my informants, who was a philosopher, put it, "this idea of making your life better or more relaxed through pharmacology—I haven't met that idea in Germany.…the Germans are opposed to leaving the natural basis [of their bodies], or doing something about that basis" (see chapter 3).

Practices and Discourses around Pharmacological Self-Improvement in Germany

This ethnographic context shaped what kind of situated problem "enhancement" was in Germany. The German media began reporting about enhancement somewhat regularly around 2004, and in late 2008 reported about a position statement in the journal *Nature* by a group of senior doctors, scientists, ethicists, as well as the *Nature* editor, arguing that using enhancement use should be liberalized (Greeley et al. 2009). Coverage exploded in the next few months, as a major insurance company (*Deutsche Allgemeine Krankenkasse*, DAK), claimed that 5% of the three thousand workers they surveyed used enhancements for their jobs, which they termed "doping at work". This quickly became news that "2 million Germans" were doping at work.

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[9] Assheuer, Thomas. "Das Zarathustra-Projekt." *DIE ZEIT*, September 2, 1999.

Later in 2009, taking the *Nature* publication as its model, a group of German physicians, legal scholars, and ethicists published "The Optimized Brain", arguing that a more liberal approach to performance improvers should be carefully considered (Galert et al. 2009).[10] The combination of popular information about supposed enhancement use, and the proposal that such use might be a good thing, set off media panics that were reinforced from other quarters. My analysis of the media showed that on the one hand, there had been anecdotal reports about college students who were taking medications, and a feeling that use was "on the rise". (Often, reports about rising "study drug" use among *American* college students were cited as corroborating evidence, which I argue indexed a fear of Germany coming perilously close to the frequently disdained American "enthusiasm" for both medications and free-wheeling capitalism.) On the other, there was data indicating that the number of prescriptions for ADHD medications had increased in recent years (the government reported that 7 times as much methylphenidate (Ritalin) was dispensed by pharmacies in 2009 than a decade earlier; see chapter 2). Common interpretations ran along the lines of "stress and pressure at work are increasing. Employees have the subjective feeling they need constantly need to be more productive out of fear of losing their jobs"[11] or, for students, "according to experts the reasons are time and achievement pressure. 'The amount of stress on students has risen in the past years', says the Head of student counseling".[12] Even schoolchildren were said to be receiving Ritalin as a means of "braindoping".[13]

These accounts of why individuals were reaching for drugs characterized the demands for performance set by the workplace and schools—largely in response to economic factors and competition—as being too high for many individuals to reach. Thus, those who used drugs were said to compensate for their lack through taking medications. I found that in the German debate,

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[10] Since then, there have been various other positions statements (e.g. by the German associations of psychiatrists, addiction counselors, and surgeons); government sponsored epidemiological reports, in addition to those by health insurers (Hoebel et al. 2011; Middendorf et al. 2012); and a report by the German technology assessment bureau (Sauter and Gerlinger 2011).

[11] "Doping Am Schreibtisch," *Berliner Zeitung*, April 15, 2009.

[12] Claudia Schuh, "Universitäten: Doping-Kontrolle Für Studenten," *Sueddeutsche Zeitung*, March 10, 2008.

[13] Yasemin Ergin, "Pillen Für Den Zappelphilipp," *Tagesschau.de*, August 9, 2007, http://www.tagesschau.de/inland/meldung4572.html.

the "solution" of performance improvement seemed to become a symptom, as economic rationalities of capital accumulation and its disregard for human limits were materialized in the numbers of individuals who felt they needed to take drugs to achieve. A fear often voiced in interviews was that individuals were thereby succumbing to inordinate standards, which would ultimately undercut their autonomy, as well as their self-realization. By taking enhancements, the critique went, people would instrumentalize their capacities, corrupting those (school-children, teens, or students) who still needed space to develop "freely" in a creative or aesthetic process. I argue that these worries are produced through the context in which they are lived—post-War expectations of the welfare state, contemporary neoliberal economic arrangements, the presumed material effects of drugs, and historical ethical commitments about respecting human limitations. Interestingly, such a worry about enhancement technologies runs counter to the assumption in the bioethics literature on enhancements that maximizing capacity and self-control will lead to increased autonomy or happiness. Important to my overall argument, then, is that the claims voiced in Germany raise questions about naturalized assumptions of progress, which cannot even be *posed* within an unreflected frame.

At the same time, even an apparently straightforward case demands the kind of attention to situation that I advocate. Many of those students I interviewed who were using medications accepted the heightened demands they felt education reforms and the prospects of a tight job market had placed on them. They saw a certain level of achievement as necessary to fulfill their expectations for future career and lifestyle. However, the even more pivotal reason for taking drugs was their orientation towards living a certain kind of "fulfilled" life, in which a form of ordinary life—family, close friends, leisure pursuits—was possible, while meeting demands for performance that seemed to have intensified. For them, then, "lack" was something they transformed into an index of a productive and successful person. In other words, they internalized the rhetoric of maximization, inscribing it into their conception of their own self-realization. In their view, the limit to maximization was set by an imagination of the drugs as helping them not to “be better”, but “be their best self”, realizing a kind of “optimum” of individual potential. Users said they were willing to take medications to improve only so long as they felt they were in control of their own productivity, and did not become “dependent” on the medications for accessing their full capacities (in other words, to forestall transforming the medication into a supplement that would have made their lack visible to them (Derrida 1994)). But, again interrogating the bioethics of enhancement, would this re-imagination of the self to become a more productive subject be “coercion” or a lack of autonomy, if it seems freely chosen? And what should one make of the lurking tension between control and dependence—would this meet the standard of a “no-risk” enhancement drug? If self-realization is a self-evident ideal (one that determines what is best by individual fiat), it becomes difficult to raise, much less answer these questions (despite them being very real concerns for those using medications, emerging out of their concrete situation).

My fieldwork also examined the role of biomedicine, which was a prominent and complex subtext in the debate and for my informants. A basic issue that frequently came up was the boundary in question: typically, medicine was thought to “treat”, while enhancements went “beyond”. However, changes in biomedicine that seemed to be “medicalizing” more people troubled a straightforward reliance on biomedical categories, suggesting to many that biomedicine was somehow complicit in furthering a view of people as always requiring intervention. Perhaps formulating the issue overly polemically, a report about psychosomatic and psychotherapeutic medicine asked whether these doctors saw themselves as a “repair service for the victims of work and crises of ‘speed-up’, or is it an optimizing agency that is mainly occupied with bringing exhausted workers back into production or to their desks as quickly as possible?”[14] The distinction made here was perhaps too subtle to be appreciated: in both cases medicine was framed as being complicit with problematic regimes of achievement. Such regimes had their own symptom: while I was living in Germany, a wide-ranging debate about “burnout”

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[14] Werner Bartens, “Befristet, Verdichtet, Gefeuert,” *Sueddeutsche Zeitung*, April 5, 2014, 22.

took place, a condition thought to manifest contemporary exhaustion and joylessness at being expected to constantly perform both in one's work and leisure time. The role of medicine in burnout was ambiguous, with positions ranging from a refusal to acknowledge a specific "work" pathology, to its subsumption into familiar nosological categories.

Indeed, in interviews and my reading of the debate, I found that there was widespread ambiguity around medicine's relationship to "enhancement'. Much of the research in Germany mirrored this ambivalence: The most prominent study on the topic, about doping at work, included prescription and over-the-counter substances in its assessment (DAK 2009). The largest study of students defined "brain-doping" as including using prescription and illicit drugs to improve performance, but also pain medications and sleeping pills, seeing "performance improvement" as paired with "stress-management" (Middendorf et al. 2012:13-4). Katrin Lohman, a public health researcher, ran a different study asking about study drugs. She made a distinction that I found to be tenuous, but nonetheless illuminated a distinction many were interested in making, between "doping in the everyday" (*Alltagsdoping*) and "neuro-enhancement". When I asked about the difference, she explained that the former "is the use to maintain or possibly improve the ability to perform", while "neuro-enhancement is the attempt to increase performance through psychopharmaceuticals". An example of the former would be taking painkillers to be able to go to work, while an example of the latter would be taking stimulants to improve performance at work.

These various definitions of enhancement in practices of research demonstrate that "enhancement" is not conceptualized as it is in most of the English-language literature, where it is limited to the use of prescription pharmaceuticals for "performance" improvement. In Germany, "enhancement" is often intrinsically connected to medical intervention more broadly, including what is often considered to be simply self-management (possibly under physician supervision) of "pathological" signs of being maladjusted to stress. By defining enhancement so broadly, an implicit assumption these researchers are making seems to be that even seemingly unproblematic interventions can become worrisome if they are part of an overall economy of achievement.

Indeed, this points to a curious feature about an enhancement: its paradoxical status of having both therapeutic and non-therapeutic effects. Stated differently, the debate fetishizes the material properties of the medications as being ethically problematic in themselves. In my research, I tried to invert this question to ask how the social context makes the materially underdetermined properties of drugs into a problem. Part of the answer, I discovered, relates to issues around achievement I discussed above; another part depends on how individuals are alerted to biomedical “pathology”, what is considered to be biologically “normal”, and what relationship one is exhorted to have to the “risk” of decline. All of these are intimately connected to what it means to live a “full” life of well-being (generally in relation to economic arrangements). Further, as a corpus of work on the anthropology of biomedicine suggests (Good 1994; Kaufmann 2005; Lock and Nguyen 2010), biomedical discourse plays an important role in shaping norms of health and risk, at the same time as those norms are produced through wider social fields. As my research shows, at the level of biomedical rationalities of intervention, “treatment” and “enhancement” can at times be difficult to distinguish. Again, the point here is that a more productive framing pushes beyond the confines of treatment vs. improvement, uncovering how enhancements are linked to the social world that sustains and organizes uses of medicine and technology, and of certain conceptions of what a “human being” is (cf. Hogle 2005).

Theoretical Contributions

I develop three lines of argument: the first shows tensions in contemporary regimes of “neoliberalism” that enhancements make visible. This line speaks to the second, in which I connect tensions inherent in ideals of self-maximization or optimization to biopolitics, arguing that what has been termed a “politics of life” must be understood with reference to locally situated practice as much as to technological advance. Finally, the third and overall line of argument is to understand enhancements as a field of ethical practice through ethnography.

Neoliberal Regimes of Subjectivity and Practice

A common observation about neoliberalism is that it purports to assure individual well-being. According to David Harvey, neoliberalism is ”a theory of political economic practices that proposes that human well-being can best be advanced by liberating individual entrepreneurial freedoms and skills” (2005:3). The “well-being” at issue here includes the biological kind, but also refers to material, financial, and social welfare. Much recent scholarship has examined the effects of neoliberal rhetorics in social life, how neoliberalism becomes productive of new forms of social practice, or is part of reworking notions of status or personhood (Greenhouse 2011; Ong and Collier 2005; Kipnis 2008; Truitt 2008; Ho 2009). Many have suggested that what is particularly unsetting about the economic ideology of neoliberalism is how it tries to achieve an exhaustive reach into individuals’ innermost being (Brown 2005; Rose et al. 2006; Povinelli 2011). As a form of “governmentality” (Rose et al. 2006) or what Wendy Brown terms a “political rationality” (2005), neoliberalism is concerned with “the soul of the citizen-subject”, the aim of which is the “production of all human and institutional action as rational entrepreneurial action” (Brown 2005:39-40). Neoliberalism is said to replace all other rationalities with the neoliberal one, so that privatization or the withdrawal of government services is a strategy by the state to produce calculating subjects instead of those who think in terms of being dependent on the state. Individuals must thereby take responsibility for their lives, on the one hand to avoid material hardships, but on the other to escape being viewed as having failed morally; neoliberalism is figured as an ideology in which individuals are enjoined to maximize themselves and their capacities. In other words, neoliberalism is characterized as an encompassing logic that can secure welfare because it brings individual subjectivity into alignment with market rationalities, becoming an ethical program thought to lead to personal success and fulfillment (Urciuoli 2008; Funahashi 2013). I take up these analyses to ethnographically show how neoliberal discourses in contemporary Germany become productive of social facts that are in tension with historical commitments to a strong welfare state and long-standing notions about group solidarity. At the same time, I follow how neoliberal logics become integrated into individuals' understanding of themselves and reconfigure meanings of "ethics" (cf. Muhlebach 2012; Zaloom 2005; Zigon 2010). Thus, I also trace the limits to how deeply neoliberalism can form subjects, and characterize the "well-being" it can secure.

In so doing, I am following work by those who have pointed out that at the same time as ideologies of neoliberalism purport to lead to individual and social welfare, they are implicated in deprivations. Carol Greenhouse writes that this is a "provocation [that in part] arises from the contradictions in neoliberalism itself" (2010:5). As Jean and John Comaroff stated at the turn of the present century, "more and more ordinary people…attribute to these arcane forces their feelings of erasure and loss: an erasure in many places of community and family, exacerbated by the destabilization of labor, the translocalization of management, and the death of retail trade; a loss of human integrity, experienced in the spreading commodification of persons, bodies, cultures, and histories, in the substitution of quantity for quality, abstraction for substance" (2000). I show how in Germany, the wide reach of economic rationalities are believed to undermine community, welfare, and even health (cf. Molé 2010). While scholars like Alexander Edmonds (2011) usefully describes reconfigurations of subjectivity and of capital through the register of "health technologies" in a world his informants assumed to function according to neoliberal logics, in my field site health technologies become a way to problematize neoliberal ideals of self-care and self-maximization themselves.

Biopolitics and Contemporary Biomedicine

The second line of argument relates to the first, in which I situate biomedicine alongside other social fields. Much scholarship claims that contemporary biomedicine and the biosciences have been fundamentally reoriented towards “optimization” rather than the older task of “treatment” (Rose 2007; Clarke et al. 2003, 2010, 2011). In Nikolas Rose’s phrase, a “politics of life itself” is emerging. Rose argues that technological advances, changes in the epistemology of biomedicine to focus on the molecular level, and political economic shifts mean that “the old lines between treatment, correction, and enhancement can no longer be sustained” (2007:17). These changes in the meaning of health have in turn created a situation in which individuals are under an “imperative…to maximize the vital forces and potentialities of the living body” (2007:23). These changes are linked to an ethic of neoliberalism in which individuals form their personhood primarily through biological or chemical means, in which there is a “growing sense of individual obligation or responsibility to literally ‘make the best” of oneself” (Clarke and Shim 2011:180).

Rather than taking the novel powers of biomedicine as a given, I try to understand how proclamations about the supposed material abilities of technology to help individuals do more intersect with, on the one hand, felt increases in demands for self-care and productivity; and on the other hand, with pronouncements that people need novel biomedical interventions because they are not as well as they previously thought. Linking the biopolitical to neoliberalism are the visions and exhortations I have noted, that individuals should maximize themselves, constantly working to secure more autonomy, more productivity, and more self-realization—which technology can perhaps help them achieve. I propose that there is an ethos of maximization and a vision of productive subjects trying to find its realization in enhancements. This ethos is the *condition of possibility* for drugs’ material potential to become significant, and ethically problematic, in the first place. In sum, I intend my analysis of the practices and ethics of technological self-improvement to provide a different scale of analysis than arguments that have tended to emphasize the significance of shifts in the material practices of biomedicine.

This project is also biopolitical in the sense that it tries to understand how the management of biological bodies produces certain forms of life, which are at the same time questions about the economic arrangements of a given populace (Foucault 2008). A key term in contemporary biopolitics is “health”. Joe Dumit has shown how the pharmaceutical industry’s imperatives of expanding market share and ensuring returns on speculative investments reconfigure the *epistêmê* and practice of biomedicine and biotechnology, orienting treatments towards risk prevention that are *hailed as* furthering health but often primarily advance profits rather than well-being (Dumit 2012). Kaushik Sunder Rajan provides a frame to make sense of some recent transformations in health through his study of economic exchange and circulation as these interact with the life sciences. He shows how risk is implicated in expanding what counts as ‘therapy’, which allows companies to generate the venture capital they need for the expensive and uncertain process of developing therapies. Beyond showing how the kinds of knowledge produced by the life sciences are dependent on capital, he tightly links capital to biopolitics, suggesting that “an articulation of ‘the life sciences’ and ‘political economy’ [is] a central operation of an emergent modernity…whose understanding is still very much at stake” (2006:13). I take up this notion of an emergent “articulation” through biocapital in my field site, expanding its conceptual purchase. I show how the reconfiguration of treatment along the lines of risk (which is driven by the pressure to generate economic value), becomes an effective rationality of intervention because it intersects with older logics of biomedical practice, and with specific, “culturally” situated norms of well-being.

Ethics

Overall, this dissertation is an argument for thinking of ethics in terms of problems that emerge out of a situated, historical context. Recent ethnographies of Germany have elaborated on how the Second World War (and later Reunification) have deeply marked German post-war experience (Borneman 1992; Behrdahl 2007; Mandel 2008). As I argued above, the German state and publics have continually reenacted a state that has learned from the transgressions of the National Socialists, and which has enshrined far-reaching basic protections of human beings in its judicial and institutional structures. This has shaped the meanings of new biomedical and biotechnological developments. Linda Hogle's ethnography of organ transplants shows how transplant practice assiduously avoids any associations that would threaten to "instrumentalize" individuals or violate their "dignity" (Hogle 1999). I build on Stefan Sperling's (2013) account of bioethics commissions in Germany, which demonstrates how collective ethics have been influenced by the War, an ethics which nonetheless has deep roots in German philosophical thought. In describing the debate around enhancements in Germany, I show how ethical ideals around "instrumentalization" are mobilized to critique pharmaceutical self-improvement. I also complicate this ethics, by relating it not to the post-War era but to German ideas about individual self-development (Boyer 2005) that enhancements seem to threaten.

Thus, I use the debate around enhancements in Germany to describe how ethical dilemmas are situated problems, building on recent research on the "anthropology of ethics" (Lambek 2010; Laidlaw 2002; Zigon 2007; Fassin 2012). Though this work tends to focus on the individual, I suggest that these concepts can be usefully adapted to study collective responses to ethical conundrums as well. By developing a robust delineation of "ethics" and "ethical" dilemmas around enhancement technologies, I also build on recent work attending to ethical dimensions of biomedicine (Lock 2002; Lakoff 2005; Sunder Rajan 2005; Petryna 2009). My goal is to sharpen the analytic focus on that domain, further elaborating an assumption that seems to be latent in some of this research: key notions about subjectivity and well-being are being reconfigured in complex and often contradictory ways by biomedicine, which puts the "human being" in question, and demand historicized, reflexive engagement with the ethics that are at stake.

Fieldwork Sites and Methods

Fieldwork was conducted in Berlin, Germany's most populous city, with around 3 million inhabitants. Berlin has been the cultural capital of Germany since at least the Weimar Republic, when it had a thriving intellectual, arts, and amusement scene. Divided by the Wall during the

Cold War, West Berlin nonetheless continued to receive extensive funding that propped up an economy largely severed from the rest of West Germany (Borneman 1992). Since reintegration in 1989, enormous sums of money have been poured into efforts to modernize eastern Berlin. Because of its size and continued importance, Berlin concentrates many individuals and events in a single place that would be dispersed elsewhere, which was an advantage during fieldwork; this was particularly the case for this project, in which it was necessary to track into various different sites. At the same time, the density of sites also forced me to select those I thought were most important, which may not have been necessary (or possible) in smaller cities.

I lived in Germany for two years, and conducted fieldwork on a full-time basis for fifteen months. While most of my fieldwork was in Berlin, I regularly travelled to other sites in Germany as needed. My approach was oriented towards beginning with "enhancement" and following its trails outward. Thus, I analyzed media to create an archive of the debate (from roughly the 1990s onward), and in parallel formally interviewed several of those who participated in the debate. This included physicians, academics (mostly bioethicists and philosophers), some journalists, politicians, as well as several researchers studying the effects of enhancement drugs. I also attended as many relevant public events of various forms as possible, which included the obligatory ones on enhancement, as well as on related issues like burnout or addiction. To follow the other themes related specifically to education and work, I spent time at local universities and a school, and participated in events like organizational and educational meetings and protest rallies. I again conducted interviews, both formal (roughly 50 directly related to the debate) and informal, among others with teachers, psychologists, academics, labor organizers, and workers themselves. At the start of my fieldwork the "Occupy" movement gained prominence in Germany, so I spent time speaking with individuals at these events as well (though it was a relatively short-lived movement, about 3 months long). A core part of the research were interviews with students who took medications for improvement. An important reason for doing this research in Berlin was its size: with three full universities and several smaller under/graduate programs, it has Germany's largest student population. I interviewed 20 students, who were enrolled at local universities in any field of study, in a semi-structured format. Students generally ranged in age from 19-30 (with one outlier who was 37).

Parallel to these other sites, I conducted fieldwork at a memory clinic, a specialized site for treating cognitive impairments. I was there from one to several days a week for nine months. The clinic was among the largest in Germany, housed at an academic psychiatric clinic. To get a kind of "control" in terms of whether there was something unique about how dementia was diagnosed in comparison to other disease conditions, I also spent time at an ADHD clinic. The work of the memory clinic concentrated on diagnosis, and enrolling patients in clinical trials. I observed procedures and diagnosis among physicians and psychologists, attending meetings, and speaking with staff. Though I was often interpellated in my role as a medical student, in an attempt to keep my role clearly defined I did not conduct any procedures myself. In pre-field research, I had been told that memory clinics regularly had patients who came seeking some kind of "improvement" of their cognitive function despite being healthy. Thus, the memory clinic was intended as a way to juxtapose medical practice with the discourses and practices outside the clinic. As I try to show especially in chapters 5 and 6, discourses circulated between the various sites and the clinic. The relative ambiguity of the purpose of a "memory clinic" was a resource, since it made it possible for a range of patients to come to the clinic who may have had only vague "memory complaints", whose problems were nonetheless easily recognizable in the register of insufficient performance

Chapter Outlines

Chapter 1, "Situated Problems: Toward a Reflexive Ethics of Technology", reviews prominent positions in the Anglophone bioethics literature on pharmaceutical enhancement. Drawing on anthropological critiques of bioethics, I explicate how bioethics' inattention to social factors, individual experience, and discursive settings has narrowed its focus and prevented it from addressing some basic questions about enhancement. I argue that a different engagement with ethical dimensions of the biosciences is necessary, given how bioethics is a means of arbitrating visionary futures, and that recent work on the biosciences has pointed to ethical concerns outside of the traditional doctor-patient dyad. Building on the work of anthropologists in a recent "turn" to ethics, which I combine with a reading of recent work on the biosciences, I try to draw these resources together to outline an approach of thinking about ethics in terms of "situated problems". The important point is to view ethics as concerned with diagnosis of, a response to, ruptures in habitual ways of understanding questions related to the "good" or "how to live", which emerge through practice. The arguments here set up several of the ethnographic chapters that follow. Importantly, I claim that only through attention to practice can one reflexively engage or intervene in ethical norms, both at the level of the norms in the particular situation (by historicizing them and recognizing their tensions), and at the level of "abstracted" norms like those used in bioethics (which can be understood and their adequacy judged only in relation to practice).

Chapter 2 and 3 form a pair, in which I examine what kind of problematization pharmaceutical enhancement is in Germany. Chapter 2, "Posing the "*Systemfrage*": Work and Achievement in Contemporary Germany" sets out the political economic shifts in the last decades, which can broadly be described as neoliberal, that have prioritized "achievement" (*Leistung*) as the solution to individual and national welfare. In this context, media panics about rising drug use indicate concern about the intensification or expansion of economic rationales into different areas of life. I show how drugs thus become a "symptom" of anxieties about current forms of economic logics and labor organization. The typical assumption in bioethics is that self-improvement will lead to increased autonomy, fulfillment, and social benefit, (i.e. to "progress"). I pose the bioethical account of the potential of enhancements against the one in the German debate, to point out that the worry expressed there troubles whether "improvement" is taking place, since people are being rendered insufficient through drugs; this concern is based on a specific historically and socially locatable context, though it also reflects more general features of capitalist-oriented arrangements found elsewhere.

In chapter 3, “The “Anthropology” of Enhancement in Germany: Overcoming Anthropos?” I examine why, precisely, too much conformity with economic rationales is disquieting in Germany. In the debate, enhancement is frequently referred to as “brain-doping”, which can be understood as a general worry about “overcoming” human limitations through technology. I historically and ethnographically explore the concepts indexed by brain-doping (the “natural”, “doping”, “dignity”). I show how the moniker is an ethical judgment about pharmaceutical improvement, the core idea of which is that technological enhancement would constrain individual self-development, by disrupting their potential for self-realization by diverting it to instrumental ends (like productivity or achievement). Because this debate is a public one, I further argue that the public voicing of worries about technological improvement also serves to enact a communal responsibility for protecting “dignity” in post-War Germany, in a way that shifts concern from the form of the human (e.g. embryos or the disabled) to forms of life at issue.

Chapter 4, “Productivity Aesthetics: Enhancement Drugs and Neoliberal Self-Fulfillments” describes the experiences of students who use enhancement medications, to understand the ethical stakes from their perspective. It engages claims made by scholars that neoliberalism effectively shapes individuals into self-maximizers. I suggest paying attention to how self-improvement works out in practice, to understand how and to what extent subjects are re-configured. Users report taking medications because they desire a fuller sense of “ordinary life”, in which they have enough time for work and other pursuits. In so doing, they are aiming at a particular form of self-realization, in which they bring out their “best” or “maximal” self through medication. I argue that it is possible for users to think this way because they have internalized a certain logic of productivity, which aligns their desires with larger rhetorics about economic efficiency (termed a “productivity aesthetics”). I thus trouble the reliability of the notion of “self-realization” as a moral guide, as well as offering a way to think about how a rationality like neoliberalism might shape “the soul” of subjects.

While medicine is frequently figured as a kind of generic discursive force (i.e. biomedicine provides powerful new technologies or medicalizes), chapters 5 and 6 try to tease out how biomedical logics interact with life outside the clinic. In chapter 5, “Intersections of Life and the Clinic: Burnout and Dementia”, I take two conditions to show how the norms circulating between the clinic and the “outside” are mutually constituting and interdependent. These norms are unstable configurations that cannot be thought apart from social context, which in this case means that notions of wellbeing are shaped both by biomedicine and expectations of achievement and productive capacity: On the one hand, “burnout” was thought to be caused by contemporary work regimes and pressures to achieve. It was a contested biomedical category, indicating the ambiguous role of biomedicine in helping individuals be productive. On the other, Alzheimer’s dementia raised the specter of cognitive decline from middle-age onwards, setting norms of cognitive capacity that individuals were implored to vigilantly patrol and realize through (nonprescription) medication or memory exercises.

Chapter 6 is entitled “‘Early Treatment is the Best Treatment’: Risk, Enhancement, and Early Optimization in Medicine”. After having shown how biomedical norms circulate, a crucial question about the role of biomedical *rationality* remains. Discursively, fears have been voiced that medicine is progressively expanding its purview to pathologize “healthy” individuals, raising the question of what relationship there might be between biomedical practice and “enhanced” wellbeing. This chapter “situates” the ethical concerns about enhancement in two ways: first, it engages the boundary between treatment and enhancement, which is thought to be ethically significant. Second—expanding the previous question—it asks what part biomedical rationalities play in the large-scale shifts in regimes of productivity or maximization that are thought to be part why enhancement is problematic. I take up suggestions by theorists that biomedicine produces optimization, examining recent shifts in dementia treatment for how they speak to biomedical logic as a whole. I argue that the ascendant logics of risk are a sign of how biomedical rationality aims at securing as much potential for health (and thus wellbeing) as biologically possible, and trouble claims in this literature that a fundamentally new shift has taken place.

Introduction

Statement of Problem

> The rise of modern science and technology has radically transformed the relation between human beings and nature. Nature, which for millennia had seemed all powerful and immutable, has suddenly become an object for control and manipulation, something that can systematically be shaped to human ends. Yet throughout the dramatic upheavals of the modern era the fundamental constants of human nature—human mortality, a shared repertoire of emotions and moods, a range of basic perceptual and intellectual capacities—remained a relatively fixed reference point that could bridge cultural and ideological differences. But in recent decades, radical advances in genetics and the neurosciences, and in computing and other forms of technology, raise the possibility that we are on the brink of a further revolution, this time not in our relation to the natural world, but in our relation to ourselves. Our bodies, even our feelings, thoughts, and intellectual capacities, are also gradually entering the sphere of scientific control and manipulation.…Some aspects of this silent revolution are already around us, in the form of antidepressants or other drugs that control mood and attention, performance enhancing drugs illicitly used by athletes, or cosmetic surgery to correct the results of the genetic lottery or conceal the results of aging. Others are only in early stakes of speculative research: mind-machine interfaces, or neuropharmaceuticals that reduce aggression and increase cooperation. The use of pills to "brighten" mood, and the widespread diagnosis of controversial and pharmacologically treatable new psychiatric conditions such as attention deficit disorder, are putting into question the traditional conception of medicine as concerned only with the treatment and cure of disease. Traditional notions of human nature, normality, and flourishing seem increasingly inadequate.
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> "Enhancing Human Capacities" (Kahane et al. 2011:xv)

This extended quote, which I take from the preface to a volume edited by several leading scholars in academic bioethics, refers to the prospect of "human enhancement". According to a classic definition, this term refers to using biomedical interventions "to improve human form or functioning beyond what is necessary to sustain or restore good health" (Juengst 1998). Enhancement is achieved through what the literature terms "enhancement technologies". These are typically biomedical interventions[1] that can be used for improvement purposes: cosmetic surgery, sports doping, psychoactive medications (typically SSRI antidepressants, stimulants, anti-dementia drugs), anti-hypertensive beta-blockers, transcranial magnetic brain stimulation (in which a magnetic field outside of the skull influences brain activity), brain-computer interfaces,

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[1] Others would consider eyeglasses, coffee, or sports to be enhancements; or largely speculative prospects like expanded "ultraviolet" or "magnetic" sensation (Sandberg 2011).

and genetic engineering. Pharmaceutical enhancements—particularly those targeting "cognition"—are the most widely debated and used, and are the focus of this dissertation.

Kahane et al. refer to the potentials these technologies seem to promise as a whole, outlining a familiar trope about the contemporary moment, which goes something like this: what began as a modernist project to use "nature" for human ends, of the kind outlined by Francis Bacon, has been so successful that the material world can ostensibly now be engineered at will (cf. Rheinberger 2000). Superimposed on this remarkable change (the temporality is not quite clear) is the prospect of an epochal shift: biomedicine and biotechnology have apparently already given us pharmaceutical emissaries heralding the future, and have proclaimed that our own biological material, that most concrete and steadfast aspect of our existence, is about to fall under the same spell of inexorably progressing scientific control. Crucially, the values guiding what should be done—the ethics of the present—seem to be insufficient to the demands of the day. Thus, work to generate ethical pronouncements has become essential to navigate the future speeding towards us.

In this dissertation, I take up the observation that in the last decades, shifts in biomedical discourses and technologies have helped to reconfigure social life in far-reaching ways, though I view the diagnosis of profound ethical uncertainty as something that deserves further study. The perceived potentials of biomedicine and biotechnology have spawned wide-ranging assessments of "ethics", paralleling attention to the "ethics" of other fields like neuroscience, nanotechnology, or synthetic biology. In one sense, ethics seems to be the register in which we formulate troubling questions about hybrids, boundary crossings, and unstable categories of bodies and technology. In another sense, ethics is functioning as the mode through which questions about the "future" are being arbitrated, in which visions of un/desirable types of society or persons are articulated. For instance, a "discussion paper" intended to stimulate debate about pharmaceutical enhancements, published by the British Medical Association, notes that "[t]his paper focuses on attempts to improve cognition within normal species functioning. In other words to help people to achieve their full potential. These are very real issues that have implications for us all" (2007:3). To address the question of "why is this issue ethically important?", the authors answer that "particular concerns arise from interference with the brain precisely because it is intrinsically linked with our personality and individuality and because the long-term effects of interfering with this very complex system are unknown" (ibid.).

An assumption latent in the focus on ethics is that such novel technologies may profoundly change human beings, thereby raising new ethical questions. Writing about the last techno-visionary project of the preceding century, Paul Rabinow and Gaymon Bennett observe "[f]rom the outset, the genome projects and the bioethics programs affiliated with them traded on the notion that the genome contained the determinative essence of human identity.…As such, a good deal of anthropological and ethical energy was spent working to imagine, understand, and critically evaluate the supposed capacities and threats introduced by massive genomic-sequencing projects" (2012:31). One can note a similar presumption in the examination of pharmaceutical enhancements, where ethical reflection hinges on the idea that neurobiology determines someone's subjectivity and capacities, which can effectively be altered by drugs. In short, the material potency of medications is new, and their extensive neurobiological transformations are what matter ethically.

But what if one were to resist ceding primacy over the ethical agenda to neurobiology—what would then be "new" about these drugs, and how could one understand the attendant "ethical" concerns? This dissertation proposes to reframe the ethical stakes of "pharmaceutical enhancement" through an ethnographic study of practices and discourses around using medications for self-improvement in contemporary Germany.

"Human Enhancement" in Bioethics

"Enhancement", as one might suspect, is difficult to define conclusively—how clear are boundaries delineating treatment? What is "normal"? Arguably, "enhancement", by defining the use of technology for increasing well-being outside of the ostensibly unproblematic biomedical frame of healing, could be seen as a term crystallizing the trope that ‘ethical questions arise because of new powers to redesign human beings’. It creates a recognizable problem that can be discussed and acted on by bioethicists, doctors, researchers, and lawmakers.

Schematically, one can track a history of “enhancement” in bioethics that begins in the late 1970s. In the middle of the Cold War, the risks of genetic research that had accompanied the developments in genetics and molecular biology of previous decades were being widely debated among scientists (culminating with the conference in Asilomar in 1975 to establish standards for research). Around the same time, some geneticists suggested that “enhancement” might be possible, most prominently the geneticist W. French Anderson. He defined “enhancement genetic engineering” as “no longer therapy of a genetic disorder; it is the insertion of an additional normal gene (or a gene modified in a specific way) to produce a change in some characteristic that the individual wants….for example, greater size through the insertion of an additional growth hormone gene into the cells of an infant” (1985). It was claimed that “enhancement” could result from attempted therapy, if a genetic intervention produced an unintended increase in function. This was believed to be possible because the effects of any given intervention could only be imperfectly predicted, and on account of the far-reaching effects of genetic interventions (e.g. replacing a defective gene could lead to above-average hormone production). At the same time, the *conceptual* difference between treatment and improvement was troubled, primarily by the widespread availability of genetically engineered growth hormone: at a molecular level, there is no difference between a "pathological" deficiency of growth hormone, and a level that is “below average” but still in the “normal” range (e.g. because of genetically short stature (Hogle 2005; Rothman and Rothman 2003)). Scholars like the sociologist Jonathan Glover (1984) wrote about the potential social and ethical consequences they saw for genetic engineering, and the topic was widely discussed in bioethics (Brock et al. 2001; Reiss and Straughan 2001).

Questions about genetic enhancement remained important until Peter Kramer's *Listening to Prozac* (1993) catalyzed a shift in focus. Eric Parens of the *Hastings Center for Bioethics* gives a history in which "Kramer rather enthusiastically exhorted his readers to accept that since we *can* now 'enhance' ourselves with new biotechnologies like Prozac, it is time to start thinking about how we *should* enhance ourselves….Thus late 1993 seemed like a good time to try to ask very basic questions about aiming new biotechnologies at enhancement purposes" (1998:viii, emphasis original).[2] Research on pharmaceutical enhancements eventually eclipsed work done on genetic enhancements, which is likely related to the seemingly pressing problem of pharmaceutical enhancement: while novel genetic enhancements had not been developed, epidemiological data about psychopharmaceutical use by college students for "non-medical purposes" (purportedly for performance) seemed to indicate that a pressing problem existed (Babcock and Byrne 2000).

Several of the most prominent texts on enhancement directly addressed the prospects of being "better than well" that Kramer laid out.[3] Writing at the beginning of the new millennium, some warned of an impending "'posthuman' stage of history" (Fukuyama 2002:7). The American "President's Council on Bioethics" opined that enhancement "raises some of the

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[2] Parens is referring to a workshop on "enhancement" the Hastings Center initiated, out of which the first and perhaps only canonical text about enhancements resulted (Parens 1998).

[3] They were also a response to another, more radical stream of thought about human improvement. This stream has been less important in bioethics (though it has prompted a range of responses), and plays hardly any role in Germany:
This strand can be traced back to the writings of British intellectuals in the 1920s, when noted scientists like John BS Haldane and John D Bernal advocated that social utopia could be brought about by controlling genetics or through implantable technologies, partly prompting Aldous Huxley's famous dystopic novel "Brave new World" (Coenen 2010; Bostrom 2005). The contemporary strand of the radical vision is claimed by "transhumanism", which "holds that current human nature is improvable through the use of applied science and other rational methods, which may make it possible to increase human health-span, extend our intellectual and physical capacities, and give us increased control over our own mental states and moods" (Bostrom 2005). It is closely related to claims made about computing from the middle of the last Century onward, that technology would soon lead to a revolution by expanding human capacities through powerful computers; as well as visions about transcending human capacities through artificial intelligence, often referred to as the "singularity", or the point at which technology would so radically reality that it is impossible to imagine the future beyond that point (popularized by Ray Kurzweil in his *New York Times* bestseller "The Singularity is Near"). Nanotechnology has also been credited with the potential to literally "re-build" the material world on a "nano" scale (Milburn 2008; Drexler 1986). These various strands of research were brought together in a report by the NSF in 2003 which promised that "we stand at the threshold of a new renaissance in science and technology, based on a comprehensive understanding of the structure and behavior of matter from the nanoscale up to the… human brain. Unification of science based on unity in nature and its holistic investigation will lead to technological convergence and a more efficient societal structure for reaching human goals" (2003:1).

weightiest questions in bioethics. It touches on the ends and goals to be served by the acquisition of biotechnical power, not just on the safety, efficacy, or morality of the means. It bears on the nature and meaning of human freedom and human flourishing.... And it is far from being simply futuristic: current trends make clear how the push "beyond therapy" and "toward perfection and happiness" is already upon us—witness the growing and increasingly acceptable uses of cosmetic surgery, performance- enhancing drugs, and mood- or attention-altering agents" (2003:8).

These well-known reflections on human enhancement considered the whole range of available technologies, and some authors (Sandel 2007; Habermas 2002) have continued to caution against enhancements. Medications have received most of the attention in the literature on enhancements, ranging from ethics pertaining to speculative scenarios and futuristic projections; to explorations of fundamental principles in philosophy; to position statements, reports, policy, and legal recommendations; to epidemiological research; to testing of substances and technologies' effectiveness (British Medical Association 2007; Larriviere et al. 2009; Graf et al. 2013; Singh and Kelleher 2013; DeJongh et al. 2008; Ilieva et al. 2013). However, a good deal of recent bioethical work has focused on existing drugs rather than speculative scenarios, and has taken a moderately optimistic stance, believing that these technologies will eventually become reality and will have desirable effects. In this dissertation I engage the most prominent texts in Anglophone bioethics about enhancements (Greeley et al. 2008; Harris 2007; Farah et al. 2004; Bostrom 2005; Savulescu et al. 2011), some of which take the form of position statements advocating for specific policies, and argue for a liberal stance towards pharmaceutical enhancements.

Many of these arguments valorize individual autonomy and self-realization: authors argue that legislation should protect individuals from physical risks, as well as from being coerced into taking a medication they did not freely decide to take, and individuals should be given fair access to these drugs, or at least not be at a disadvantage relative to others. The literature countenances limitations on enhancement use if they somehow fail to benefit individuals—for instance because of medical risks, or because not everyone has access to them. While the central claims made by much of the dominant literature about enhancements are important, I will show that ethical analysis could benefit from a more robust consideration the empirical context, and that any thorough ethical reflection should consider the broad range of concerns that are at stake in human enhancement.

Bioethics and Social Scientific Critique

My arguments engage with only a limited set of claims within the expansive field of "bioethics". My concern, put in terms of only a very tenuous and rudimentary categorization of the discipline, is not with that form of bioethics which is primarily concerned with patient care or clinical outcomes (e.g. (clinical) medical ethics); nor which is directly policy-oriented, for instance dealing with questions of research ethics (e.g. institutional review boards (IRBs) or research guidelines). I am most interested in the claims made by 'academic' bioethics, which is overwhelmingly oriented towards theoretical analysis. It generally attempts to delineate fundamental principles, and speculate on how these norms might be applied in practice. This kind of work often gestures towards the previous type, as theoretical reframing may support claims about changing policy (e.g. allowing organs to be bought and sold). Within this subfield, my attention is again limited to the vein of bioethics operating in a *visionary* or *speculative* mode, which tries to identify ethical concerns attending novel and emerging technologies. The recent history of bioethics suggests that there is growing currency to this research, as new subfields of 'neuro-' or 'nano'-ethics have been formed to address scientific developments, following the extensive efforts to chart the ethics of the human genome project.

Further, I do not intend to offer a wholesale critique of "bioethics". I follow other social scientists who have showed how bioethical research has frequently too narrowly focused on "ethical principles" and has ignored the concrete social interaction, power differentials, and meanings that are part of actually experienced ethical dilemmas (Kleinmann 1995; Hoffmaster 2001; Mueller and Koenig 2004; Rapp 2006). However, rather than revising bioethics, or call for what Hamdy (2012) terms "rebinding" it to its cultural context, I am interested in engaging those claims academic bioethics makes about technological self-improvement. While there has been widespread interest and an ever-growing body of literature about the ethics of enhancement, only a relatively small proportion of research has been empirical: most of the existing empirical data comes from quantitative surveys of drug use by public health scholars, or of the options of students or doctors. Very little empirical research about ethical aspects has been qualitative (see Frazzetto, Keenan, and Singh 2007; Singh 2005; Bolt and Schermer 2009; Schermer and Bolt 2011; Forlini and Racine 2009; Vrecko 2013). To my knowledge, the current study represents the first ethnography explicitly dealing with enhancement technologies.[4] Using my empirical data, I offer a re-articulation of the ethical aspects of human enhancement from an anthropological perspective. Importantly, my goal is not to push for a 'different' bioethics or claim that anthropology always offers a superior approach; I aim to provide a different vantage point on important questions about contemporary technological developments and visions from that offered by academic bioethics.

Thus, I also hope to expand the aperture of how the "ethics" of biotechnological advance more generally can be understood. My analysis is grounded in a characterization of ethics less in terms of a pre-determined corpus of fixed and abstracted norms, and more in terms of ethics as something that emerges out of shared practice and reflection in particular, concrete situations. This implies that ethical dilemmas entails must be understood with reference to the interplay between technological possibility, and concrete historical practices and discourses. I make this argument by drawing on the recent "turn" to ethics in anthropology (Laidlaw 2002; Lambek 2010; Zigon 2007), which has tried to delineate what might be specific about ethnographically studying ethical practice. This work characterizes ethical dilemmas as being responses to

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[4] But see Wagner (2013). Related technologies like cosmetic surgery or sexual dysfunction treatments have been ethnographically studied (see Edmonds 2010; Wentzell 2013).

situations in which the “good”, or the “right” course of action is unclear. The point here is *not* to eschew generality, but to insist that grasping the stakes of any given ethical problem entails an attention to its particulars. Thus, this dissertation is an argument for thinking about ethics in terms of “situated problems”, in which the interplay of meaning and material possibilities *in practice* produce ethical dilemmas, determine their stakes, and outline the resources available for resolution. I argue that a perspective underscoring the situated and emergent nature of ethical dilemmas is necessary to understand how new technologies put habitual forms of what it means to be “human” in question, and to more reflexively think about ethical dilemmas, both of which I see as being major contributions anthropology can make to contemporary ethical debates. I argue that such a perspective also casts a different light on popular narratives in which enhancements are harbingers of either utopias or dystopias, showing how enhancements are in fact the leading edge of deeper and long-standing ethical questions about medicine, health, and progress.

My specific critique of dominant approaches to enhancements follows from this expanded view of ‘ethics’. Many arguments in the literature seem to presume that enhancements, as the name suggests, are ostensibly self-evident goods, advancing liberal personhood pharmaceutically in the form of increased individual autonomy, personal choice, maximized individual capacity, and enlarged self-control. Nonetheless, while enhancements appear to be desirable because they promise the realization of significant social, political, and ethical ideals, they seem simultaneously profoundly troubling. Worries about the loss of a “human nature”, or “authenticity” have been voiced, as well as about the social ramifications of a population of pharmacologically altered individuals. Such concerns are generally dismissed as being due to “traditional” notions or unreasonable fears. Here, it seems that what I have called a trope about the new powers of technology indexes incomplete “enlightenment”: the fact that the trope exists means that there are some worries about technologically improving humans. But if the ethical concerns are primarily procedural, then there should not be major resistance—if opposition exists, it would be because of what Kahane and colleagues above called “traditional notions”.

The problem with these arguments is not that they advance "liberal" over "traditional" values; which to prefer in each case remains an open question. Rather, I suggest the form of ethics operating in the literature seems to be unable to reflect on the very values it arbitrates. Enhancements can be characterized as technologies that come out of a lineage of scientific research that has aimed at increasing mastery over the material world, which has its counterpart in discourses about subjects who create value through their work to transform that world, and who use technology "instrumentally" to serve their own ends (cf. Horkheimer and Adorno 2002). The ethical arguments above give the impression of merely accepting (or celebrating) the synergy between technological progress and desirable subjectivities, without interrogating that frame. In other words, they assume that technological progress necessarily serves individual or collective "progress."

I am advocating a double dislocation with regard to arguments about enhancements: first, by closely attending to several concrete settings, I want to re-frame familiar assumptions about what "ethical problems" enhancement raises. I trouble a self-evident fiction persuasive within the academic bioethics literature, that enhancements are an improvement.[5] Based on my research other interpretations are more common: enhancements are either a way to "keep up" if one is perpetually lacking, or a way to remove blockades on the path to expressing one's "true" capacities. In turn, this opens up a field of questions outside of these often posed about how and when the benefits of technological self-improvement should be made available. Second, I problematize the naturalized norms in the strands of academic bioethics I engage. I argue that "ethical problems" (like other disjuncts of understanding) are *co*-produced in a dialectic between empirical "reality" and the meanings that reality takes on. Certainly, new technologies may be "ethically troubling" because these interventions can unsettle naturalized categories of reality that are taken to be fundamental to social life (e.g. on kinship, see Strathern 1992). But a main

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[5] This is not to say that enhancements can't be beneficial but that a good deal of current reflection on enhancements has a very limited notion of, to use Eric Parens' phrase, "what does enhancement mean?" that elides other crucial concerns.

point I am trying to make is that ethical dilemmas may also arise because there are unresolved tensions *in the ideals* those technologies seem to realize. On my reading, the German debate raises concerns that trouble the (bio)ethical imagination that understands human "fullness" in terms of promoting (scientific and economic) "progress", the absolute primacy of expanding "freedom", and the unquestioned benefit of increases in productivity or function. Thus, I locate the concerns about pharmaceutical enhancement in both registers of meaning and technological possibility, rather than in a straightforward determination of ethical problems by new material possibilities, which would safeguard habitual norms of judgment from scrutiny.

In short, I am trying to use ethnography to think of ethics as being located at the interface between reasons for acting and the world those actions are imagined to respond to. By denaturalizing familiar ways of judging, I want to open up a window on some general assumptions made in arguments about enhancements, and indeed in claims about the ethics of new technology in general. These presume: individuals who are autonomous subjects, the largely determinative relationship of the "natural world" to humans and society"; and the (unrecognized) "overdetermination" (Sunder Rajan 2012:10) of political, social, and epistemic arrangements by economically-oriented rationales. These suppositions are essential to how the literature judges ethical problems. Denaturalizing these assumptions makes it possible to examine whether the ethics in play are self-evident, and possibly *re-envison* the ethical concerns.

The Object of Study: "Enhancement" in Germany

To move away from understanding enhancements in terms of an epochal shift in technological ability, I want to offer a characterization of enhancement oriented around those concerns I encountered in my fieldwork, which captures how these technologies intersect and are made meaningful in practice. A first clue that the ethical concerns around performance improvement in Germany are not necessarily the same as those around enhancement in the Anglophone academic literature was in how I encountered the terms: "enhancements" (or the practice of "enhancing") were often mentioned in the public discourse, but were frequently termed “performance-improving medications”. A German bioethicist who was one of the first people in Germany to write about enhancements, pointed this out to me directly. Describing how the research had changed, he said:

> I noticed that there was an explosion of academic work about enhancements, and that might make it seem as though enhancement is a single topic. I've been thinking about this… [and] decided there is no such thing as a single debate about enhancements in Germany. I once called that enhancement debates—in the plural—because I think the links to the single topic of ‘enhancement’ are made on a reflexive level, in medical ethics and philosophical ethics. But there is no public ‘enhancement debate’ in the singular.

He went on to clarify what he thought was included:

> That means there is a debate about doping (including gene-doping) that is carried out publicly, in which cheating plays a large role. Then there is a debate about Ritalin, with teachers and parents. There are also debates about growth hormone, or the use of psychopharmaceuticals at work…But it's also about the changes in the job market and working conditions. So workers are suddenly in new situations of pressure to perform, and have new expectations of career and achievement than used to be the case. In other words, these different debates have very different foci. The idea that they are all about ‘enhancement’ [in the bioethics sense of the word] has remained an academic one.

As this bioethicist indicates, there are several sets of concerns at issue, having to do with changes in different areas like work and education. I want to take these comments as a point of departure to open up the space between the bioethical characterization of enhancement, and how these technologies are being discussed in Germany. This seems like an essential step, because a definition of enhancement that groups all different sorts of technology and problems under a single sign of improvement can end up erasing important differences. My sense is that in bioethics, “enhancement” is often laden with quasi-futuristic imaginations of extensive improvement and precise technological control that hinders more precise engagement with the concrete details.

Piecing together the worries I encountered during my fieldwork, which coalesced around questions about “improvement” through medicine that were considered to be somehow troubling, I suggest that in Germany enhancements are imagined not as a clearly demarcated technology, but as a flag for a constellation of elements that combine to form a particular kind of problem. The following elements capture a working definition of enhancements that became clear to me during my research:

1. Improvement, the necessary condition, since an intervention produces something that is “better” from some perspective. It is closely related to
2. Medical technology, which is often a problematic solution because it may not be appropriate to a given situation, or may indicate that *too much* improvement is called for. This in turn points to
3. Questionable conditions of life, i.e. norms and structures that demand certain levels of performance or kinds of people.
4. These norms have their counterpart in misplaced desires, which is to say that individuals may be implicated in *not* rejecting inordinate demands, or even identifying with them, and
5. Ethical stakes, often the loss of something (e.g. opportunities for self-development or humane working conditions and hours).

These components suggest thinking about ethics in terms practice and culture as being *constitutive* of the problems that arise. The “ethics” I am interested in, then, are the norms that are being articulated (explicitly or implicitly) and embodied in relation to biomedical improvement. To situate this object of study, I turn to a sketch of my field site.

Historical and Ethnographic Context

After World War II, much of Germany’s infrastructure lay in ruins and its population was decimated. Nonetheless, from the 1950s until the early 1970s, during West Germany’s “economic miracle” the economy grew at a rate in the high single digits, and unemployment was at times less than one percent. This allowed the state to raise the overall standard of living by expanding state services and welfare payments. Through a combination of regulations to protect workers and an extensive welfare system, the state redistributed the spoils of the economic miracle, and tried to guarantee at least a minimum of individual welfare for all. This highly regulated system was part of the "Ordo-Liberal" program, which Foucault argues was the economic response to the emergence of Nazism; Ordo-Liberals believed that the Nazis could seize power because a well-functioning market system had been absent (Lemke 2001; Foucault 2008:106-19).[6]

However, from the 1980s onward, the state began reducing its services and increasing privatization, initiating what could be termed "neoliberal" changes in the relationship of the state to citizens (Harvey 2005; Prasad 2006). Many of these changes were driven by European integration, which aimed to provide a pan-European market for goods and services. Integration also required the labor market to be de-regulated, which allowed an influx of (often cheaper) labor from other EU countries. Significantly, the combination of stagnating economic growth (mirroring other European countries and partly due to the worldwide economic crisis of the 1970s), high costs of state services, and enormous costs of reunification (in which West German transferred huge sums to "modernize" the East) led to gradual cuts in welfare services and the loosening of labor laws (Schmidt 1998; Butterwegge 2006).

By the early 2000s, low levels of economic growth and high unemployment were seen as an urgent political problem, which many argued was primarily due to high taxes and a bloated welfare system (Sinn 2007). In 2003, Chancellor Gerhard Schröder initiated the *Agenda 2010*. It called for de-regulating the labor market, and "demand[ed] individual achievement (*Leistung*)" (Schröder 2003) by reducing welfare payments. Many have credited changes wrought by reforms to the welfare state and labor market with Germany's economic strength in the last decade; others have argued that it prioritized individual achievement, making individuals responsible for their own welfare as the state withdrew and directly exposed them to "market demands". Media have attributed reported increases in sick days and rising rates of early retirement on account of psychological factors (which increased from 15% from 2006-09 (Kroll et al. 2011) to anxiety

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[6] This differed from the position of Frankfurt School theorists, who claimed that the capitalist system bred fascism.

about the felt pressure to perform at work. A condition known as “burnout” is seen as symptomatic of these excessive pressures, which dominated the airways during my fieldwork, with headlines like “the Exhausted Country (*Volk*)”[7] or book titles like “is the achievement society burning itself out?” (Dettmer 2011). Burnout, one psychologist told me, was “when you’re always at the limit of your capacities, or over that limit”, interpreted by many as an index of economic arrangements and pressures to achieve that have spiraled out of control.

A parallel narrative about the rising significance of “achievement” was voiced in education. German college graduates were typically in their late 20s when they received their first degree, much later than the European average. This was perceived to be an economic disadvantage, so politicians and educational leaders in Germany and across Europe harmonized standards for receiving and recognizing degrees, drawing on rhetoric about the importance of education for “global competition” and the “quality of life”. In Germany, this transformed what had only been a loosely structured curriculum into a more regimented system in which performance was regularly monitored and standardized. Reports of rising cases of depression among students and widespread protests indexed that many felt the standards for achievement had become too high. These critics were resisting what they felt was a reorganization of education along “neo-liberal” lines that they believed intended to prepare students for the workplace rather than enable self-development (*Bildung*). A similar situation has taken place in schools in the past decade: in 2001, the “PISA Study” was released, a triennial report comparing the performance of elementary through high-school students in OECD countries. Germany was below the international average in several areas, prompting the popular weekly *Der Spiegel* to ask if German students were “stupid” in an infamous cover headline, claiming that “Germany, the land of the poets and thinkers, has been left behind” (Darnstädt et al. 2001). In response, education was reformed, heavily emphasizing student achievement, and linking it with economic success: high school has traditionally had a nine-year curriculum, but it was shortened by one year, in large part on the

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[7] Markus Dettmer, Samiha Shafy, and Tietz, Janko, “Volk Der Erschöpften,” *Der Spiegel*, January 24, 2011.

grounds that it would allow graduates to enter the workforce or college sooner. While some parents and students praised the reforms, again protests ensued;[8] many parents worried about what they saw as an expansion of the pressure to achieve to lower grade-levels (which had also been reformed, e.g. introducing grades earlier in primary school). School, like work and university, were part of a narrative that emphasized the preeminence of achievement in response to economic changes and international competition.

Another legacy of war is Germany's response to the extent of the Nazi atrocities. The Allied forces nullified the Third Reich legal structure, even dismantling institutions like the public health service (Sperling 2013; Niehwöhner 2011). The founders of the modern German state wrote the constitution in direct response to national Socialism, enshrining an ethical counter-ideal in the very first sentences of Article One of the Constitution: "the dignity of the human being is inviolable". Further, while the previous regime had been responsible for war crimes, the modern state had as its duty to "respect and protect [dignity]". At the core of dignity is a prohibition on instrumentalization, or the idea that individual wellbeing may not be sacrificed for *any* reason. In public discourses, the danger of instrumentalization is commonly invoked to warn of perceived transgressions against individual welfare: for instance when scientists propose to create embryos and help potential parents-to-be select one that has not inherited a serious genetic disease, discarding the unused embryos or using them for research would instrumentalize them (in this case the fertilized egg is seen as standing in for human beings generally). Preventing instrumentalization, typically framed as protecting 'dignity', is part of the national project of overcoming the Nazi past, and like practices of public remembrance it demonstrates that modern Germany is a democratic state that respects and protects individual existence in all forms (Boyer 2005; Hogle 1999; Sperling 2013).

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[8] On account of widespread resistance to the reforms, many states rolled back the reforms and began offering the 9-year high school diploma again. Some politicians saw this as a " farewell to the idea of achievement" (cited in Roland Preuss and Marc Widmann, "Da Staunen Die Anderen," *Sueddeutsche Zeitung*, March 24, 2014, 13).

Particularly technology that threatens to instrumentalize some individuals is met with public debate and rebuke: in 1999, the philosopher Peter Sloterdijk gave a highly abstract lecture proposing how to govern the possible "genetic reform of the species" through a departure from classic forms of "humanism" (2009). Though not outlining a program for scientific intervention, Sloterdijk sparked a debate in which he was accused of advocating an essentially fascist project of "genetic breeding"[9], and wanting to create the *Übermensch* first proposed by Nietzsche's Zarathustra. Jürgen Habermas (2002) weighed in on the debate, arguing that "human nature" and "dignity" were essential boundaries that technological intervention should not cross. Habermas indexed widely held views about the relationship of individuals to technology that are inflected by Germany's WWII past, as well as the much longer significance of "nature". The "natural" marks a set of capacities thought to be arranged in a kind of harmonious whole that should be protected, and conditions the relationship to technology. As one of my informants, who was a philosopher, put it, "this idea of making your life better or more relaxed through pharmacology—I haven't met that idea in Germany.…the Germans are opposed to leaving the natural basis [of their bodies], or doing something about that basis" (see chapter 3).

Practices and Discourses around Pharmacological Self-Improvement in Germany

This ethnographic context shaped what kind of situated problem "enhancement" was in Germany. The German media began reporting about enhancement somewhat regularly around 2004, and in late 2008 reported about a position statement in the journal *Nature* by a group of senior doctors, scientists, ethicists, as well as the *Nature* editor, arguing that using enhancement use should be liberalized (Greeley et al. 2009). Coverage exploded in the next few months, as a major insurance company (*Deutsche Allgemeine Krankenkasse*, DAK), claimed that 5% of the three thousand workers they surveyed used enhancements for their jobs, which they termed "doping at work". This quickly became news that "2 million Germans" were doping at work.

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[9] Assheuer, Thomas. "Das Zarathustra-Projekt." *DIE ZEIT*, September 2, 1999.

Later in 2009, taking the *Nature* publication as its model, a group of German physicians, legal scholars, and ethicists published “The Optimized Brain”, arguing that a more liberal approach to performance improvers should be carefully considered (Galert et al. 2009).[10] The combination of popular information about supposed enhancement use, and the proposal that such use might be a good thing, set off media panics that were reinforced from other quarters. My analysis of the media showed that on the one hand, there had been anecdotal reports about college students who were taking medications, and a feeling that use was “on the rise”. (Often, reports about rising “study drug” use among *American* college students were cited as corroborating evidence, which I argue indexed a fear of Germany coming perilously close to the frequently disdained American “enthusiasm” for both medications and free-wheeling capitalism.) On the other, there was data indicating that the number of prescriptions for ADHD medications had increased in recent years (the government reported that 7 times as much methylphenidate (Ritalin) was dispensed by pharmacies in 2009 than a decade earlier; see chapter 2). Common interpretations ran along the lines of “stress and pressure at work are increasing. Employees have the subjective feeling they need constantly need to be more productive out of fear of losing their jobs”[11] or, for students, “according to experts the reasons are time and achievement pressure. ‘The amount of stress on students has risen in the past years’, says the Head of student counseling”.[12] Even schoolchildren were said to be receiving Ritalin as a means of “braindoping”.[13]

These accounts of why individuals were reaching for drugs characterized the demands for performance set by the workplace and schools—largely in response to economic factors and competition—as being too high for many individuals to reach. Thus, those who used drugs were said to compensate for their lack through taking medications. I found that in the German debate,

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[10] Since then, there have been various other positions statements (e.g. by the German associations of psychiatrists, addiction counselors, and surgeons); government sponsored epidemiological reports, in addition to those by health insurers (Hoebel et al. 2011; Middendorf et al. 2012); and a report by the German technology assessment bureau (Sauter and Gerlinger 2011).

[11] “Doping Am Schreibtisch,” *Berliner Zeitung*, April 15, 2009.

[12] Claudia Schuh, “Universitäten: Doping-Kontrolle Für Studenten,” *Sueddeutsche Zeitung*, March 10, 2008.

[13] Yasemin Ergin, “Pillen Für Den Zappelphilipp,” *Tagesschau.de*, August 9, 2007, http://www.tagesschau.de/inland/meldung4572.html.

the "solution" of performance improvement seemed to become a symptom, as economic rationalities of capital accumulation and its disregard for human limits were materialized in the numbers of individuals who felt they needed to take drugs to achieve. A fear often voiced in interviews was that individuals were thereby succumbing to inordinate standards, which would ultimately undercut their autonomy, as well as their self-realization. By taking enhancements, the critique went, people would instrumentalize their capacities, corrupting those (school-children, teens, or students) who still needed space to develop "freely" in a creative or aesthetic process. I argue that these worries are produced through the context in which they are lived—post-War expectations of the welfare state, contemporary neoliberal economic arrangements, the presumed material effects of drugs, and historical ethical commitments about respecting human limitations. Interestingly, such a worry about enhancement technologies runs counter to the assumption in the bioethics literature on enhancements that maximizing capacity and self-control will lead to increased autonomy or happiness. Important to my overall argument, then, is that the claims voiced in Germany raise questions about naturalized assumptions of progress, which cannot even be *posed* within an unreflected frame.

At the same time, even an apparently straightforward case demands the kind of attention to situation that I advocate. Many of those students I interviewed who were using medications accepted the heightened demands they felt education reforms and the prospects of a tight job market had placed on them. They saw a certain level of achievement as necessary to fulfill their expectations for future career and lifestyle. However, the even more pivotal reason for taking drugs was their orientation towards living a certain kind of "fulfilled" life, in which a form of ordinary life—family, close friends, leisure pursuits—was possible, while meeting demands for performance that seemed to have intensified. For them, then, "lack" was something they transformed into an index of a productive and successful person. In other words, they internalized the rhetoric of maximization, inscribing it into their conception of their own self-realization. In their view, the limit to maximization was set by an imagination of the drugs as helping them not to “be better”, but “be their best self”, realizing a kind of “optimum” of individual potential. Users said they were willing to take medications to improve only so long as they felt they were in control of their own productivity, and did not become “dependent” on the medications for accessing their full capacities (in other words, to forestall transforming the medication into a supplement that would have made their lack visible to them (Derrida 1994)). But, again interrogating the bioethics of enhancement, would this re-imagination of the self to become a more productive subject be “coercion” or a lack of autonomy, if it seems freely chosen? And what should one make of the lurking tension between control and dependence—would this meet the standard of a “no-risk” enhancement drug? If self-realization is a self-evident ideal (one that determines what is best by individual fiat), it becomes difficult to raise, much less answer these questions (despite them being very real concerns for those using medications, emerging out of their concrete situation).

My fieldwork also examined the role of biomedicine, which was a prominent and complex subtext in the debate and for my informants. A basic issue that frequently came up was the boundary in question: typically, medicine was thought to “treat”, while enhancements went “beyond”. However, changes in biomedicine that seemed to be “medicalizing” more people troubled a straightforward reliance on biomedical categories, suggesting to many that biomedicine was somehow complicit in furthering a view of people as always requiring intervention. Perhaps formulating the issue overly polemically, a report about psychosomatic and psychotherapeutic medicine asked whether these doctors saw themselves as a “repair service for the victims of work and crises of ‘speed-up’, or is it an optimizing agency that is mainly occupied with bringing exhausted workers back into production or to their desks as quickly as possible?”[14] The distinction made here was perhaps too subtle to be appreciated: in both cases medicine was framed as being complicit with problematic regimes of achievement. Such regimes had their own symptom: while I was living in Germany, a wide-ranging debate about “burnout”

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[14] Werner Bartens, “Befristet, Verdichtet, Gefeuert,” *Sueddeutsche Zeitung*, April 5, 2014, 22.

took place, a condition thought to manifest contemporary exhaustion and joylessness at being expected to constantly perform both in one's work and leisure time. The role of medicine in burnout was ambiguous, with positions ranging from a refusal to acknowledge a specific "work" pathology, to its subsumption into familiar nosological categories.

Indeed, in interviews and my reading of the debate, I found that there was widespread ambiguity around medicine's relationship to "enhancement'. Much of the research in Germany mirrored this ambivalence: The most prominent study on the topic, about doping at work, included prescription and over-the-counter substances in its assessment (DAK 2009). The largest study of students defined "brain-doping" as including using prescription and illicit drugs to improve performance, but also pain medications and sleeping pills, seeing "performance improvement" as paired with "stress-management" (Middendorf et al. 2012:13-4). Katrin Lohman, a public health researcher, ran a different study asking about study drugs. She made a distinction that I found to be tenuous, but nonetheless illuminated a distinction many were interested in making, between "doping in the everyday" (*Alltagsdoping*) and "neuro-enhancement". When I asked about the difference, she explained that the former "is the use to maintain or possibly improve the ability to perform", while "neuro-enhancement is the attempt to increase performance through psychopharmaceuticals". An example of the former would be taking painkillers to be able to go to work, while an example of the latter would be taking stimulants to improve performance at work.

These various definitions of enhancement in practices of research demonstrate that "enhancement" is not conceptualized as it is in most of the English-language literature, where it is limited to the use of prescription pharmaceuticals for "performance" improvement. In Germany, "enhancement" is often intrinsically connected to medical intervention more broadly, including what is often considered to be simply self-management (possibly under physician supervision) of "pathological" signs of being maladjusted to stress. By defining enhancement so broadly, an implicit assumption these researchers are making seems to be that even seemingly unproblematic interventions can become worrisome if they are part of an overall economy of achievement.

Indeed, this points to a curious feature about an enhancement: its paradoxical status of having both therapeutic and non-therapeutic effects. Stated differently, the debate fetishizes the material properties of the medications as being ethically problematic in themselves. In my research, I tried to invert this question to ask how the social context makes the materially underdetermined properties of drugs into a problem. Part of the answer, I discovered, relates to issues around achievement I discussed above; another part depends on how individuals are alerted to biomedical "pathology", what is considered to be biologically "normal", and what relationship one is exhorted to have to the "risk" of decline. All of these are intimately connected to what it means to live a "full" life of well-being (generally in relation to economic arrangements). Further, as a corpus of work on the anthropology of biomedicine suggests (Good 1994; Kaufmann 2005; Lock and Nguyen 2010), biomedical discourse plays an important role in shaping norms of health and risk, at the same time as those norms are produced through wider social fields. As my research shows, at the level of biomedical rationalities of intervention, "treatment" and "enhancement" can at times be difficult to distinguish. Again, the point here is that a more productive framing pushes beyond the confines of treatment vs. improvement, uncovering how enhancements are linked to the social world that sustains and organizes uses of medicine and technology, and of certain conceptions of what a "human being" is (cf. Hogle 2005).

Theoretical Contributions

I develop three lines of argument: the first shows tensions in contemporary regimes of "neoliberalism" that enhancements make visible. This line speaks to the second, in which I connect tensions inherent in ideals of self-maximization or optimization to biopolitics, arguing that what has been termed a "politics of life" must be understood with reference to locally situated practice as much as to technological advance. Finally, the third and overall line of argument is to understand enhancements as a field of ethical practice through ethnography.

Neoliberal Regimes of Subjectivity and Practice

A common observation about neoliberalism is that it purports to assure individual well-being. According to David Harvey, neoliberalism is ”a theory of political economic practices that proposes that human well-being can best be advanced by liberating individual entrepreneurial freedoms and skills” (2005:3). The “well-being” at issue here includes the biological kind, but also refers to material, financial, and social welfare. Much recent scholarship has examined the effects of neoliberal rhetorics in social life, how neoliberalism becomes productive of new forms of social practice, or is part of reworking notions of status or personhood (Greenhouse 2011; Ong and Collier 2005; Kipnis 2008; Truitt 2008; Ho 2009). Many have suggested that what is particularly unsetting about the economic ideology of neoliberalism is how it tries to achieve an exhaustive reach into individuals’ innermost being (Brown 2005; Rose et al. 2006; Povinelli 2011). As a form of “governmentality” (Rose et al. 2006) or what Wendy Brown terms a “political rationality” (2005), neoliberalism is concerned with “the soul of the citizen-subject”, the aim of which is the “production of all human and institutional action as rational entrepreneurial action” (Brown 2005:39-40). Neoliberalism is said to replace all other rationalities with the neoliberal one, so that privatization or the withdrawal of government services is a strategy by the state to produce calculating subjects instead of those who think in terms of being dependent on the state. Individuals must thereby take responsibility for their lives, on the one hand to avoid material hardships, but on the other to escape being viewed as having failed morally; neoliberalism is figured as an ideology in which individuals are enjoined to maximize themselves and their capacities. In other words, neoliberalism is characterized as an encompassing logic that can secure welfare because it brings individual subjectivity into alignment with market rationalities, becoming an ethical program thought to lead to personal success and fulfillment (Urciuoli 2008; Funahashi 2013). I take up these analyses to ethnographically show how neoliberal discourses in contemporary Germany become productive of social facts that are in tension with historical commitments to a strong welfare state and long-standing notions about group solidarity. At the same time, I follow how neoliberal logics become integrated into individuals' understanding of themselves and reconfigure meanings of "ethics" (cf. Muhlebach 2012; Zaloom 2005; Zigon 2010). Thus, I also trace the limits to how deeply neoliberalism can form subjects, and characterize the "well-being" it can secure.

In so doing, I am following work by those who have pointed out that at the same time as ideologies of neoliberalism purport to lead to individual and social welfare, they are implicated in deprivations. Carol Greenhouse writes that this is a "provocation [that in part] arises from the contradictions in neoliberalism itself" (2010:5). As Jean and John Comaroff stated at the turn of the present century, "more and more ordinary people…attribute to these arcane forces their feelings of erasure and loss: an erasure in many places of community and family, exacerbated by the destabilization of labor, the translocalization of management, and the death of retail trade; a loss of human integrity, experienced in the spreading commodification of persons, bodies, cultures, and histories, in the substitution of quantity for quality, abstraction for substance" (2000). I show how in Germany, the wide reach of economic rationalities are believed to undermine community, welfare, and even health (cf. Molé 2010). While scholars like Alexander Edmonds (2011) usefully describes reconfigurations of subjectivity and of capital through the register of "health technologies" in a world his informants assumed to function according to neoliberal logics, in my field site health technologies become a way to problematize neoliberal ideals of self-care and self-maximization themselves.

Biopolitics and Contemporary Biomedicine

The second line of argument relates to the first, in which I situate biomedicine alongside other social fields. Much scholarship claims that contemporary biomedicine and the biosciences have been fundamentally reoriented towards "optimization" rather than the older task of "treatment" (Rose 2007; Clarke et al. 2003, 2010, 2011). In Nikolas Rose's phrase, a "politics of life itself" is emerging. Rose argues that technological advances, changes in the epistemology of biomedicine to focus on the molecular level, and political economic shifts mean that "the old lines between treatment, correction, and enhancement can no longer be sustained" (2007:17). These changes in the meaning of health have in turn created a situation in which individuals are under an "imperative…to maximize the vital forces and potentialities of the living body" (2007:23). These changes are linked to an ethic of neoliberalism in which individuals form their personhood primarily through biological or chemical means, in which there is a "growing sense of individual obligation or responsibility to literally 'make the best" of oneself" (Clarke and Shim 2011:180).

Rather than taking the novel powers of biomedicine as a given, I try to understand how proclamations about the supposed material abilities of technology to help individuals do more intersect with, on the one hand, felt increases in demands for self-care and productivity; and on the other hand, with pronouncements that people need novel biomedical interventions because they are not as well as they previously thought. Linking the biopolitical to neoliberalism are the visions and exhortations I have noted, that individuals should maximize themselves, constantly working to secure more autonomy, more productivity, and more self-realization—which technology can perhaps help them achieve. I propose that there is an ethos of maximization and a vision of productive subjects trying to find its realization in enhancements. This ethos is the *condition of possibility* for drugs' material potential to become significant, and ethically problematic, in the first place. In sum, I intend my analysis of the practices and ethics of technological self-improvement to provide a different scale of analysis than arguments that have tended to emphasize the significance of shifts in the material practices of biomedicine.

This project is also biopolitical in the sense that it tries to understand how the management of biological bodies produces certain forms of life, which are at the same time questions about the economic arrangements of a given populace (Foucault 2008). A key term in contemporary biopolitics is “health”. Joe Dumit has shown how the pharmaceutical industry’s imperatives of expanding market share and ensuring returns on speculative investments reconfigure the *epistêmê* and practice of biomedicine and biotechnology, orienting treatments towards risk prevention that are *hailed as* furthering health but often primarily advance profits rather than well-being (Dumit 2012). Kaushik Sunder Rajan provides a frame to make sense of some recent transformations in health through his study of economic exchange and circulation as these interact with the life sciences. He shows how risk is implicated in expanding what counts as ‘therapy’, which allows companies to generate the venture capital they need for the expensive and uncertain process of developing therapies. Beyond showing how the kinds of knowledge produced by the life sciences are dependent on capital, he tightly links capital to biopolitics, suggesting that “an articulation of ‘the life sciences’ and ‘political economy’ [is] a central operation of an emergent modernity…whose understanding is still very much at stake” (2006:13). I take up this notion of an emergent “articulation” through biocapital in my field site, expanding its conceptual purchase. I show how the reconfiguration of treatment along the lines of risk (which is driven by the pressure to generate economic value), becomes an effective rationality of intervention because it intersects with older logics of biomedical practice, and with specific, “culturally” situated norms of well-being.

Ethics

Overall, this dissertation is an argument for thinking of ethics in terms of problems that emerge out of a situated, historical context. Recent ethnographies of Germany have elaborated on how the Second World War (and later Reunification) have deeply marked German post-war experience (Borneman 1992; Behrdahl 2007; Mandel 2008). As I argued above, the German state and publics have continually reenacted a state that has learned from the transgressions of the National Socialists, and which has enshrined far-reaching basic protections of human beings in its judicial and institutional structures. This has shaped the meanings of new biomedical and biotechnological developments. Linda Hogle's ethnography of organ transplants shows how transplant practice assiduously avoids any associations that would threaten to "instrumentalize" individuals or violate their "dignity" (Hogle 1999). I build on Stefan Sperling's (2013) account of bioethics commissions in Germany, which demonstrates how collective ethics have been influenced by the War, an ethics which nonetheless has deep roots in German philosophical thought. In describing the debate around enhancements in Germany, I show how ethical ideals around "instrumentalization" are mobilized to critique pharmaceutical self-improvement. I also complicate this ethics, by relating it not to the post-War era but to German ideas about individual self-development (Boyer 2005) that enhancements seem to threaten.

Thus, I use the debate around enhancements in Germany to describe how ethical dilemmas are situated problems, building on recent research on the "anthropology of ethics" (Lambek 2010; Laidlaw 2002; Zigon 2007; Fassin 2012). Though this work tends to focus on the individual, I suggest that these concepts can be usefully adapted to study collective responses to ethical conundrums as well. By developing a robust delineation of "ethics" and "ethical" dilemmas around enhancement technologies, I also build on recent work attending to ethical dimensions of biomedicine (Lock 2002; Lakoff 2005; Sunder Rajan 2005; Petryna 2009). My goal is to sharpen the analytic focus on that domain, further elaborating an assumption that seems to be latent in some of this research: key notions about subjectivity and well-being are being reconfigured in complex and often contradictory ways by biomedicine, which puts the "human being" in question, and demand historicized, reflexive engagement with the ethics that are at stake.

Fieldwork Sites and Methods

Fieldwork was conducted in Berlin, Germany's most populous city, with around 3 million inhabitants. Berlin has been the cultural capital of Germany since at least the Weimar Republic, when it had a thriving intellectual, arts, and amusement scene. Divided by the Wall during the

Cold War, West Berlin nonetheless continued to receive extensive funding that propped up an economy largely severed from the rest of West Germany (Borneman 1992). Since reintegration in 1989, enormous sums of money have been poured into efforts to modernize eastern Berlin. Because of its size and continued importance, Berlin concentrates many individuals and events in a single place that would be dispersed elsewhere, which was an advantage during fieldwork; this was particularly the case for this project, in which it was necessary to track into various different sites. At the same time, the density of sites also forced me to select those I thought were most important, which may not have been necessary (or possible) in smaller cities.

I lived in Germany for two years, and conducted fieldwork on a full-time basis for fifteen months. While most of my fieldwork was in Berlin, I regularly travelled to other sites in Germany as needed. My approach was oriented towards beginning with "enhancement" and following its trails outward. Thus, I analyzed media to create an archive of the debate (from roughly the 1990s onward), and in parallel formally interviewed several of those who participated in the debate. This included physicians, academics (mostly bioethicists and philosophers), some journalists, politicians, as well as several researchers studying the effects of enhancement drugs. I also attended as many relevant public events of various forms as possible, which included the obligatory ones on enhancement, as well as on related issues like burnout or addiction. To follow the other themes related specifically to education and work, I spent time at local universities and a school, and participated in events like organizational and educational meetings and protest rallies. I again conducted interviews, both formal (roughly 50 directly related to the debate) and informal, among others with teachers, psychologists, academics, labor organizers, and workers themselves. At the start of my fieldwork the "Occupy" movement gained prominence in Germany, so I spent time speaking with individuals at these events as well (though it was a relatively short-lived movement, about 3 months long). A core part of the research were interviews with students who took medications for improvement. An important reason for doing this research in Berlin was its size: with three full universities and several smaller under/graduate programs, it has Germany's largest student population. I interviewed 20 students, who were enrolled at local universities in any field of study, in a semi-structured format. Students generally ranged in age from 19-30 (with one outlier who was 37).

Parallel to these other sites, I conducted fieldwork at a memory clinic, a specialized site for treating cognitive impairments. I was there from one to several days a week for nine months. The clinic was among the largest in Germany, housed at an academic psychiatric clinic. To get a kind of "control" in terms of whether there was something unique about how dementia was diagnosed in comparison to other disease conditions, I also spent time at an ADHD clinic. The work of the memory clinic concentrated on diagnosis, and enrolling patients in clinical trials. I observed procedures and diagnosis among physicians and psychologists, attending meetings, and speaking with staff. Though I was often interpellated in my role as a medical student, in an attempt to keep my role clearly defined I did not conduct any procedures myself. In pre-field research, I had been told that memory clinics regularly had patients who came seeking some kind of "improvement" of their cognitive function despite being healthy. Thus, the memory clinic was intended as a way to juxtapose medical practice with the discourses and practices outside the clinic. As I try to show especially in chapters 5 and 6, discourses circulated between the various sites and the clinic. The relative ambiguity of the purpose of a "memory clinic" was a resource, since it made it possible for a range of patients to come to the clinic who may have had only vague "memory complaints", whose problems were nonetheless easily recognizable in the register of insufficient performance

Chapter Outlines

Chapter 1, "Situated Problems: Toward a Reflexive Ethics of Technology", reviews prominent positions in the Anglophone bioethics literature on pharmaceutical enhancement. Drawing on anthropological critiques of bioethics, I explicate how bioethics' inattention to social factors, individual experience, and discursive settings has narrowed its focus and prevented it from addressing some basic questions about enhancement. I argue that a different engagement with ethical dimensions of the biosciences is necessary, given how bioethics is a means of arbitrating visionary futures, and that recent work on the biosciences has pointed to ethical concerns outside of the traditional doctor-patient dyad. Building on the work of anthropologists in a recent "turn" to ethics, which I combine with a reading of recent work on the biosciences, I try to draw these resources together to outline an approach of thinking about ethics in terms of "situated problems". The important point is to view ethics as concerned with diagnosis of, a response to, ruptures in habitual ways of understanding questions related to the "good" or "how to live", which emerge through practice. The arguments here set up several of the ethnographic chapters that follow. Importantly, I claim that only through attention to practice can one reflexively engage or intervene in ethical norms, both at the level of the norms in the particular situation (by historicizing them and recognizing their tensions), and at the level of "abstracted" norms like those used in bioethics (which can be understood and their adequacy judged only in relation to practice).

Chapter 2 and 3 form a pair, in which I examine what kind of problematization pharmaceutical enhancement is in Germany. Chapter 2, "Posing the "*Systemfrage*": Work and Achievement in Contemporary Germany" sets out the political economic shifts in the last decades, which can broadly be described as neoliberal, that have prioritized "achievement" (*Leistung*) as the solution to individual and national welfare. In this context, media panics about rising drug use indicate concern about the intensification or expansion of economic rationales into different areas of life. I show how drugs thus become a "symptom" of anxieties about current forms of economic logics and labor organization. The typical assumption in bioethics is that self-improvement will lead to increased autonomy, fulfillment, and social benefit, (i.e. to "progress"). I pose the bioethical account of the potential of enhancements against the one in the German debate, to point out that the worry expressed there troubles whether "improvement" is taking place, since people are being rendered insufficient through drugs; this concern is based on a specific historically and socially locatable context, though it also reflects more general features of capitalist-oriented arrangements found elsewhere.

In chapter 3, “The “Anthropology” of Enhancement in Germany: Overcoming Anthropos?” I examine why, precisely, too much conformity with economic rationales is disquieting in Germany. In the debate, enhancement is frequently referred to as “brain-doping”, which can be understood as a general worry about “overcoming” human limitations through technology. I historically and ethnographically explore the concepts indexed by brain-doping (the “natural”, “doping”, “dignity”). I show how the moniker is an ethical judgment about pharmaceutical improvement, the core idea of which is that technological enhancement would constrain individual self-development, by disrupting their potential for self-realization by diverting it to instrumental ends (like productivity or achievement). Because this debate is a public one, I further argue that the public voicing of worries about technological improvement also serves to enact a communal responsibility for protecting “dignity” in post-War Germany, in a way that shifts concern from the form of the human (e.g. embryos or the disabled) to forms of life at issue.

Chapter 4, “Productivity Aesthetics: Enhancement Drugs and Neoliberal Self-Fulfillments” describes the experiences of students who use enhancement medications, to understand the ethical stakes from their perspective. It engages claims made by scholars that neoliberalism effectively shapes individuals into self-maximizers. I suggest paying attention to how self-improvement works out in practice, to understand how and to what extent subjects are re-configured. Users report taking medications because they desire a fuller sense of “ordinary life”, in which they have enough time for work and other pursuits. In so doing, they are aiming at a particular form of self-realization, in which they bring out their “best” or “maximal” self through medication. I argue that it is possible for users to think this way because they have internalized a certain logic of productivity, which aligns their desires with larger rhetorics about economic efficiency (termed a “productivity aesthetics”). I thus trouble the reliability of the notion of “self-realization” as a moral guide, as well as offering a way to think about how a rationality like neoliberalism might shape “the soul” of subjects.

While medicine is frequently figured as a kind of generic discursive force (i.e. biomedicine provides powerful new technologies or medicalizes), chapters 5 and 6 try to tease out how biomedical logics interact with life outside the clinic. In chapter 5, “Intersections of Life and the Clinic: Burnout and Dementia”, I take two conditions to show how the norms circulating between the clinic and the “outside” are mutually constituting and interdependent. These norms are unstable configurations that cannot be thought apart from social context, which in this case means that notions of wellbeing are shaped both by biomedicine and expectations of achievement and productive capacity: On the one hand, “burnout” was thought to be caused by contemporary work regimes and pressures to achieve. It was a contested biomedical category, indicating the ambiguous role of biomedicine in helping individuals be productive. On the other, Alzheimer’s dementia raised the specter of cognitive decline from middle-age onwards, setting norms of cognitive capacity that individuals were implored to vigilantly patrol and realize through (nonprescription) medication or memory exercises.

Chapter 6 is entitled “‘Early Treatment is the Best Treatment’: Risk, Enhancement, and Early Optimization in Medicine”. After having shown how biomedical norms circulate, a crucial question about the role of biomedical *rationality* remains. Discursively, fears have been voiced that medicine is progressively expanding its purview to pathologize “healthy” individuals, raising the question of what relationship there might be between biomedical practice and “enhanced” wellbeing. This chapter “situates” the ethical concerns about enhancement in two ways: first, it engages the boundary between treatment and enhancement, which is thought to be ethically significant. Second—expanding the previous question—it asks what part biomedical rationalities play in the large-scale shifts in regimes of productivity or maximization that are thought to be part why enhancement is problematic. I take up suggestions by theorists that biomedicine produces optimization, examining recent shifts in dementia treatment for how they speak to biomedical logic as a whole. I argue that the ascendant logics of risk are a sign of how biomedical rationality aims at securing as much potential for health (and thus wellbeing) as biologically possible, and trouble claims in this literature that a fundamentally new shift has taken place.

I

Situated Problems: Toward a Reflexive Ethics of Technology

In the past decade, human enhancements have become increasingly visible as an ethical issue. They are a prominent topic in the bioethics literature, have been considered by several professional organizations statements or (e.g. American Academy of Neurology, the British Medical Association, the German association for addiction (DHS)), and have been the subject of various books, movies, and articles in the popular press. The most commonly considered type of human enhancement is pharmaceutical enhancement. Typically, the ethical arguments mobilized to think about enhancements are drawn from bioethics. Ethical principles are applied to speculative scenarios, or minimalist versions of existing situations, neither of which would seem to provide enough details or information for anything but a extremely general analysis, which often gestures towards, but is unable resolve (or even adequately pose) key questions about enhancements. So what would we need to know to think about and evaluate the ethics of enhancement? In terms of the dissertation as a whole, the goal of this chapter is firstly to articulate how to ethnographically study the "ethics" of enhancement, and secondly to point towards the stakes of this re-conceptualization for those (Western) liberal norms invoked to evaluate ethical questions around enhancements.

Since the main literature on enhancements comes from bioethics, this chapter builds on a long lineage of critiques of the field. Schematically, one could say that as bioethics grew in significance from the 1960s onward, anthropologists responded with their own assessments of how bioethics characterized and analyzed the ethical dilemmas it studied (Kleinman 1995; Marshall and Koenig 1996). Frequently, social scientists noted that bioethics relied on norms that were (mistakenly) presumed to be universal, neglected the "context" of social, economic, political, and legal factors that shaped ethical problems, and ignored or misunderstood the concerns of those involved in the dilemmas themselves. A good deal of work attempted to remedy these failures, bringing anthropological methods to bear on bioethical concerns (cf. Kaufman 2001).

In recent decades, the analyses of “bioethics” and “bioethical” issues seem to have shifted. On the one hand, scholars have examined how bioethics, as “the” institution charged with maintaining “ethics”, furthers a particular form of procedural ethics, and has a legitimating function (Rose 2007; Fortun 2008; Sunder Rajan 2006:60-6; Wilson 2011). On the other, many have emphasized the “ethical” issues of the contexts and technologies under study, seemingly interested in social analysis as well as in highlighting ignored ethical concerns or reframing important ethical issues (Rapp 1999; Rabinow 1999; Lock 2003; Biehl 2005; Sunder Rajan 2006, 2007; Rose 2007; Rabinow and Bennett 2012; Dumit 2012; Hamdy 2012). Typically, ethics has been engaged in a general way: for instance, in work on the “ethics” of clinical trials or humanitarianism (Petryna 2009; Fassin 2011), ethics is presumed to mark a recognizable category of academic and public discourse, identifying a particular sphere of “ethical” concerns. I hope to push the recent attention to lived ethics in many recent ethnographies of biomedicine and the biosciences to a slightly more analytic level by drawing on recent work in the “anthropology of ethics”, while taking up the critical point that ethnography can offer an illuminating gaze on ethical issues.

Chapter Argument

The first half of the chapter discusses the standard views of enhancements in bioethics, and the difficulties with this view. I advocate that a more anthropologically robust notion of ethics can avoid these problems, a reconceptualization I outline in the second half of the chapter.

I begin by outlining the positions in the bioethical literature on pharmaceutical enhancement. Drawing on the familiar principles of medical ethics, the dominant arguments generally take a stance that views enhancements positively, and argues their use should be evaluated according to the risks they pose to individuals; whether individuals could feel “coerced” into using them; and how “fair” using enhancements is. I then review anthropological critiques of bioethics claiming that the field disregards the context of practice and relies on universalizing ethical principles. Applying this critique, I point to how the bioethics literature’s inattention to lived settings of ethical problems has led to oversimplified application of notions about coercion or fairness, a neglect of important questions that are not easily amenable to principle-based ethics (having to do with human “nature”, authenticity, and the social significance of action), and is plagued by a general inattention to empirical detail.

However, given the expansion of bioethics as a mode of arbitrating speculative visions of the future, I claim that a more expansive critique may be necessary. A fundamental and seemingly ubiquitous assumption about the ethics of future technologies is that technology—the specific material effects—will determine the ethical problems that arise. I show how this presumes that shifts in ethical attention come in response to “crisis” produced by technology, rather than as a consequence of (social/political/economic) aspects of particular historical moments. Such a view of ethics locates “the dilemma” outside of ethical reasoning, undercutting the potential for a self-reflexive analysis about its own norms. However, I contend that precisely this potential is necessary to evaluate enhancements, as reflection about them is caught a curious double-bind: enhancements appear to materialize liberal ideals of increased freedom, self-realization, and progress, and thus the bioethics literature seems to view them as a self-evident good. Nonetheless, enhancements seem deeply troubling n my ethnographic site precisely because they were thought to produce the opposite effects. These worries are typically dismissed in the literature (in part because they are “messy” questions about social practices and meanings). This disjunct suggests that it is necessary to attend to the ideals that enhancements realize, since these ideals may be rendered problematic by the “ethics” of enhancements that one finds in practice. I argue that this tension and its origins only come into view when ethics is understood as being about “situated problems”, in which the interplay of meaning and material possibilities *in practice* produce ethical dilemmas, determine their stakes, and outline the resources available for resolution.

I then proceed to outline what viewing ethics in terms of situated problems entails, drawing on work in what some have identified as an "ethical turn" (Lambek 2010:5) in anthropology, which has attempted to specify the domain of "ethics" as an object of anthropological inquiry (Laidlaw 2002; Zigon 2007; Fassin 2012; Robbins 2009). Here, ethics has been understood more broadly than simply adherence to "rules" or "principles", in contrast characterized as being related to questions about "how one should live". The specifically "ethical" domain has been identified as the practices aimed at forming subjectivities, which some have defined further to point to how labor on the self is particularly important in moments of "breakdown", in which habitual ways of acting or being affected are cast into doubt. I expand on these points to argue that the domain of ethics can be understood at not only an individual but also a collective level, in the sense of mobilizing shared responses or underlying rationalities that respond to a rupture, and aim at some vision of the "good" or how to live.[1]

Thus, on a methodological level I define ethics as being is about a problematization in which the "good" or "how on should live" is at stake. I refer to ethical dilemmas as situated problems, to delineate an object of ethnographic inquiry:[2] they emerge out of a specific context in which technology has intersected with some combination of practices, meanings, institutions, and relationships to produce a moment of rupture. Thus ethical dilemmas are produced *through* practice. These failures of familiar interpretation call for some resolution, which can take the form of individual or collective response. And resolution (if it is achieved) relies on those meanings already in play to find provisional solutions, which simultaneously rework established norms.

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[1] As is the case for many others writing about the "anthropology of ethics", my intention is not to supplant other foci like "politics", or to subsume them into "the ethical", but to gain analytic traction on an aspect of social practice.

[2] I have drawn inspiration from others who have thought about ethics in terms of "situations" (Smith 1988; Lock 2001; Rabinow 2003)

My account of situated problems sets up the ethnographic frame for the rest of the dissertation, serving to define what the "ethical" encompasses, and, crucially, how the form of ethical analysis I am conducting differs from that offered by the bioethics of enhancements. At the same time, my concern with ethics is also analytic. Stephen Collier and Andrew Lakoff (2005) identify "ethical problematizations", in which the right course of action or way of understanding is in doubt. In the same way that an informant might engage ethical ruptures, they suggest that the anthropologist as analyst can *reflexively* engage an ethical problematization, using it to illuminate the concrete ways in which more general questions about "living" or how to understand human beings are put at stake. Thus, I explicate my second use of the term "situated problems", which tries to use an ethnographic account of norms in practice to raise general questions about the norms according to which enhancements are judged in the bioethics literature, and ethical norms about biomedicine/biotechnology more generally.

Pharmaceutical Enhancement: Principles of a Liberal Imagination

In what follows I review some of the dominant positions on enhancement in Anglophone bioethics,[3] which arguably represent the most prominent voices.[4] While the earliest influential texts on enhancements were often skeptical of the technologies and marshaled a range of arguments (Fukuyama 2002; President's Council 2003; Elliot 2003), much of the recent and most influential literature takes a permissive approach, and concentrates on three major concepts that are used to evaluate the ethics of enhancements. These three mirror the major principles of bioethics suggested by Beauchamp and Childress (2001): whether the risks of using enhancements are outweighed by the benefits (taking up the principles of beneficence and non-

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[3] I explicitly mean the institutionalized reflection on the ethics of enhancement that largely precedes in the style of "analytic philosophy". I am not considering the various forms of "clinical" ethics focusing on medical dilemmas, institutional review activities, or the many other activities subsumed under "bioethics".
While some of the points I develop below could apply to other aspects of bioethics, the field is too vast to do justice to *en masse*, and as scholars have pointed out, overly general critiques are not productive for the relationship between bioethics and the social sciences (Turner 2009).

[4] I include writings on "neuroethics" in the more general category "bioethics".
(On cognitive enhancements, see Greely et al. 2008; Farah et al. 2004; Chaterjee 2004, 2013; Farah 2012, Farah and Chaterjee 2013; on enhancements generally see Harris 2007; Savulescu et al. 2011; Wolpe 2002; Caplan 2009).

maleficence), if people will be coerced to use the drugs (related to autonomy), and if it is unfair (related to distributive justice).

A common characterization of the medications naturalizes their use and effectiveness, so that "today there are several drugs on the market that improve memory, concentration, planning and reduce impulsive behaviour and risky decision-making" (Sahakian and Morein-Zamir 2007). Typically, arguments view the primary ethical obligation as realizing the potential of enhancement to bring individual and social benefits, and some see an "obligation to enhance" (Harris 2007).[5] These postulated benefits are paired with a commitment to the right of autonomous individuals to decide what substances to use, what Greely et al. term "a presumption that mentally competent adults should be able to engage in cognitive enhancement using drugs", a view Savulescu et al. attribute to the utilitarian ethics of John Stuart Mill (2011:16).

The major limitations on liberalizing the use of cognitive enhancements are the safety risks of the drugs, and the potential for coercion. Risk encompasses both the potential short and long-term side-effects and the potential for addiction, as well as the "trade-offs" of intervening in the brain. As a complex system, advantages in one domain (e.g. attention) might lead to a decrease in another (e.g. memory) (Chaterjee 2013; Bostrom and Sandberg 2009; Farah et al. 2009; Wolpe 2002). While a general risk:benefit paradigm for medical treatments exists, enhancements are not treatments, and hence are thought to need a more favorable risk:benefit ratio than therapy would. Many authors believe that more research with healthy human subjects is necessary to properly evaluate risks, though long-term research inevitably runs counter to established clinical research protocols (that were not designed to measure risk/benefit ratio for healthy volunteers). This situation has prompted some to argue that it may be necessary to consider new research paradigms (cf. Metzinger 2012). However, the tacit assumption seems to be that at some point, drugs will be developed whose risks are small enough that they can be widely used.

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[5] Many arguments concentrate on cognition, which is assumed to be necessary, if not sufficient, for academic and business success, for making sound judgments, and to "appreciate" life more fully.

At this point, the issue of coercion would become especially salient. Two forms of coercion are identified, both of which impinge on individual autonomy by limiting the "freedom from coercion to enhance" (Greely et al. 2008). Explicit coercion refers to the clear demand that someone take an enhancement, usually issued by someone in authority, like an employer or teacher. Implicit coercion is the compulsion "to maintain or better one's position in some perceived social order.…To not take enhancements might mean being left behind" (Chaterjee 2013:9). While the concern recognizes that duress is not always directly applied force, the typical recommendation is to render the compulsion harmless, argue that it is worse than the limitation on liberty would be (Farah et al. 2004), or to "discourage" indirect coercion through legislation or policy (Greeley et al. 2008). In all cases, coercion seems to be a concern that can best be solved procedurally, rather than through a ban on enhancements.

The final concern that is typically cited is that of fairness. Arguments generally state that it is unlikely that everyone will have access to these new drugs given the current social and economic arrangements, which could exacerbate inequalities. One solution offered is to provide *everyone* with access to the drugs the way schools might provide computers for exams (Greeley et al. 2008). Others argue that the presence of injustice may in fact *require* enhancement as a means of redressing social and political problems: "the best way to protect the disadvantaged form the inequalities that…[some] believe will follow from enhancement is not to prevent enhancement, but to ensure that the social institutions we use to distribute enhancement technologies work to protect the least well off and provide everyone with a fair go" (Sandberg and Savulescu 2011). Taking a less optimistic view, Farah et al. argue that even if inequalities persist, this need not be problematic, since "[u]nequal access is generally not grounds for prohibiting neurocognitive enhancement, and more than it is grounds for prohibiting other types of enhancement, such as private tutoring or cosmetic surgery, that are enjoyed mainly by the wealthy" (2004:423).

Anthropological Critiques of Bioethics

These arguments rely on a narrow set of principles, which are assumed to be sufficient, if not optimal, for ethical analysis. Social scientists have critiqued those forms of bioethics that rely on such a limited set of norms; they have termed valorizing the norms of Western morality as transcultural, universal ideals to be "ethnocentric". Many commentators in bioethics trace the field's beginnings to political and social upheavals in the 1960s in the US, when new calls for human "rights" intersected with new technological possibilities (Gaines and Juengst 2008; Jonsen 1998; see Fox and Swazey (2008) for an alternate account). Anthropologists have pointed to these roots, arguing that bioethics often endorses only a narrow set of moral norms, like the focus on individuals, valorizing its particular perspective rather than taking "local" norms seriously (Kleinman 1995, 1999; Marshall 1992; Rapp 2006).

A second, related argument advanced by anthropologist is that bioethics marginalizes context, ignoring the setting in which ethical problems take place. Arthur Kleinman writes that "from an ethnographic perspective, the use of abstract concepts of justice and beneficence as universal ethical principles in decision making is suspect….there is also a failure to take into account the local workloads in which patients and practitioners live, worlds that involve unjust distributions of power, entitlements, and resources" (1995). By ignoring these concrete details, bioethics too often does not admit the reasons for action given by those involved, their interpretation of the stakes, or the specifics of the conundrum in question. And by neglecting the historical, material, political, cultural, and economical context of the ethical dilemmas being studied, bioethics mischaracterizes or conceals the ethical concerns at stake for those involved (Cohen 1999; Kleinman 1995; Hogle 1999, 2005; Lock 2003; Marshall and Koenig 1996, 2004; Muller 1994; Hamdy 2012).

Barry Hoffmaster attributes bioethics' inattention to context to its concern with making and justifying judgments about moral quandaries, which "is regarded as a matter of providing 'good reasons' for judgments" (2001:1). Good reasons, in turn, are "taken to require an appeal to moral rules or principles" (bid.). Hoffmaster points out how a model of ethics centered on the judgement and the principle it is buttressed by cannot incorporate empirical examination of concrete situations. Empirical data can only say who is holding what position, and for what reasons—neither of which can be recognized as the kind of rationality that bioethics demands. Thus ethnography is not able to provide insight about the decision that should be rendered, or deliver arguments for the syllogism.

These critiques often seem to be suggesting ways in which bioethics is deficient, which anthropology could remedy.[6] Writing about what the ethnographic method can bring to bioethics, Arthur Kleinman's view is that "the cardinal contribution of the anthropologist of medicine to bioethics, then, is to deeply humanize the process of formulating an ethical problem by allowing variation and pluralism and the constraints of social position to merge and receive their due, so that ethical standards are not imposed in an alien and authoritarian way but, rather, are actualized as the outcome of reciprocal participatory engagement across different worlds of experience" (1995:67). Kleinman, and indeed much of what anthropologists have explicitly written about bioethics, refers to the clinical encounter, and subordinates ethnography to that dyad's goals: enabling communication leading to a deeper shared understanding of the positions of the actors involved, trying to acknowledge suffering and the experiential dimensions of illness, and negotiating to an appropriate treatment. Sherine Hamdy's ethnography of organ transplantation in Egypt adds a focus on public health "in order to expand upon and reorient the field to find a better way to meet its original goals of improving health, justice, and medical benefit to the most people" (2012:9-10).

A basic point these critiques make is that bioethics has too often uncritically appropriated the same assumptions biomedicine makes about ontology, subjects, bodies, and the social world, mistakenly propagating them as universal ethical norms. Bioethics often generates its norms by elaborating and grounding the ethics that are implicit in biomedicine, which themselves are

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[6] Thus part of this literature has focused directly on using anthropological methods to address "bioethical" problems (Kaufmann 2001; Gordon and Daugherty 2003; see Koenig and Marshall 1996 for a review of this large field).

drawn from familiar Western notions about the nature of disease, the autonomy of individuals, or what would constitute a "benefit" of treatment or technology. For instance, when bioethics arbitrates what uses and goals of technology are appropriate in a general sense (reproductive technology, abortion, cloning), bioethics must to work out the limits of technology—again by relying on the same foundational assumptions about subjects and society. Thus, bioethics generally makes arguments about whether a new technology is compatible with the individual based on rights or an assessments of risks. My point is that bioethics' tendency to take up the same assumptions that animate medicine produces a narrow focus on ethical problems, even when the issues are not within medical paradigm.

Putting Practice in Context: Purified Problems and Fuzzy Selves

The standard arguments about enhancements I discussed above, though they likely share the "ethical background" of "Western" norms that are drawn on to make sense of enhancement, nonetheless disregard the context in which medication use takes place and focus too heavily on individuals. In the vein of the classic critiques I discussed above, I will examine what is missed by bioethics' inattention to the lived practice of enhancement, focusing on 1) problems with how bioethics conceptualizes the issues it is most concerned about (coercion and fairness) 2) the general inattention to empirical detail, and 3) important questions that are neglected (about nature, authenticity, and action).

Firstly, recall that the literature either rendered coercion innocuous or irrelevant, or called for "preventing" it through legislation. On a purely conceptual level, it is not clear why an "external" constraint operating through the force of law should be effective against someone's "internal" representation of the demands placed on them; this would seem to assume an idealized function of the law as regulating social action. But more importantly, the framing of coercion in the enhancement literature is sociologically under-powered, relying on a model in which power can either be directly applied (e.g. by someone in authority like an employer), or is confined to individual perception (of the "demand" to use drugs). As Michel Foucault pointed out, "[w]e must not look for who has the power, or who is deprived…we must seek rather the pattern of the modifications which the relationships of force imply by the very nature of their process…relations of 'power-knowledge' are 'matrices of transformation'" (1978:99). In other words, because power is effective, one must track how it is deployed in particular situations, and what its effects are, rather than assuming pre-given (rather than produced) entities that can only resist or succumb (and remain otherwise unaltered). Similarly naively, arguments about fairness assume that unequal access can simply be removed through the proper distribution of drugs.[7] Alexander Edmonds' work in Brazil is helpful here (2007, 2010). As he shows, the poor in Brazil demand cosmetic surgery, which has led to a shift in how healthcare is delivered and what is covered, exacerbating some of the pre-existing inequalities in the healthcare system. Further, the hopes of those women for whom surgery should have opened the doors to enter mainstream employment, or make them more socially desirable partners, remain unfulfilled. These bioethical arguments may perhaps be primarily medicalizing social problems (Conrad 2007), veiling deeper structural inequalities without bringing about any lasting change.

Second, current arguments in bioethics have failed to adequately engage the ethical issues from an empirical perspective. Questions of coercion or justice could be studied empirically, and Farah et al. (2004) even identified as important a set of questions that

> Encompasses the many ways in which neurocognitive enhancement intersects with our understanding of what it means to be a person, to be healthy and whole, to do meaningful work, and to value human life in all its imperfection….Attempts to derive policies from these considerations must contend with the contradictory ways in which different values are both challenged and affirmed by neurocognitive Enhancement…We generally encourage innovations that save time and effort… However, when we improve our productivity by taking a pill, we might also be undermining the value and dignity of hard work, medicalizing human effort and pathologizing a normal attention span. The self-transformation that we effect by neurocognitive intervention can be seen as self-actualizing, or as eroding our personal identity. Neither the benefits nor the dangers of neurocognitive enhancement are trivial.

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[7] See chapter 4, which could be interpreted as having taken up Foucault's insight that power is productive through the dispersed workings of institutions, discourses, and knowledge to provide an empirically grounded vantage point on coercion by providing users' accounts of using enhancements.

Despite suggesting questions amenable to empirical social science inquiry, most subsequent work has been theoretical, oriented towards philosophy, policy, or some mixture of the two. Empirical research in ethics has only rarely been done (for exceptions, see Forlini 2009, 2010; Singh 2005; and Frazzetto, Keenan, and Singh 2007; Bolt and Schermer 2009). Of course, some of the most prominent texts take the form of a position paper rather than research (Greeley et al. 2008, Farah et al. 2004), perhaps reflecting attempts at a bioethics that is empirically grounded and fulfills its self-proclaimed goal of speaking to pressing public concerns. Nonetheless, statements in the literature frequently affirm the wish to provide ethical guidance and policy advice based on empirical evidence, "proposing actions that will help society accept the benefits of enhancement, given appropriate research and evolved regulation" (Greeley et al. 2008; cf. Schermer et al. 2009; Singh and Kelleher 2013; Cook-Deegan et. al 2008). However, I argue that providing sound recommendations would seem to *depend* on extensive empirical data supporting the claims made, regardless of the position taken.[8]

Third, the literature has largely abandoned "messy" questions about nature, authenticity, or action. For example, the principle of using only "natural" substances has been dismissed because it does not seem to distinguish anything ethically relevant about enhancement; as Greeley et al. (2008) put it, "the lives of almost all living humans are deeply unnatural…why draw the line here and say, thus far but no further?" (cf. Kahane and Savulescu 2013:7; DeGrazia 2005; Harris 2007:110-5). This claim seems to index a persistent assumption in the debate, interpreting concepts like "nature" or "identity" as fixed entities, which can only be rendered meaningful if their "essence" can be specified.

Thus, questions of authenticity or identity have been similarly cast aside. The President's Commission on Bioethics has been most influential in arguing that biotechnologies would undermine individuals' ability to live authentically, as "the growing power to manage our mental lives pharmacologically threatens our happiness by estranging us not only from the world but

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[8] Other arguments claiming that enhancements violate human nature, or represent a hubris towards the "given" (Sandel 2007; President's Council 2003) have also not considered or inspired empirical research.

also from the sentiments, passions, and qualities of mind and character that enable us to live in it well" (2003:268; cf. Fukuyama 2002, Sandel 2007; Elliot 2000, 2004). Several have replied by claiming that there are no "core" traits that define someone's authenticity or self, so these concerns cannot stand in the way of self-improvement (DeGrazia 2005; Harris 2007). Further, authenticity, like nature, is taken to be a site of too much disagreement and its contents as empirically unverifiable, so the presumption is that a public consensus could not be reached. However, if as Donna Haraway (2005) suggests we are "all cyborgs" in the sense of humans and technology being inseparably intertwined, it becomes unproductive to search for essences of "nature" distinct from a constructed "culture", or a self preceding the social. As I will show, these concepts are important to many writing about or using enhancements in Germany, and can be fruitfully analyzed as discourses that fix shifting and "fuzzy" boundaries between nature, self, and technology, with profound implications for the ethics of self-improvement (See chapter 2 and 4). And even if a consensus cannot be reached in the among the rationally deliberating citizens in a secular sphere that underlies the idealized "public" bioethics implicitly has in mind, certain concepts of nature (Jasanoff 2005) or the self (Rose 2007:98-102) nonetheless structure practice, politics, and legislation, operating according to an implicit ethics that can be made visible.

Moreover, the basic issue of how to understand the "ethics" of practice remains unaddressed. It hearkens back to an early concern about enhancements, captured in the claim that "means matter morally", i.e. that "means make an obvious moral difference when a given socially valued activity is predicated on their use" (Parens 1998:12). Parens argues that "[b]ecause enhancing human capacities is taken to be a fairly self-evident good, worries about it are often dismissed as being a function of unnecessary anxiety or fear of the new" (ibid.). Parens terms this the "argument from precedent", which he says essentially substitutes a new means for an old one, and renders them equivalent because the end is the same. For example, if increasing the number of teachers and/or reducing class size (the means) has been used to improve student performance in school (the end), if a drug aims at the same end it is morally unproblematic. The problem, Parens says, is that this makes the means—social interaction or brain chemistry—the same, and obscures that the end may be the same only with regard to a single measure. I find Paren's analysis highly useful, because he points to the necessarily social nature of agency (regardless of whether it is a non-/human actor), at the same time as he shows how the argument from precedent makes invisible the social work of producing those distinctions. A helpful comparison here might be Marx's account of the fetish, in which "the social character of men's labor appears to them as an objective character stamped on the product of that labor" (1967:320); the point is that the fetish produces an erasure by reducing the multiple axes along which to evaluate human action to a single outcome.[9]

The relationship between treatment and enhancement remains unresolved, meaning that how enhancements are defined and how they relate to medicine remain open questions. As mentioned above, the concept of "enhancement" comes out of an extension of medical therapy, as some therapies seemed to go beyond treatment to make people "better than well". This made defining the relationship between therapy and enhancement a fundamental question for bioethics.[10] An influential concept has been to fix the level of "normal functioning", which establishes a statistical level that a "typical" individual of the same age and gender would have (Daniels and Sabin 1994; Daniels 2000). Another view has been to define enhancement negatively, by claiming that medicine treats diseases, leaving whatever interventions remain to be enhancement. Both the normal functioning and "not disease" approaches have been

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[9] However, though bioethics has largely left the meaning of action unexamined, it arguably continues to have something of a spectral existence in questions such as whether taking drugs is "cheating", where someone's "character" is often a concern.

[10] A related concern, already present in the first edited volume (Parens 1998), was whether physicians should dispense medications for enhancements, which in turn depended on what the "goals" of medicine were thought to be (Parens 1998; cf. Chaterjee 2004). The latter concern has largely been submerged; rather than taking a position on difficult questions about what it might mean for medicine to aim at "the prevention of disease and injury and promotion and maintenance of health" (Callahan 1996) and how this relates to self-improvement, recent literature places medical practice in a liberal, contractual framework, in which individuals need to be informed about risks and possibly supervised, but the physician acts as a kind of sympathetic gatekeeper to medications. To mitigate pharmaceutical lobby's growing influence on drug prescribing and advertising, some have called for professional organizations to establish professional guidelines for dispensing medications for enhancement (Farah 2012). In 2009, the American Academy of Neurology issued a position statement on prescribing enhancement drugs, leaving the decision to the individual physician and her patient (Larriviere et al. 2009).

challenged for being unable to conclusively distinguish between prevention and enhancement, and for making distinctions seem arbitrary by basing them on medical authority[11] (Parens 1998; Juengst 1998; Wolpe 2002). Moreover, the fact that medicine often aims at prevention seems to entail that some forms of improvement are ethically acceptable even without intending to treat disease. In short, many claim there seems to be no way to draw a robust boundary between treatment and enhancement, at least not firmly enough ethical analysis or for "the hard cases policy makers may face when issuing practice guidelines or deciding what insurers should pay for" (Hyman 2011; cf. Savulescu et al. 2011:5).

This has led to proposals that try to only roughly define enhancements, assuming that one can define the contentious areas relatively clearly. However, I suggest that this leaves the connection between medicine and enhancement unspecified, by relying on a practical approach which mirrors the established consensus about what "treatment" and "enhancement" mean, without providing any analytical traction to examine the relationship between the two. Another approach has been to define enhancements without referring to medicine (e.g. Savulescu et al. 2011). However, these definitions are necessarily broad (since they cannot limit the possible means of improvement to "medical" technologies), and thus eliminate the important questions that arise *from* the connections between medicine and enhancement.

It seems to me that rejecting the treatment/enhancement distinction by insisting on an objective source for norms, or by simply accepting "prevention" as a legitimate goal, erases the significance of this boundary. Both in medical practice and conceptually[12], a difference between therapy and improvement exists (see Schöne-Seifert and Talbot 2010 for a useful summary). This difference must be continually reaffirmed, to legitimate medical practice, and to mark a

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[11] For instance, cannot distinguish between individuals who are very short because of a growth hormone deficiency, and who are genetically very short. Both deviate from function to the same extent, but only one is a disease, because of an authoritative medial judgment about what counts as pathology.

[12] Virtually all of the literature that does not take a strict analytical-philosophical tack implicitly relies on this distinction:
"Our growing ability to alter brain function can be used to enhance the mental processes of normal individuals" (Farah et al. 2004).
"Many of the medications used to treat psychiatric and neurological conditions also improve the performance of the healthy. The drugs most commonly used for cognitive enhancement are stimulants...." (Greely et al 2008).

sphere of intervention as *not*-medicine. It is these latter technologies the authors I focus on want to promote, explicitly as *non*-medical improvements that would benefit society. Enhancements are contentious *precisely* because they trouble this (unacknowledged) limit. As Bowker and Star point out, "each standard and classification valorizes some view, and silences another" (1999:5), and refusing to acknowledge the classification into treatment versus enhancement as legitimate submerges (dis)continuities between therapy and improvement, as well as the biopolitics of expanding medication intervention in the name of risk or a healthier and better life.[13]

These problems in prominent approaches to enhancements matter because it makes this vision of ethics unable to fully capture the many and complex ethical features of enhancement. Hamdy claims that bioethics' "individual scale and the insistence on abstract principles, such as beneficence, justice, and autonomy, often miss what should be the targets of analysis by failing to capture the messiness of bioethical problems" (Hamdy 2012:10). Similarly, I suggest that the aperture of what can be studied must be widened in the search for clarity of moral vision. This requires attention to lived practices and articulations in the confounding muddle of the social, which the arguments I have outlined above systematically try to purify out. As Bruno Latour points out, this muddle is precisely what our ethics and politics must grasp, or it risks "distancing [it]self in order to go in search of foundations" (2004:98). As he says, we "must connect the question of the common world to the question of the common good" (ibid.)—common playing on the double meaning of being both what is shared, and what is prosaically mundane. Hence, it seems that to productively think through the ethics of enhancement it will be necessary to engage dilemmas on the terms in which they are lived and practiced.

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[13] As Schöne-Seifert and Talbot (2010) point out, the difference between treatment and enhancement does not necessarily map onto ethical permissiveness vs prohibition. However, in practice there is a moral valence to therapy, with consequences for the meaning of enhancement and therapeutic intervention.

Bioethics and the Primacy of the Objective

Above, I discussed how anthropological critiques of the bioethics of enhancement could enrich the kind of research being done by attending to the concrete contexts of ethical problems, moving away from a focus on the naturalized and seemingly indisputable principles of autonomy, justice, and risk avoidance. Yet, with continued pronouncements of impending revolutions in biomedicine and biotechnology, a different critique may be necessary. Mine is not case of healing. It is about more general questions related to visions of the future, about what kinds of technologically enabled forms of life are becoming possible. In the past few decades, bioethics has continued with its bread and butter, arbitrating difficult cases in clinical medicine and research (through oversight committees, ethics services, education, and arguments about the proper forms of ethics). At the same time, bioethicists have moved into arbitrating speculative visions of the future by dealing with enhancements, nanotechnology or synthetic biology. Bioethics has become a major forum for arbitrating what the future of society should look like. It takes up, examines, and in some cases produces visions of a "good" future, asking for an engagement with the powerful pronouncements of ethics of the present and near future.

Moreover, it is not entirely clear what form an engagement with bioethics could take: Kaushik Sunder Rajan (2005) shows how the dyad of healing is no longer the only focus of medicine, as shifts in the epistemological and economic conditions of medicine and the ever more important biotechnology sector form new subjectivities. Sunder Rajan calls these "subjects of speculation", who are potential consumers of drugs, "patients-in-waiting" whose risk profiles have been established (and a market for potential therapies thereby discovered). Indeed, one gets a sense of the profound consequences of the significance of market logics in Joe Dumit's (2012) phrase describing the current American predicament of needing to take "drugs for life", which indicates not only that ethical issues must be understood in terms of the wider institutional and structural context, but also that the concerns themselves may have shifted levels.

To begin formulating an adequate critique, I will turn to the "native anthropology" (Sahlins 1996) of the Anglophone cosmology of ethics. There, moral dilemmas in medicine and biotechnology are thought to be a result of scientific advances: because new technical possibilities exist, ethical problems arise (Jonsen 1998; Gaines and Juengst 2008). The usual strategy of ethical reflection followed by bioethics is to crystallize the key technical difference(s) between the old, "unproblematitc" and the new, perplexing medical or scientific practice, and match that alteration to an ethical domain. Important here is the claim that technological advances produce ethical ruptures, "raising" new ethical questions. This is frequently said about enhancements. In the volume *Enhancing Human Capacities*, the editors state:Our bodies, even our feelings, thoughts, and intellectual capacities, are also gradually entering the sphere of scientific control and manipulation….Traditional notions of human nature, normality, and flourishing seem increasingly inadequate. (Kahane et al. 2011:xv) Since science is the main driver of these changes, it follows that

> A look back at similar disputes about past scientific and technological advances reveals that many past fears and hopes were deeply misguided or exaggerated…If we are not to repeat this error, it is important that we set the debate on the right track. We will not find sound answers through armchair prophecy. Instead, the debate needs to be informed by detailed and accurate knowledge of the relevant science and it's limits—an understanding of what is feasible as well as practicable—as well as by a clear view of the relevant concepts and values. It cannot, for example, be simply assumed that the ethical conceptions and principles that have served us well in the past will be useful guides in this uncharted territory. (ibid.:xvi)

Here, Kahane et al. claim that an appreciation of scientific details is the key to establishing ethics, and that ethical concepts might need to be adjusted to fit with the scientific facts. Or, as an early article by a group of leading scholars in the bourgeoning subfield of bioethics known as "neuroethics" argued, "Our growing ability to alter brain function can be used to enhance the mental processes of normal individuals as well as to treat mental dysfunction in people who are ill. The prospect of cognitive enhancement raises many issues about what is safe, fair and otherwise morally acceptable" (Farah et al. 2004:421). But, they argued, these questions did not float above the world of practice, as they are contingent on the "state of the art of science". Their argument proceeded to "show the state of the art in psychopharmaceutical enhancement, the ethical issues raised by such enhancement and the policy implications of these ethical issues" (ibid.). In other words, the empirically verifiable physiological effects of technology on the material body fix the bounds of the possible meanings of practice and ethics.

Such a preoccupation with the "objective" is foundational to contemporary ethical reflection on enhancements, which presumes that the ethical agenda will be entirely determined by what is technically possible. Charting the possible can take two forms: one is examining what technologies can do right now. Research provides "updates" of the scientific state of the art, linking it to its ethical implications (Sandberg and Bostrom 2006, 2009; Gordijn and Chadwick 2009:191-205). Speculating about what *will become* possible, typically assuming that the ethical problems can be clearly delineated in advance, because they depend on specific technological developments (Gordijn and Chadwick 2008; Mehlmann 2004).[14]

In the case of the pharmaceutical enhancements I focus on, the debate prizes having the most current scientific data available. Hence, a major lines of research evaluates how enhancement drugs function and what kinds of objectively measurable effects they have (Repantis, DeJong et al. 2008, Schermer et al. 2008). Ethical problems, in turn, hinge on the magnitude of effects. I have called this the key 'technical difference' that shapes the ethical argument: as Greeley et al. (2008) put it, "Drugs may seem distinctive among enhancements in that they bring about their effects by altering brain function, but in reality so does any intervention that enhances cognition. Recent research has identified beneficial neural changes engendered by exercise, nutrition and sleep, as well as instruction and reading. In short,

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[14] Prognostications about what science will be able to achieve has even prompted the development of a new field, neuroethics. As one of the founding figures and first president of the Society for Neuroethics, Martha Farah, says in her volume introducing the field, "New ethical issues are arising as neuroscience gives us unprecedented ways to control the human mind and to predict, influence, and even control it. These issues lead us beyond the field of bioethics into the philosophy of mind, psychology, theology, law, and neuroscience itself. It is this larger set of issues that has…earned it a name of its own: neuroethics" (2010:2). Farah clarifies the content of neuroethics, giving a subtle view of the difference between bioethics and neuroethics, which for my purposes illustrates the relationship between science and ethics: "My point [] is simply that some neuroethical issues are relatively novel and emerge primarily because of the very special status of the brain in human life" (2010:7). In other words, when novel science and technology (appear to) shift the social meanings associated with the brain, ethical issues are raised.

cognitive-enhancing drugs seem morally equivalent to other, more familiar, enhancements." Thus, if drugs have only modest effects, they are similar to traditional substances like coffee or exercise, and ethically unproblematic. In this imagination of ethics, (social and ethical) meaning is fixed and clearly understood, and is logically secondary to changes in the material world; social worlds have a set of values, practices, and interpretations that will shift if their objective referent changes. In other words, we might say that the technological straightforwardly determines the ethical. Ethical questions, then, are those that arise when what Savulescu et al. referred to as "traditional notions" are no longer adequate to describe technological reality, what Michael Fischer has described as an "ethnographic *datum* that…traditional concepts and ways of doing things no longer work" (Fischer 2003:37, emphasis added).

"Inside the Whale": The Limits of Bioethics and the Stakes of Reflection

The assumption that technology straightforwardly determines the ethical seems to be a pervasive idea, legitimating ethical reflection on the biosciences. But, as Roger Cooter (2010) argues, such an assumption can lead to an ethics that is not well-suited to reflexively engage its own conceptual foundation. Cooter claims that conventional histories of bioethics see the field's origins a response to technological developments in technology that raised novel questions, and expanded the focus of concern away from only professional ethics to those receiving medical services. This means, according to Cooter, that the narrative about how bioethics (a particular mode of ethical thought) came into being is entirely "inside the whale of bioethics and biomedicine". It operates only at the level of what is happening within "ethics in medicine" and in "biomedicine", and cannot recognize "the more systemic shift involved in creating the possibility *for* bioethics." The fundamental change missed bt these standard narratives is indexed by the notion of informed consent, which became central to ethical evaluation in the 1960s. Thus, bioethics could come into being because of "a prioritization and celebration of personhood within a particular politico-economic context", in short a transposition in the ethical values of the world in which medical ethics was operating at that moment.

Cooter's critique, as he mentions at several points, is about a way of *narrating* history, specifically of narrating how a form of ethical attention comes into being. Cooter seems to be pointing to a way of reflecting on ethics that fails to properly historicize itself, because it does not look *outside* itself to locate shifts in ethical attention, concerns, or in the types of arguments that become persuasive. However, such a mode of ethical reflection cannot recognize how its norms are produced through a particular (social, historical, economic, political, etc.) moment. Cooter's point is on one level of course similar to one anthropologists have made, that bioethics privileges a partial and contingent perspective. On another level, Cooter seems to point out that because bioethics' narrative about itself tells makes technological change responsible for "ethical crisis", it simultaneously erases the possibility of paradoxes within the style of ethical reasoning itself to be responsible for "ethical questions". In short, the ahistorical narrative of bioethics locates the "problem" it is responding to outside of its own ethical principles, making it blind to potential tensions *within* those principles.

I suggest that this blind spot is particularly salient for the (bio)ethics of enhancement, because the arguments I cited above tend to draw on the same frame of meaning that makes enhancements desirable in the first place, without interrogating that frame. These arguments are entirely within the liberal paradigm, focusing on the individual and how she can maximize her well-being. Legislation should protect individuals from physical risks, as well as from being coerced into taking a medication they did not freely decide to take. Individuals should be given fair access to these drugs, or at least not be at a disadvantage relative to others. These arguments are based on the notion that technologies might well produce a range of benefits that should be as widely available as possible. As the prominent philosopher and bioethicist John Harris says, "if it wasn't good for you, it wouldn't be an enhancement…the opportunity to create healthier, longer-lived, and altogether 'better' individuals is one that there are moral reasons to take" (2007:9).

Yet this synergy—that these technologies materialize ethics, in the sense of materializing liberal visions of the good—entails that enhancements seem to be *self-evidently* good (as the name suggests). By ostensibly so clearly advancing freedom, individual choice, control, and happiness, enhancements can *only* seem to further the highest liberal values. Any limitations on their use would appear to be possibly only if they somehow failed to benefit individuals—for instance because of medical risks, or because not everyone had access.

The problem with these arguments is not that they advance liberal values. Enhancements might very well turn out to be a good thing. However, this specific form of ethics operating in the literature is, it seems, unable to objectify the very values it arbitrates. A liberal imagination of progress, increasing autonomy, and human control makes enhancements desirable by promising the realization of several social, political, and ethical ideals (e.g. a more productive society, more autonomous individuals, self-realized and happy people, a more just society). But if enhancements seem so obviously "good", why are they simultaneously so profoundly troubling? An ethics that takes the norms of that same liberal imagination to be ahistorical and fundamental moral truths must see enhancements as unsettling some values outside of itself: conceptions individuals have of "nature" that are threatened, fears about losing one's "self", or other "traditional" notions about subjectivity and social life. Such an ethics would also seem to be "inside the whale" of progress and perfection, locating the questions and ruptures in the muddle of social life outside of itself, which needs guidance in the form of statements about what "should" be done. Such an ethics would, it seems, fail to see that perhaps the social context in which such an ethics is done has shifted, calling the norms themselves into question. One might say that this way of thinking is premised on the idea that it has all of the required ethical resources at its disposal, a sealed-off system of "ethics" that has always already captured what is at stake and needs to only "apply" its norms to the changes or question that arise in the world it examines.

My basic argument is that this misunderstands what "ethics" is. I advocate thinking of ethics in terms of "situated problems", in which the interplay of meaning and material possibilities *in practice* produce ethical dilemmas, determine their stakes, and outline the resources available for resolution. This in no way implies that the ethical arguments I am examining, or of bioethics as a whole cannot make a valuable contribution to thinking about ethics. It does, however, mean that one must attend to ethical problems in practice to understand how, or if, these norms can be usefully deployed. As I hope to show, attention to the practice of enhancements in contemporary Germany puts elements of the liberal imagination into question, opening up different avenues to think the ethics of technological improvement. I will make this argument by drawing on a main insight of the anthropological responses to bioethics I outlined above, who argue that an attention to concrete context and lived details is essential to understand ethical dilemmas. Because many of these critiques are based on ethnographic engagement with situations that had already been defined as involving "ethical dilemmas" by bioethics, this tended to under specify the definition of "ethics". Thus, I turn to recent work in the anthropology of ethics to specify the object of study—"ethics and ethical problems"—more carefully, and characterize the axes along which such dilemmas can fruitfully be analyzed.

Situating Ethics: Technology

Rather than assuming that technology straightforwardly creates ethical dilemmas and leave one's norms uninterrogated, how can changes in ethical concerns be "historicized"? Writing about brain-dead organ donors, Margaret Lock reminds us "it is the hybrid and not the machine itself that incites moral dispute, doubts, and angst. Although the ventilator influences discourse about the brain-dead and in this sense is an active agent…it is not itself a decisive force in the formation of discourse and practices in connection with the brain-dead. The existence of the technology does not *determine* anything" (2002:40, italics original). Lock makes an admirably terse argument for the absolute necessity of engaging the social context of technology empirically to be able to describe, understand, or resolve moral disputes. In the case of the ventilator, typically cited among the seminal events responsible for the emergence of bioethics as a field, Lock points out that before the ventilator, death in the West was determined by the cessation of breathing, pulse, and the onset of pallor. By keeping maintaining breathing, the ventilator made it possible to determine a moment of death based only the extent of brain damage. It was the possibility of "living cadavers", strange entities that were dead even thought they "seemed" alive, and which could thus apparently "die" twice, which created hybrids that troubled moral categories.

Sherine Hamdy (2012) gives an illuminating history about why ethical questions around brain death remain persistently unresolved in Egypt, pointing to layers deeper than instrumental ability. After transplantation procedures had been introduced in the late 70s, the Grand Mufti of the Republic, Egypt's highest religious authority, issued a *fatwa* ruling about brain-death stating that "'a human being is not considered dead when one part of his body [i.e. the brain] loses life'" (2012:56), a position based partly on Islamic philosophical traditions of life being dispersed throughout the body. When transplantation techniques had become more common several years later, the lack of organs that could be transplanted led to a rise in black market organ trafficking, prompting transplant proponents to seek a new ruling in hopes of expanding the pool of available organs. This time, the Mufti decided that determining death was a strictly medical issue, a ruling that stoked the fires of discontent: much of the public was suspicious of the Mufti, who seemed to simply legitimate powerful interests. Further, the ruling was opposed by the claims of popular religious figures like Shaykh Sha'rawi's, who said that "the body belongs to God" (and thus its parts are not freely available for use). Increasing rates of kidney failure—which many attributed to environmental pollution that went unregulated by the state—intensified both the need for transplants from whatever donors were available, and the resistance to them. Though some of these are "religious" concerns, they shape what counts as "ethical", i.e. as good and right, by informing how to judge the ambiguous status of the brain dead. The point, then, is that what is at stake in ethical disputes, who is being harmed, and who should decide are contingent, rather than pre-determined by technology.

Technology is caught up in what Michael Fischer terms an "ethical plateau", or "horizons of ethical issues posed by the intersection of several technologies, their institutional formattings, and their deployments through markets and other mechanisms" (2003:146). Various elements (e.g. market logics, religious pronouncements, public concerns, institutional actions) come together and *in combination* give rise to a set of ethical dilemmas or questions. Such a complex nexus of meanings, practices, technologies, and histories *relies on*, but also *re-works*, extant ethical norms. Kim and Mike Fortun (2005) describe how advances in genomics are being incorporated into toxicology, which raises questions about what sound and responsible science that serves the public should look like. Termed "civic science", many toxicologists feel this is the core ethical imperative of their work. While in the past, this meant testing compounds in animal models, slowly amassing conclusive evidence for risk, genomics promises to more quickly identify larger numbers of toxins. The trade-off, however, is that knowledge becomes less conclusive, and relies on large databases that can be mined for information. Thus, scientists must develop practices that re-work the ethics of civic science, allowing toxicology to provide information that can be used by environmental regulators, but also embracing new ways of assessing toxins' effects on health, and of taming the tenuousness of this knowledge through well-designed database systems. Pre-existing norms of ethics matter, both informing how the present question is framed, and providing the starting points for attempts to solve the present problem; not only does the "emergence" of ethical dilemmas depend on specific practices and meanings, but their solution does as well.

Situating Ethics: Practice

As Fortun and Fortun make clear, ethical questions emerge from the intersection of technologies, norms, and history; the ethical is located within practice. In one sense, this means that norms become “un/ethical” in how they are enacted. Adriana Petryna, in her anthropology of global clinical trials, “engage[s] ethics as a field of action for anthropological inquiry” (2009:33, emphasis added). Petryna traces how pharmaceutical firms have expanded the sites where they conduct clinical trials, driven by their need to find so-called “treatment naive” patient populations, as they are welcomed by local researchers as an opportunity to provide treatment to underserved patients, supplement their income, or gain prestige. To make results from trials usable in drug approval regimes, global standards have been “harmonized”, standards that researchers and companies conducting trials frequently follow to the letter. These international standards become a resource for engineering profit, leading to what she calls “ethical variability”. Thus, individuals will be fully ‘informed’ before entering a trial by the trial sponsor, which both discharges the bureaucratic requirement for consent and makes patients aware that they need treatment (e.g. for high cholesterol). The requirement of informed consent enables the creation of a patient consumer who then enters the trial, because they feel that they need to be treated, and know that they themselves, or the defunct state-sponsored healthcare, is unable to do so. Thus, “*the moment of buy-in [into the need for treatment] is the moment of informed consent*…the moment of informed consent is the moment when the patient is fully informed and exposed to the pharmaceutical market and its limited mechanisms of access” (2009:124, emphasis original). In other words, Petryna shows how ostensibly ethical “universal principles” become meaningful in how they are enacted, which can have an unexpected outcome even if the norm is followed to the letter.

Petryna’s example points to another, stronger point, that the ethical emerges *through* practice. Kaushik Sunder Rajan, voicing Mike Fortun, reminds us that ethics is “always already indeterminate rather than ‘right’ or ‘wrong’, as that to which one is constantly obligated to *work through*” (2006:66, emphasis original). Ethics demands working through a problem precisely because familiar ways of thinking somehow leave a residue of indeterminacy, of unanswered questions and connections. As previous examples showed, ethical dilemmas emerge out of particular and unstable situations, reflecting the tensions, hybrid categories, and mixed meanings of practice: brain-dead patients are somehow both alive and dead, the shell of a person where life nonetheless lingers, and, in Egypt, subject to both religious verdicts and biomedical rationality. Clinical trials rely on patients who are informed, but need to be educated into that state, and are able to access to drugs only because international rules to safeguard subjects have opened a global space that makes new forms of experimentation on bodies possible.

Thus, I suggest that privileging principles threatens to misunderstand the ethical stakes. But even when a recognizable notion like 'each individual weighing the risks and benefits' of something is drawn on in practice, the results are so entangled in messy realities of social life that its application cannot be understood apart from lived details. Hamdy (2012) shows how in Egypt, dialysis is a difficult long-term solution because of frequent complications with aged equipment and poor medical care, making transplant an attractive option. Yet there are very few cadaveric donors, so living donors—typically family members—are the only realistic option. Because of widespread environmental pollution, contaminated water, and largely defunct public health service for the working poor, potential recipients carefully weigh accepting a kidney from kin, not wanting to put kin at risk for kidney failure (which would possibly be caused by similar factors as their own disease). Risk, for the recipients, was about the consequences for others, judgments intimately tied to social settings: kidneys were usually taken by males from other males; potential recipients hesitate taking kidneys from female relatives, since this would make them less eligible for marriage and able to bear children, or from males who had a family to provide for. The problem was not that the recipient would be harmed 'psychologically' if they see their family member suffering. It was that doing so would violate relational obligations, and possibly religious ones as well. At the same time, the benefits for recipients were unclear, as it was not unlikely their transplanted kidney would fail at some point in the future. In other words, determining whether to take an organ from kin was embroiled with organ failure's lived context, of gendered expectations, ubiquitous toxins, entrenched inequality, and the failure of the state to care for citizens' health.

The view that ethics is about applying the "right" principles to a situation is an abstraction, as struggles to resolve ethical dilemmas are carried out in lived social life. Fischer points out that "[m]oral conflicts between different evaluative cultures tend to be the most obvious frames of choosing between binary options: should one do *x* or *y*. But ethical choices for individuals often happen in third spaces, in the ambiguous zones between clearly defined options" (2012:400), where individuals must work through the problem at hand, relying on "cultural frames for evaluation [that] are resources but not scripts, drawn upon for testing options but not followed as templates" (ibid.). It is important that solutions in those contingent spaces in which ethical dilemmas emerge are underdetermined; there are several possible interpretations in play, which which may shift as they co-exist, or through struggle in what Fischer calls "tournaments of value" (2012:408). Only at the conclusion of a joust can principles be abstracted, and posited as having guided action all along.[15] Ethical questions are "worked through" by reflection to find the situationally best course of action. Michael Lambek (2010) goes even further, suggesting that ethics is a constitutive part of everyday human action and speech. While I am using the more specific sense of ethics as working through, my general point here is that the aim of ethics is to discern the right form of action to take in a moment of dilemma. Characterizing ethics in this way matters because I suggest that any form of reasoning adequate to these lived problems must recognize their situatedness, rather than rely on abstractions as sufficient accounts of the world.

Situating Ethics: Problematization

Anthropologists who have recently turned to study ethics more closely have elaborated on ethics as practice (Lambek 2010; Laidlaw 2002; Faubion 2011; Fassin 2012; Zigon 2007, 2008). This

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[15] This recalls Canguilhem's argument that though norms are often believed to be "objective", in fact a single norm is selected from among the possible range of norms, which valorizes only a certain form of life. Similarly, an ethical norm might be said to select from among the possible forms of life, rather than standing "objectively" outside of practice. Thanks to Michael Rossi for this point.

research has recouped an older notion of ethics, making relationship between thought and action that make how one lives—rather than principles of "right" or "wrong"—the primary concern of ethics. It draws on several moral philosophers who have argued that with the emergence of modernity, ethics has centered on systematizing a set of principles that abstractly define right and wrong (MacIntyre 1981; Jonsen and Toulmin 1990; cf. Foucault 1997b). By contrast, ancient Greek conceptions posed the question, to use Bernard Williams' famous phrase, "how should one live?". Ethics was, following Aristotle, a practical matter of discerning the best course of action within a concrete setting, that presupposed a subjectivity that could reflect and work on herself in trying to realize a specific telos (cf. Williams 1985; MacIntyre 1981; Foucault 1997a; 2001; Collier and Lakoff 2005). This vision promises a more productive definition of ethics than that found in the bioethics literature on enhancement, conceiving of ethics as a "field of action" that can be empirically studied.

A common argument in the anthropology of ethics is that it has not been studied as an explicit sphere by anthropologists, which is due largely to the legacy of Durkheim.[16] Durkheim conflated morality[17] with society, with the result that studying morality has remained largely equivalent to studying "culture" (Laidlaw 2002; Zigon 2007, 2008; cf. Faubion 2011). In his foundational "Elementary Forms of Religious Life", Durkheim argues that society is the source of religion, and more generally that fundamental conceptual categories are "the work of the collectivity", rebutting Kant by arguing that "impersonal reason is but collective reason by another name" (Durkheim 1995:441). Roughly a decade later Durkheim explored how the moral was a domain of the social, extending his engagement with Kant. The moral was perhaps the social's preeminent ideal, since society "is above all a composition of ideas, beliefs and sentiments of all sorts which realize themselves through individuals. Foremost of these ideas is the moral ideal which is its principal *raison d'être*" (2009[1824]:29). Durkheim argued that basic

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[16] James Firth and EE Evans Pritchard are cited as notable exceptions.

[17] Morality and ethics are often viewed as being similar, if not synonymous. Here, I use 'morality' because that is Durkheim's term, which the literature uses to establish a distinction with *ethics*. I return to this below.

notions of Kantian morality like duty or freedom were socially organized, since society had a "moral authority" that commanded respect and a kind of compulsory obedience (2009:37-8).[18] Both the sacred and the moral are fundamentally manifestations of how society organizes itself, and the principles through which society regulates the conduct of its members (cf. Fassin 2012:28; Laidlaw 2002; Zigon 2007). Thus, morality cannot, by definition, be substantially distinct from social norms, and neither can there be any distinct "moral sphere", like freedom, obligation, or moral reasoning. As Durkheim argued in a series of lectures on pedagogy, "the domain of the moral begins where the domain of the social begins" (cited in Zigon 2008:35). In sum, so the claim made in this literature trying to recoup a distinctive area of anthropological study, until now many anthropologists have thought that by studying the social systems that structure behavior, traveling under labels like "religion", "kinship", or "culture" in general, they could at the same time think of themselves as attending to morality.

Recent literature on the anthropology of ethics frequently finds its crucial turning point in the late writings of Foucault (Laidlaw 2002; Faubion 2011; Fassin 2012). On the one hand, it could be said that by conceptualizing society in terms of power (using categories like "medicine" or "sexuality" that compel obedience), the basic Durkheimian conflation remained: subjects' attempts to be "moral" manifest the workings of power, so by studying power in its various forms, one had also already studied morality. On the other, James Laidlaw (2002) argues that Foucault was deeply concerned with ethics. While Foucault's thought is often condensed into the idea that there are totalizing systems of power/knowledge that shape individuals, in which they have very little possibly for freedom, Laidlaw argues that this is a misreading. Rather, Foucault worked against the interpretation his early works facilitated for the rest of his life. Instead, we should understand him as giving genealogies (most notably in the *History of Sexuality*) not simply of constructing subjects, but of constructing *ethical* subjects. Thus, the possibility of freedom plays a central role, as the capacity to reflectively select the kind of self one wishes to

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[18] Laidlaw writes that this undermines the idea of freedom or moral decision, since "the obligatory will necessarily become the desirable and people will act accordingly" (2002:315).

be from a historically situated and circumscribed set of possible selves. As Foucault says, "ethics is the considered form that freedom takes when it is informed by reflection" (1997). For anthropology, Laidlaw contends, viewing ethics as individuals' attempts to make themselves into certain kinds of people defines the object of study for "to the extent that they [shape themselves] with reference to ideals, values, models, practices, relationships, and institutions that are amenable to ethnographic study, to that extent their conduct becomes the subject matter for an anthropology of ethics" (2002).

Some anthropologists have taken Foucault's work as having "allow[ed] us to think of ethics as always local and particular, pertaining to a specific set of procedures, techniques, and discourses through which high specific ethical-moral subjects come to be formed" (Mahmood 2005:28; cf. Hirschkind 2009). Foucault's (1997) model of "technologies of the self" has been influential, in positing four aspects through which this self-fashioning takes place: the parts of subjectivity that are the object of moral conduct (e.g. emotions or the will); the mode of subjectivation, through which individuals are incited to recognize moral obligations; the technique that produces the desired subjectivity; and the *telos*, characterizing the kind of moral person one becomes (e.g. immortal, pure, etc.). Other scholars have taken up the suggestion that the "ethical" consists in reflexively working on the self to form a type of person, emphasizing that this task that becomes apparent in response to what Foucault termed a "problematization",[19] or a space of uncertainty or difficulty in understanding or acting. Zigon terms this a moment of "breakdown" that emerges out of everyday practices of existence (Zigon 2007, 2008), a model of rupture shared by others (cf. Laidlaw 2002; Robbins 2009). However, I want to note that a rupture need not be identical with 'crisis'; a rupture does not need to demand an immediate response, be intensely affectively dramatic, or a "categorically exceptional condition" (Redfield

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[19] According to Rabinow, Foucault defines a "problematization" as "the ensemble of discursive and nondiscursive practices that make something enter into the play of true and false and constitute it as an object of thought (whether in the form of moral reflection, scientific knowledge, political analysis, etc.)" (cited in 2003:18).

2013:2). Instead, these "moments" can be perduring, a kind of long-term failure problematization that call for repeated engagement.

Situating Ethics: Collective Rationalities and Politics

The emphasis this recent literature places on identifying "ethics" as a distinguishable sphere of action identifies forms of practice that can be ethnographically studied. First, comprehending the "situated knowledges" (Haraway 1988) of those from whom the "problemataization" becomes apparent is essential. However, there is the further question of how situations generate their own kind of ethical logic. Shared meanings, material realities, obligations, explicit norms—all of these set the terms of the dilemma, the range of actions that can be imagined, and hierarchically orders what forms of action are desirable. Ethical logics, one might say, names the reasons why something is problematic, and informs what an "ethical" response would be.[20] This ethical logic is, like other forms of meaning, embedded in—and made visible through—practices and discourses that can be examined. Hence, the ethical logic used to *make sense* of situations can be opened up for analysis through ethnographically. In short, it can be "denaturalized".

Second, individuals ethical "work" on themselves frequently responds to moments of rupture, enacting practices of ethics. Jarrett Zigon argues that morality, or the familiar and unreflected norms of acting, can take three forms: of institutional expressions of the right way to act or be; public discourse, or public articulations of moral values and hopes distinct from (and perhaps subversive of) institutions, such as media broadcast, internet blogs, literature, or the arts; and finally, an "unreflective and unreflexive disposition of everyday social life", a kind of habitus of moral action. In contrast to morality, ethics is that moment when those habitual norms fail. The task of individual ethical labor, then, is "a conscious reflection on, or the turning of one's attention toward, this third aspect of morality as embodied dispositions…what must be

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[20] Situating ethics refers to taking the context of ethical problematizations seriously; ethical logics points to the rationale that organizes how the various elements hang together. For example, it might explain how things like the material potential of medication or a particular workplace arrangement take on one, but not another, particular ethical significance.

done is a process of working on the self…to make oneself into a more morally appropriate and acceptable person" (2010:69-70).

I appreciate the subtle distinctions of the various forms ethical imperatives can take, and also take ethics to be a "process of adjusting and readjusting to the breakdowns of moral and social life" (Zigon 2010:71). However, I would add attention to the collective level, rather than the typical emphasis on the individual as the site of ethics (Zigon 2008; 2010; Laidlaw 2002; Lambek 2010), which in Zigon's case requires questioning the distinction he makes between morality and ethics. [21]I prefer to see both terms as referring to questions of "the good" and of the right forms of action and/or being, questions which appear generally indistinguishable in practice, and which more importantly are fluid and continually reconstituted. If social life is an unstable and contingent formation, it would seem that

"Familiar norms" that can break down may refer not only to desirable kinds of subjectivities, but also hoped-for states of reality and forms of action. "The good" is an expansive concept, which I argue should not be reduced only to individual subjectivity. Zigon's characterization constraints ethics by writing that it is "a conscious reflection on… morality as embodied dispositions. In this ethical moment, a person becomes reflective and reflexive about her moral way of being in the world and what she must do, say, or think to appropriately return to her non conscious moral mode of being" (2010:69). This makes the individual an obligatory "point of passage" through which all morality must ultimately become meaningful, seemingly excluding imaginations about the good that institutions or collectives can aim at.[22] In other words, morality is not exhausted in individual action; as Peter Redfield (2013) shows, "Doctors without Borders" is an institutional answer, and an ongoing institutionalized attempt to deal with the moments of rupture—the

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[21] One might recall Brian Massumi's discussion of the 'virtual' as that which has spontaneous potential before it is closed down (Massumi 2002; cf Mazzarella 2007).

[22] I also do not want to foreclose the potential of studying ethics to critique familiar ethical notions. For Zigon, ethics requires attention to one's habitual dispositions in order to bring them into alignment with perceived moral norms. This makes ethics "the lifelong struggle to remake oneself in the face of finding oneself over and over again in a state of inauthenticity" (2010:71). Hence, a form of authenticity is the goal of ethics. However, in chapter 4 I will argue that authenticity is ultimately solipsistic, because it rests on fiction of transparently affirming one's own desires or hopes, which makes it unable to independently ground ethics.

question of how best to care for those whose sheer life is at stake—occasioned by crisis across the globe.

It seems crucial to push the question of ethics to include the individual as well as the collective, to understand how medical and scientific rationalities are part of responses to moments of rupture (e.g. when the right course of *care* is unclear). Certainly these rationalities are usually embodied in and carried out by actions of individuals, but I contend that to fully understand these rationalities, one must look beyond how subjects negotiate them, to examine them as productive forces in their own right. Here, it becomes important that a problematization can persist: brain death in the US, for example, remains a contentious issue because the status of the brain-dead patient remains unresolved, calling for continued work—as in the stabilizing of medical categories to paper over ruptures, or practices of memorialization to erase them (Lock 2002; Sharp 2006). I resist the move to subsume this under "morality", because these are repeated attempts to deal with unresolved concerns precisely because dilemmas have persisted. The fact that a response is more or less routinized may mean only that it is an available "institutional script" to resolve a recurring problem, rather than that it has been ultimately resolved.

In other words, there are certain rationalities that are essential to the work of ethics, which are "ethical" rationalities precisely because they are r*esponses to moments when the question of 'how to live' is at stake*. These rationalities are frequently around *biopolitical* issues, as "'politics' is reconfigured in more partial and provisional forms around problems of collective existence related to life itself" (Lakoff and Collier 2005). Linking rationalities concerned with problems of living (i.e. "ethical" rationalities) to biopolitics makes a sphere of practices, ideologies, and institutions outside of individuals' self-formation available for a study of "ethics". As will become clear, my arguments about the relationship between medicine and enhancement presume that medical rationalities can produce an ethical field through structuring medical practice and shaping the hopes of individuals.

Provisionally, then, I will use a definition of ethics as a response that takes place in moments of rupture, when the "right" course of action to take, values to hold, institutional intervention to pursue, form of social relationship to create, or meaning (related to ethical goals) to make of a situation is in doubt. The responses are concerned with practices of forming subjects or collectives with relation to some kind of value, or of achieving values in practices, institutions (possibly even objects). I draw on a notion of ethics that moves beyond the individual because I also believe this to be prerequisite to finding a form of ethics appropriate to the collective (Latour 2004). Fischer's notion of 'plateaus' is helpful, as conceptualizing ethics as sitting at an intersection (of technology, institutional forms, practices, and spheres of action like markets) makes clear that the ethical—as a moment of questioning—can be contiguous with politics. That is, questions of forming subjects and collectives are ethical in that they are a moment calling for a resolution and enabling creative formation, but they are also political in that solutions (present or future) may lie in collective forms of action. Joe Dumit, in his recent study of pharmaceuticals, outlines an ethic that aims to reduce risk absolutely, in the name of saving lives. Individuals are enrolled in this project by a concern for their selves, and healthcare professionals by their concern for their patients. This is a rationality powered by a certain ethics, which raises questions both ethical and political: "[w]hat is at stake here is the limit of the ethic of preventative medicine: the pharmaceuticalization of prevention….What criteria and procedures are available socially and culturally to determine how much bad cholesterol is bad and in need of treatment?" (2012:132). I argue that a careful analysis of ethics should attend to both ethics and politics, without conflating either into the logic of the other.

"Situated Problems"

In sum, I view ethics as being about a problematization in which the "good" or "how should one live" is at stake. Ethical dilemmas are what we might term situated problems: they emerge out of a specific context in which technology has intersected with some combination of practices, meanings, institutions, and relationships to produce a moment of rupture. Thus ethical dilemmas are produced *through* practice (rather than simply being observations about particular situations). These failures of familiar interpretation call for some resolution, which can take the form of individual or collective response. And resolution (if it is achieved) relies on those meanings already in play to find provisional solutions, which simultaneously re-work established norms.

This dissertation is an argument that tries to show how taking these features of ethics and ethical dilemmas seriously can provide more incisive and reflexive analysis. I offer this as a corrective to the abstract content of dominant ways of thinking about ethics (specifically the bioethics literature on human enhancement I engage). Seeing ethics as a productive form of action that responds to a breakdown is a critical link that entails closely attending to practice. Thus, I will make my argument ethnographically, that is by engaging the web of social dynamics, power differentials, practices of meaning, institutional setting, and economic structures, to historically and culturally situates the practices out of which ethical tensions arise. While those oriented towards an ethics based on universal norms might claim that what people are doing doesn't matter as much as what they *should* do, this misses the point. Ethics, to discern what goods are at stake and should be pursued, must involve what people are doing. One can, for whatever reason, argue that actors that they should be doing something differently, but one cannot claim to understand ethics by ignoring practice. Rather, if ethics are situated problems, an analysis adequate to the situation will involve working through that situation.

While I use an account of ethics as situated problems to sharpen my methodological focus, my project is less about contributing to a *general* theory of ethics or specify what might studied in an "anthropology of ethics". Instead, I am interested in the broader relationship between ethics and “problematization”. Stephen Collier and Andrew Lakoff write about “sites of ethical problematization”, which are “situations that present ethical problems—that is, situations in which the question of how to live is at stake" (2005).[23] They suggest that problematizations offer windows onto the ways in which those problems come to be, and "how the practice of human life and the *telos* of living are constituted and reconstituted" (2005). In other worlds, they suggest that analysts can *reflexively* engage ethical problematizations.[24]

Thus, I also mean "situated problem" in a second sense, using my account of enhancements to point to deeper tensions in those norms drawn on in those practices and discourse, and to raise general questions about the ethical ideals that are typically used to judge technological improvement (in the bioethical literature as well as public discourse). My approach is an attempt to clarify the ethical stakes of the present and enable a more reflective response. I turn particular attention to ethical questions raised about biomedicine, subjectivity, and capital, following other recent works in this field (Sunder Rajan 2006; Petryna 2009; Dumit 2012; Fortun 2008), seeing the emphasis on ethics in the turn to "the anthropology of ethics" as providing a way to more carefully define the field of practice at issue, in hopes of opening up new space for analysis.

In the next chapter I turn to my ethnographic material to characterize how enhancements are problematized in contemporary Germany.

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[23] Mike Fortun writes that the place of ethics is the "interval between the proverbial rock and hard place" (2008:268).

[24] In some sense, the link between a "problematization" for those who are analyzed and for the analyst might be in Foucault's (1997) observation that ethical technologies of the self responded to the problem "what kind of self should one be", a question which itself repeatedly arose as a result of the shifts in forms of subjectivation that Foucault outlines. By using an account of the problematizations that ethnographic subjects work through to reveal the general conditions of social life that structure the (shared) worlds of the informant and the ethnographer, it would seem that the "problematization" becomes a tool to reflect on contemporary processes of subjectivation that affect both analyzed and analyst, thus offering an opportunity for a more reflexive engagement with those processes. Paul Rabinow's (2003:11) comment that "the challenge of bringing logos and ethos into the right relationship was, and is, the challenge confronting anthropos" may have a similar project in mind, in which a challenge is to conduct one's "inquiries in a manner that makes the relations, connections, and disjunctions between logos and ethos apparent and available to oneself and to others, that is to say, to make those relations part of the inquiry itself as well as part of a life" (ibid.:12).

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Posing the "Systemfrage": Work and Achievement in Contemporary Germany

On a cold January evening I walked out of the subway station onto the *Hermanplatz*. It was quiet as I stepped onto the street, flanked by tightly packed four to six story buildings. I passed several small grocery stores selling Turkish and Arabic specialties, and a store displaying art made out of used electronics: a dinosaur, a spaceship, and what appeared to be a bear, all glued together out of old green and black transistors and cables. I walked through a park, lit only by the lights of a church oddly placed in the middle, turned onto a side street, and rang the bell. I was in Neukölln, where many apartments were still affordable, and were like Matthias': the lights in the entryway had stopped working, and only an occasional functioning light on the landing illuminated an old orange carpet and chipped paint on the walls. We sat in Matthias' kitchen, which was not much warmer than outside. He suggested I keep my coat on, and as he made some tea I noticed the old wooden countertops and green closets that appeared to be from pre-Unification days, when Neukölln was still GDR territory.

I was talking to Matthias about his experiences using drugs to study. He had started out majoring in philosophy, and had spent the past years working, reading, drinking, meeting with friends, and irregularly attending class. He and his friends had been very committed to the ideal of *Bildung* and thinking "free thoughts". Matthias claimed that in the past, this had been a viable way to live, since there were no restrictions on how long you could have student status, and in the worst case, you could probably find work. But Matthias had started feeling like he was under pressure. Why, I wanted to know.

"Well, I had a lot of pressure because I had been studying for ten years and hadn't achieved very much, and wasn't doing very much in general." He had switched majors to botany, which was easy to get into with low grades, he liked plants, and it had better job projects. "It was all too hard—so Ritalin seemed like a good solution. I maybe would have tried it if someone gave it to me, but in this context it was directly related to needing to prepare for an exam."

He went on to tell me that he had expected to be more successful at university, but started thinking more "pragmatically" because he needed to find a job, and wanted it to be one he enjoyed.

"I should say that I don't feel that Ritalin was my only option, or it was all over. It wasn't absolutely necessary at that point. I guess it was my last option a little bit in the sense that I felt like otherwise I would have to repeat the semester, and I wanted to get it done quickly and not be there forever. I still failed the exam, I repeated it a year later."

Since he had seemed to reorient his thinking, I wondered "So what do you think about all this talk of the achievement society (*Leistungsgesellschaft)*?"

"I don't know if it's everywhere--I can't really imagine that the demands have increased so much. I think it may also be related to diffuse fears abut failure. Feelings like '*die fetten Jahre sind vorbei*' (the years of plenty have passed) rather than actual problems with needing to work to much or something. Of course, things like short term contracts or a series of contracts have increased….but I can't judge the other stuff…Those people I know who have a job are pretty happy, or they're depressed because they worked hard with a series of short-term contracts, and were now fired. I do think that some of those people I know, for them the pressure to achieve is higher: join the workforce, it's time to settle down and build a house..I don't know if it's the actual pressure to achieve (*Leistungsdruck*) or all the discussions around it."

When I asked if he was interested in that way of living, he laughed.

"What do you think? Let's say at some point I'd like to have a heater in my kitchen!"

It had been bitterly cold in Matthias' kitchen; I had kept my coat on the entire time. I will pick up some of the many threads he mentioned in this chapter and the next (that of *Bildung*, of changing the self through medication). Presently, however, the image of the heater gives me an arc to organize his story: from someone who had come to Berlin, lived and worked as a student for a decade, and discovered that the model was no longer working because he couldn't heat his kitchen in the winter. By offering him a chance to get through his new major, Ritalin became a way to manage psychological anxiety and existential lack about what he felt was his own insufficient achievement.

Chapter Argument

Matthias' experience gestures towards why performance has become a problem, and how drugs can appear to be its solution. A common assumption about enhancements one finds in the Anglophone bioethics literature is based on a version of techno-determinism, in which medical or biotechnological discovery will inevitably lead to progress and improvement in social, individual, economic, or political terms. Thus, the argument goes, enhancements should be embraced. However, in Germany rather the opposite seems to be true, as there is widespread resistance to pharmacological improvement. Uneasiness with enhancement is a common theme in the "debate", a term I use to refer to the general discourse about "enhancement" in Germany: the public forums in which the topic is discussed (newspapers, TV, radio broadcasts, conferences, cultural events); the political interventions (educational projects, parliamentary hearings); the research projects and their "outputs"; and everyday conversations abut this topic. I will generally use the term "debate", because it carries the notion of a shared discussion or argument, pointing to a problematization that puts important meanings at stake which are being collectively addressed.

Since a key part of my overall argument is that enhancements should be viewed as a situated ethical problem, this involves describing the actual concerns in the case I am examining. This chapter and the next form a pair, in which I characterize what is at stake in the enhancement debate. In the next chapter, I show how technological improvement is often thought to be incompatible with various forms of self-development, or *Bildung*. This chapter describes the key problematization around enhancement, that many people feel standards for performance have become unmanageable, and believe drugs to be a troubling “solution”. I am interested in how psychopharmaceuticals appear to function in the German debate: not as heralds of progress, but as a sign of problems with current capitalist (i.e. neoliberal) forms of labor. In other words, enhancements reverse pharmaceutical potential for progress into a *symptom* of discomforts with the contemporary moment.

I draw on work characterizing the political economic shifts of the last decades, which have advanced a system favoring privatization, free market competition, the withdrawal of the state from public provision and the increased modeling of state services on private enterprise (Harvey 1989, 2007; Prasad 2006). Specifically, I build on a strand of research that examines social life under neoliberalism, or the “ethnographic manifestation” (Richland 2009) of current regimes of market capitalism (Muhlebach 2012; Molé 2010; Sunder Rajan 2006; Urciuoli 2008). “Recognizing the extent to which political economy entails problems of meaning” (Greenhouse 2010:4), I focus on the effects of the current iteration of capitalism on (individual and collective) subjectivity.

Further, I am analytically interested in what the German debate can contribute to the academic debate in bioethics. Again, I argue that in the German debate, many interpret enhancements as a symptom of the worrying expansion of economic rationalities. I claim that enhancements *become* problematic because they seem to be so *harmoniously congruent* with those rationalities aiming at maximization, competition, and efficiency. Yet, the academic literature does not typically identify this as a significant issue, arguably because these norms have been naturalized as being “desirable.” Thus, the debate about enhancements in Germany suggests that in addition to considering the potential of enhancements for progress, one could attend to the tensions in the ideals that are generally used to judge enhancements. In other words, denaturalizing the self-evident meaning of “progress” opens up a different vantage point on the question as to what forms of improvement are desirable.

Since my argument depends on showing how enhancements are understood with reference to these discourses, I first show how recent discourses about the decreased role of the state, global competition, and economic growth have valorized individual achievement (*leistung*), which I describe as neoliberal changes. A very brief review of the history of the enhancement debate in Germany describes how media reports have linked pharmaceuticals and performance in the past few years. After this context, I discuss anxieties about achievement in the three sub-debates (doping at work, colleges, ADHD among schoolchildren) that fall under enhancement, to argue that by appearing to be solutions to perceived problems of performance, enhancements are interpreted as a symptom of an out-of-control system of market-based competition and value accumulation.

The (Dis)Appearance of Germany's "Economic Miracle"

After World War II, Germany's economy was devastated, many urban areas destroyed, and the nation owed huge reparation payments. Yet, from the 1950s until the early 1970s, the economy grew at a high rate (often 8-10%), had an export surplus, and unemployment quickly became almost nonexistent. Called the post-War "economic miracle" (*Wirtschaftswunder*), this boom allowed the state to raise the overall standard of living by expanding state services. Beginning in the early 1980s, however, the state began withdrawing from many areas of direct provision, initiating a series of "neoliberal" political and economic changes that altered the relationship of the state to the populace. In the wake of these changes and their continued unfolding to the present, a pervasive anxiety about being under pressure to achieve, compete, or improve developed. This kind of worry was repeatedly referenced by those I spoke with throughout my fieldwork, which is linked to a particular set of expectations about the role of the state in caring for its citizens.

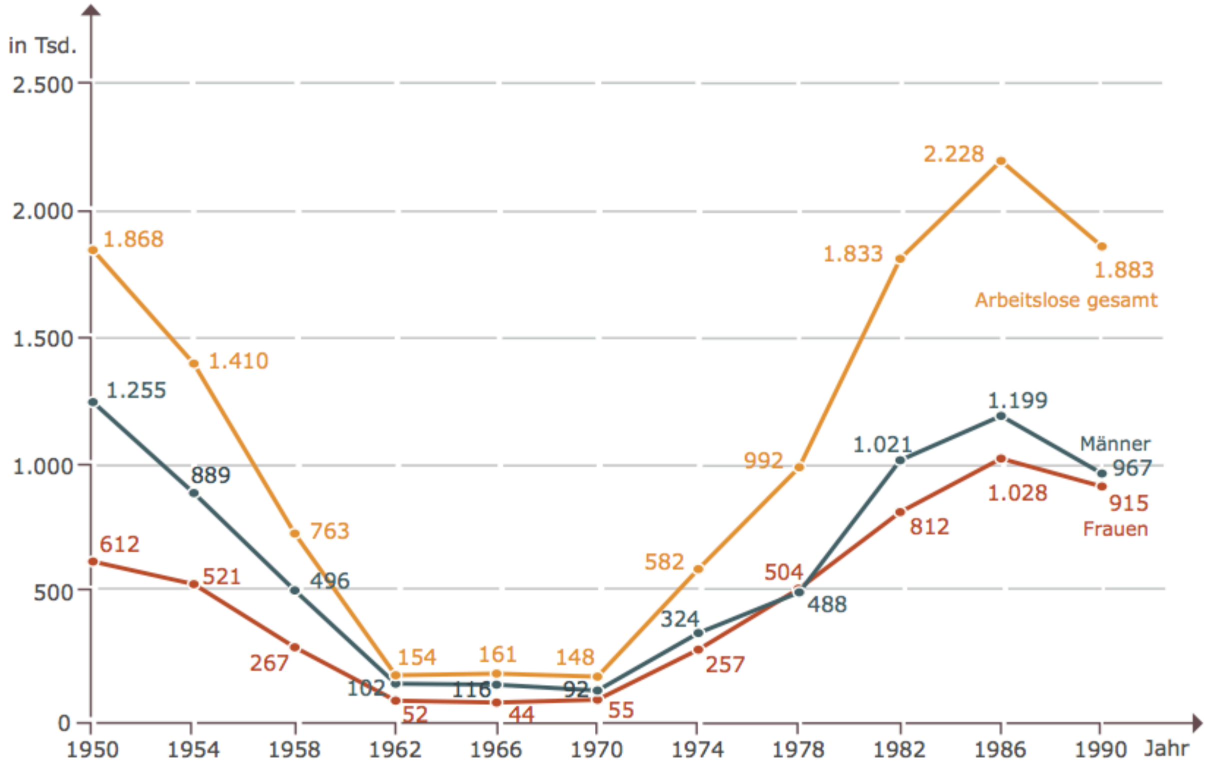

Figure 1: Unemployment in West Germany from 1950 to 1990, yellow is total count in thousands

Source: Die Entwicklung der Arbeitslosigkeit in Deutschland (available at: http://www.bpb.de/geschichte/deutsche-einheit/lange-wege-der-deutschen-einheit/47242/arbeitslosigkeit?p=all, accessed Apr 2, 2014)

European integration was an important driver of these neoliberal changes in Germany. A long-range goal of the EU was to create a pan-European market for goods and services, which required all monopolistic structures to be dismantled. Services like mail, telephones, water, and public transit were slowly privatized and deregulated. While these kinds of changes were also commonplace elsewhere, in Germany many felt especially acutely that the state was abrogating its duty to provide basic services. They complained that private companies were interested only in profits rather than in providing affordable or good services, so the state was in effect allowing the negative effects of competition and corporate profit seeking to reach into and damage people's everyday lives. This perspective has perdured, as even today, people regularly attribute problems with rapid transit in the Berlin area or the national rail system to excessive privatization; commenting on a spate of train cancellations, a union president claimed that "the pursuit of profits at the German *Bahn* is at the expense of the passengers, the workers, and maybe soon even safety".[1]

Integration also intensified the sense of global competition. Germany continues to have a highly regulated labor market that ensured relatively high wages. As EU policies allowed workers to move freely in Europe, and removed wage protections, suddenly competition for jobs was coming from nearby countries with different regulatory regimes. In Germany, access to professions has traditionally been highly regulated, as have prices for services. These features made it possible to imagine that loosening standards would lead to an influx of cheap (and poor quality) labor, depressing wages. With progressing integration, however, the discourse shifted, locating the most serious threats to Germany's national economy from competition not in Europe, but in Asia. Nonetheless, a sense of intra-European competition (for jobs, spots in universities, investments) remains acute.

Most important, however, were changes in the welfare state, and especially in the significance of achievement. During the post-War boom, the goals of West Germany's welfare system were to protect citizens against existential risks like illness, disability, or unemployment, as well as to redistribute the newly created wealth (Schmidt 1998; Eghigian 2000:279-80). This was part of a broader attempt to legitimate the newly established democratic state by managing the market and its effects on individuals, often termed a "social market economy" (*Soziale Marktwirtschaft*) pushed by German 'Ordo-Liberals'. In promoting economic growth, Germany tried to go further than many other Western states, attempting to secure a strong system of retirement, health insurance, and unemployment benefits. (Foucault 2008; Lemke 2001). Welfare

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[1] "Personalmangel Bahn-Probleme in Mainz Weiten Sich Aus." *Frankfurter Allgemeine Zeitung*, August 8, 2013. http://www.faz.net/aktuell/rhein-main/personalmangel-bahn-probleme-in-mainz-weiten-sich-aus-12452354.html.

services were a right, a service (*leistung*) that the government owed its citizens and for which they were taxed. About a third of the population was receiving some form of support, indicating how important the role of the welfare state was in daily life. However, the economic crisis of the 70s led to declining employment, which reduced government income while at the same time increasing the pool of those eligible for welfare payments. Facing a budget gap that seemed unbridgeable at the start of the 1980s, the government cut benefits, tightened standards for receiving payments, encouraged individual initiative, and made labor laws more flexible. After the Iron Curtain fell, the government decided to expand welfare services to the former GDR to expedite integration. Since the East German economy had virtually evaporated overnight, and had very little functioning industrial infrastructure, in the former East welfare payments made up two-thirds of the gross economic product (Schmidt 1998:138). Despite these large expenses, in contrast to the GDR, reunified Germany was not able to guarantee that everyone found work, and the range of welfare services offered was smaller.

***The* "Agenda 2010"**

The size of the welfare state became an urgent political problem when the technology-economy bubble burst in the late 1990s. The *Economist* called Germany the "sick man of Europe", with stagnating growth and high unemployment that many claimed was primarily due to the high taxes Germany imposed to support its welfare system (Sinn 2007). In 2003, then Chancellor Gerhard Schröder announced his "*Agenda 2010*", which implemented far-reaching reforms of the welfare system, prompted by the German economic crisis as well as the aim to become the "most potent and dynamic knowledge-based economy in the world", which EU leaders had pledged in the 2000 Lissabon Strategy (Butterwegge 2006:204). He introduced tax cuts, more flexible wage structures, heath-care and pension reforms, and deregulation of labor markets.

To justify the state's retreat, Schröder invoked a narrative in which high welfare payments (funded by high taxes on businesses) were on the one hand threatening the stability of the welfare state, and on the other the state was hindering individual achievement. By providing an extensive social safety net, the state was portrayed as vitiating individuals' desire to work and achieve, since they could receive the same services and income by "staying home." Schöder claimed that "a dynamically growing economy and high rate of employment are the preconditions for an effective welfare state, and thus also for a functioning social market economy" (2003). In other words, this narrative made a re-signification of achievement available, which emphasized that Germany's wealth and high standard of living—i.e. the continuation of an economic miracle—were more possible through individual achievement than through state redistribution. Around the same time, other politicians, like the Minister of the economic powerhouse Bavaria, Edmund Stoiber, called for a "renewal of civic understanding in Germany, the unleashing of powers that have already brought about an 'economic miracle' once before. We cannot understand ourselves just as taxpayers and recipients of state funds. We need to understand ourselves as citizens again" (Stoiber 2003). These rhetorics linked national economic success and welfare more closely to individuals, and thereby shifted care out of the state's responsibility: An environment friendlier to businesses and conducive to investment would increase the number of jobs, which would mean more tax income at the same time as fewer people needed welfare, effectively growing the welfare pot. In sum, the multiplicative effects of capital would increase the social good (Butterwegge 2006:204).

Schröder's Reforms made individual achievement a core part of his plan for the future , as reforms were intended to activate worker's individual potential for achievement (cf. Opielka 2008; Butterwergge 2006:193). His now famous charge was to "reduce the payments (*Leistungen*) of the government, promote individual responsibility, and demand individual achievement (*Eigen-leistung*) from everyone" (Schröder 2003). For unemployment benefits, this meant that unemployment and welfare, which had previously been separate, would be combined. Those who lost their jobs would receive unemployment (prorated based on previous income) for one year, then they would move into long-term unemployment which was identical with welfare. Schröder also promised that “whoever rejects reasonable work…will have to face sanctions” in the form of reduced welfare payments.

Unemployment reforms were more commonly called by their eponym *Hartz (Law number) IV*, and was controversial from the outset. *Hartz IV* was criticized for several reasons: first, it degraded those who were laid off but couldn’t find work after one year to the status of welfare recipients, essentially erasing their historically earned status as productive members of society, becoming what have been called the “losers” of the reform. Second, it also removed what had been a kind of firewall protecting the lower-middle-class from sliding into poverty by dropping payments to the lower welfare level after one year. Ten years after the reform, the *Frankfurter Allgemeine Zeitung* commented that “the fear of going from being a civil engineer to a street sweeper ate itself deep into the middle class”.[2] (FAZ 2013a). Perhaps the most contentious requirement was that the unemployed needed to accept any “reasonable work”, which was mainly determined in terms of distance traveled and pay received. For wide portions of the population, especially the middle-class, unemployment was seen as a form of social death from which you might not recover.[3] Several went to court to protest that the law was “unconstitutional” law, arguing that “*Hartz IV* violates human dignity. Whoever receives *Hartz IV*, cannot develop his personality freely, cannot choose his profession freely, and cannot move freely in Germany—all of these rights are protected by the Basic Law”.[4]

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[2] Astheimer, Sven, and Dietrich Creutzburg. “10 Jahre danach: Die Agenda 2010 – eine Bilanz.” Frankfurter Allgemeine Zeitung, March 13, 2013. http://www.faz.net/aktuell/wirtschaft/wirtschaftspolitik/10-jahre-danach-die-agenda-2010-eine-bilanz-12112119.html.

[3] It is not surprising that *Hartz IV* recipients were materialized in a genre of TV, a mix of docudrama, soap opera, and reality show, featuring unemployment recipients who were the worst incarnation of the anti-bourgeois: uneducated, lazy, and happy to be receiving state assistance instead of working. These people were *peinlich*, a term describing an embarrassment for the other, a person who is so out of touch that she does not realize she should be embarrassed (cf. Ege 2008).

[4] Anne Kunze, “Sozialleistungen: Hungern Gegen Hartz IV,” DIE ZEIT, December 6, 2012.

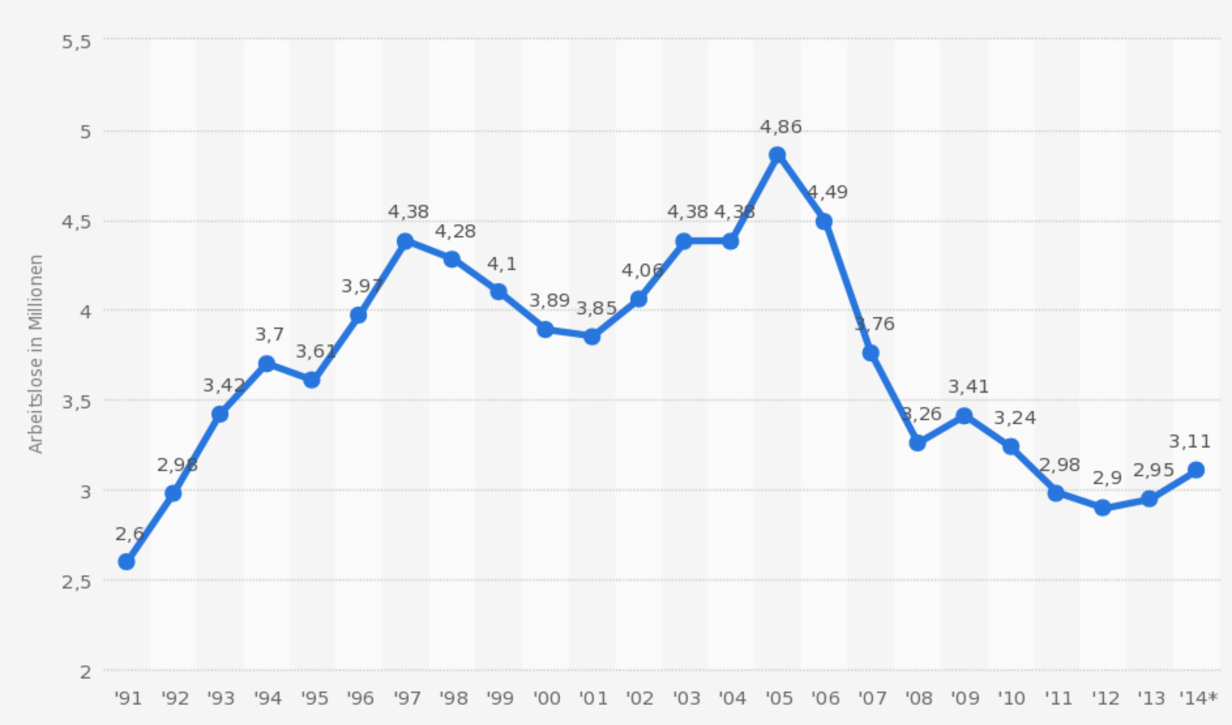

Figure 2: Unemployment in Germany from 1990-2014 (projected), total count in millions

Source: Statista (available at http://de.statista.com/statistik/daten/studie/1223/umfrage/arbeitslosenzahl-in-deutschland-jahresdurchschnittswerte, accessed Apr 2, 2014)

Proponents of the *Agenda 2010* have attributed Germany's recent economic strength to the 2003 reforms, seeing it as a sign that individual potential has been "unleashed". The head of the government's "Council of Economic Experts" claimed that the low unemployment numbers in the most recent economic crisis was the best evidence that "nothing other than the *Agenda* [2010] politics is alone responsible for Germany's strong international position".[5] Importantly, the Reforms are said to supposedly have guaranteed that "achievement will be rewarded" (*Leistung muss sich lohnen*), perhaps because it was felt that Germany was re-established as an "achievement-society".

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[5] cited in Brönstrup, Carsten. "Was Die Agenda 2010 Gebracht Hat." *Der Tagesspiegel*, March 11, 2013.

In sum, the discourse about work in Germany made individual achievement (*Leistung*) the solution to recent pressures arising from European integration, global competition, and the state's decreased responsibility for health and welfare; at the same time it has cast the guarantees of personal welfare into doubt. As I have noted, these institutional shifts can broadly be termed "neoliberal", which David Harvey defines as "in the first instance a theory of political economic practices that proposes that human well-being can best be advanced by liberating individual entrepreneurial freedoms and skills within an institutional framework characterized by free markets, and free trade" (2005:2). Neoliberal changes have occurred to various degrees and with various effects in other parts of Europe and the world, of course (Comaroff and Comaroff 2000, 2001; Harvey 1989, 2005; Muhlebach 2012; Prasad 2006), though in this chapter I am interested in their specific form in Germany, and how the details these broad institutional changes—particularly through rhetorics of "achievement"—intersect with discourses about enhancements.

***Anxieties about* Leistung**

Historically, achievement (*Leistung*) has been central to understandings of work in Germany. If one returns to its beginnings, the educated bourgeois middle class (*Bildungsbürgertum*), claims *leistung* as its own invention dating from the early 19th Century.[6] Through achievement, an individual could gain material wealth and social status, in distinction to the nobility, who had *inherited* their status. Germans frequently referred to themselves as living in an "achievement society" (*Leistungsgesellschaft*), which marks a cultural accomplishment on multiple levels: historically against the nobility, and institutionally in that society is oriented around promoting and rewarding performance (Arzberger 1988; Hartfiel 1977:7-48). Achievement has been reified as the "German work ethic", an instance of transforming perceived attributes into emblems of a unique, bounded, and discrete "culture" (see Handler 1988). Max Weber, of course, famously discerned a "protestant ethic" among the Germans (and in the West generally), that tightly linked

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[6] It could go even further back to the Enlightenment, in which participation in civil society in part meant the freedom to exchange goods that were the product of one's own "achievement".

individual achievement, visible success, and religious salvation (2001). Work in Germany was not only associated with asceticism, however, as bourgeois intellectuals who argued for achievement in the 19th Century claimed that work gave a distinct pleasure, and that "German work" was of a particular quality (Campbell 1989).[7]

The supposed assurances of achievement have been recently called into question. Labor reforms allowed more people to enter the job market, but also fractured the old model of secure, well-paying jobs that were expensive for employers (due to high social security taxes), instead promoting short-term, part-time, and temporary labor. While absolute unemployment fell in the following years, a consequence was that a much higher proportion, around 20%, of those currently working shifted to the low-wage sector. These changes created what was termed the "new poor". The news that "every fourth worker was earning low-wages" (i.e. less than the presumed minimum needed to live, around 8€/hour) re-ignited negotiations among politicians and industry to introduce a minimum wage, as politicians and unions were worried that people were living below a minimum standard, and, just as importantly, "work from which you cannot live does not have any dignity".[8] The emergence of the new poor underscored how the welfare system was perceived to have abandoned the interests of the less well-off to make Germany more attractive for employers and how encouraging "achievement" had also meant that the state had withdrawn its protective hand, reducing its protection of individuals against the effects of competition and globalization, thereby "directly" exposing individuals to market logics. A front-page article from March 3rd, 2013 in the weekly *Die Zeit* summed it up thus: "No one would still claim that the Germans are laying in the welfare hammock. Or that they think the state will help them, if they should lose their jobs". The middle class was not exempt, despite having reasonably

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[7] In a fractal recursion (Gal 2002), the capacity to achieve was mobilized post-reunification, as former Easterners, despite the valorization of work in the socialist GDR, were stigmatized as expecting their rich Western kin to pay their way because they were unable and unwilling to work (Berdahl 2009:95; Glaeser 2000). Of course, even for the former-Easterner who is willing to work, the felt odds are that he will fail, as depicted by the Oscar-winning film "The Lives of Others". More recently during the Euro Crisis, Germany was financially vouching for the Greeks, though a common sentiment was that the Greek's fiscal problems resulted from their sense of entitlement coupled with an insufficient drive to achieve.

[8] Esslinger, Detlef. "Würde Und Bürde." *Sueddeutsche Zeitung*, October 31, 2011, 2.

secure and highly taxed jobs. They were "not poor, but always getting poorer",[9] feeling like "nothing" was left over from their wages at the end of the month, a comment about being unable to "cash in" on one's *leistung*.

When people spoke about being anxious about work, or trying to find a job, the specter of unemployment was never far away. Their only real option seemed to be to accept the pressure, responding to the imperative of needing to achieve to prove one's value to the company. Especially for those in precarious work, but even for those who seemed to have a secure job, the terms of the discourse had shifted. Downsizing was a pervasive fear; I noticed how in everyday conversation, the news that a job will possibly be eliminated, or a temporary contract not renewed, was simply a perpetually present risk. People often spoke of being directly exposed to "market demands", an index of how changes in labor markets were immediately naturalized into requirements *individuals* were responsible for. One might interpret this fear as a different take on what Beck (1992) called the "risk society": people were less afraid of being exposed to large-scale environmental disasters than to uncontrollable and unforeseeable economic perils from global network of labors and capital—which people felt could only be combated by individual achievement (and even then, not always successfully). They were clear about not being able to rely on the state for help: after the government had to bail out several banks that lost money speculating on sub-prime housing stock, several people told me that acting according to "true capitalism would have meant letting the banks fail". They had accepted the principle that the risks of the market need to be borne by the actor who takes them, only to discover that the state would protect banks and the financial "system" from market fallout, but not them.

It would seem, then, that anxiety has become tightly linked to achievement. Writing in the 18th Century, Goethe (1997) noted in his *Italian Journey*: "It must be a nordic perspective, where one thinks everyone who does not anxiously (*ängstlich*) work all day must be loitering." As Goethe makes clear, anxiety (*angst*) about work is familiar; my claim is that the pressures to

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[9] Schmitz, Thorsten. "Kassensturz." *Sueddeutsche Zeitung*, July 4, 2013, 3.

achieve—and the attendant anxiety about achieving enough—are felt to have intensified recently. Even for those who were not unemployed, the recent welfare reforms were a key moment in the resurgence of an ethic of achievement, as they made the national future contingent on individual performance, and seemed to transform the state into a disciplinarian who cajoles performance out of its citizens by offering only a socially undignified existence the alternative to the vicissitudes of the free labor market. This recalls Andrea Muehlebach's discussion of the "exclusionary order" of neoliberal market changes in Italy, where the participation in forms of relational labor allows those who have been marginalized from contemporarily labor markets to "approximate a form of social belonging institutionalized and cultivated during the Fordist era—the capacity to belong and be useful to the world through waged work" (2011). In Germany, different exclusionary orders intersected: those from the former East had trouble "catching up" to the economic standards of the West, and of not falling behind other countries in the trans-European market. Nonetheless, these were largely submerged by the sense that the "average" German worker felt she was trying to avoid being excluded from the labor market generally. This instituted an affective horizon that was based on a *exclusionary* rather than an inclusive welfare state, seeming to aim at producing subjects who continued to "long" for social incorporation through waged labor, despite it having become an increasingly tenuous proposition.

Popular discourse made pressure from work, and anxiety about it, responsible for the experienced loss of boundaries (*Entgrenzung*) between work and the rest of employees' lives. Employees felt they were expected to respond to emails within several hours, regardless of the time of day, take work home with them, or stay late whenever necessary. Blackberry phones became symbolic of this transgression: in a highly publicized move in late 2012, Volkswagen countered by reprogramming its servers so that no emails would be forwarded to employees' Blackberrys past 6pm, and the Minister of Work called for "crystal clear rules" limiting cell phone availability. (Ironically, when it was discovered that her own Department had no such regulations, public pressure forced her to formalize guidelines.)

In the popular imagination, these blurred boundaries between work and leisure time, and by extension between the worker and her self, stemmed directly from the pressures for profit. Carmen Losmann, who directed a critically acclaimed documentary "Work Hard, Play Hard" (2012) on contemporary work in Germany, posed the problem most clearly when she explained that "I made this film because I was interested in why people worked 40 hours a week when they had to clock in and out, and worked 60 hours when the clocks were removed". Her film showed how management exhorted workers to merge their goals with those of the company, to internalize standards of performance, and to see themselves as "an entrepreneur within the enterprise" ("*Ein unternehmer im Unternehmen*"). Others echoed the theme that every worker is a manager, both of themselves and their responsibilities for the company; the goals of the company should be the goals of each employee (Bartmann 2012). Here, "every" can be taken literally: Losmann told me that a CEO told her that in his company, every employee from management down to the cleaning crew had agreed-upon performance goals, which she felt put pressures about fulfilling benchmarks in the shape of weekly or monthly goals on which the workers' jobs and company profitability are thought to hinge.[10]

In sum, I argue that the discourses around achievement were experienced along different axes, ranging from a pressure to stay employed, to a diffuse sense that achievement and performance defined the contemporary work ethos; to a feeling that one always needed to be ready to work (or work whenever possible), to a fear that one's performance at work was more important than anything else. Discussions about performance improving medications are taking place in this context of worries about naturalized demands for achievement. After a brief history of the debate, I discuss the three major groups in Germany who are regularly discussed as instances of healthy people pharmaceutically improving their performance: workers in the workplace; college students who use study drugs; and school-age children who receive

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[10] Anxiety in work was mirrored in popular literature, in novels with characters laboring under constant imperatives of optimization and controlling (see the recent "In the Box" by Jens Sparschuh, or more famously, Thomas von Steinaecker's "The Year in which I stopped worrying [about work] and started dreaming").

medications to treat ADHD. In each case, neoliberal market relations or arrangements are seen as placing increased demands on individuals, which creates situations in which enhancement use becomes plausible and popular. Though work might seem distant from the latter two, one could argue that work is, and historically has been, central to capitalism and (the labor form of) value creation; at the same time, work is also the condition of possibility for social recognition and self-realization (Donzelot 1991; Kocka 2009; Muehlebach 2012). In other words, shifts in the relationship of achievement and work are unlikely to go unnoticed, especially since work is an inevitable endpoint of education, and the neuralgic point at which concerns about achievement, self-development, and the "good life" converge.

A Brief History of Enhancement in the German Media

The media coverage of enhancements has paralleled the rise in rhetoric about achievement. I do not have the space to elaborate this here, but in the years before coverage exploded, enhancements were occasionally mentioned. From the mid-1990s onwards, the trajectory moved from reporting on a range of different medical improvements (e.g. steroids, Viagra, Prozac, hormones, and anti-dementia medications) to reporting almost exclusively on Ritalin and similar drugs around the middle of the last decade. Problematic drug use became closely linked to work or school, and served the singular purpose of increasing achievement.

Coverage surged in 2009, solidifying this association. A report in the scientific journal *Nature* conducted a non-representative online survey of website visitors, in which 20% of those who responded admitted that they had used performance improvers (Maher 2008), and a group of senior doctors, scientists, and ethicists, as well as the *Nature* editor, authored a paper arguing that the use of performance improvers should be liberalized (Greeley et al. 2009). These scientific news reports received lots of coverage in the national media, often of a more critical tone, pointing out that "it has been known for several years that increasing numbers of scientists and students in US labs and at universities are improving their ability to perform with prescription medications", though too little was known about the long-term effects of the drugs (Maier 2008). In early 2009, when a major insurance company (*Deutsche Allgemeine Krankenkasse*, henceforth: DAK), claimed that 5% of the workers they surveyed in Germany used performance improvers at work. The typical gloss on these results was that "the times in which humans need to work hard physically are over in our latitudes. Instead he is challenged intellectually in the information age, his brain needs to work more and faster than ever before—for which drugs are increasingly used".[11] Finally, taking the *Nature* report as its model, a group of German physicians, legal experts, and ethicists in late 2009 released "The Optimized Brain", which became known as the "*Memorandum*", arguing that a more liberal approach to performance improvers should be carefully considered (Galert et al. 2009). As the *Frankfurter Allgemeine Zeitung* wrote (October 10, 2009), echoing the critical tone of many reports, "in their plea for continuing to remain on the optimization track, there is no answer they are not ashamed to give…Maximal efficiency demands minimal restriction". In the extensive media coverage of enhancement after 2009, performance (*Leistung*) has played a central role, and has almost exclusively concentrated on *cognitive* improvement.

The term "(neuro-)enhancement" is now widely used in the public debate, though more often the pejorative "braindoping" (*Hirndoping*), or alternatively the neutral "performance improvement" (*leistungs-steigerung*) is mentioned. This semantic difference indicates that the debate in Germany may not be about exactly the same issues as the Anglophone bioethics debate (despite the bioethical term "(neuro-)enhancement" suggesting a label capturing the *essential* features of these varied phenomena, if not a unitary phenomenon). In fact, problems related to *Leistung*[12] are a main focus of the public debate.

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[11] Zittlau, Jörg. "Schneller Arbeiten - Fünf Prozent Der Arbeitnehmer Kämpfen Mit Drogen Gegen Schlechte Laune Und Konzentrationsstörungen." *Berliner Zeitung*, December 23, 2009.

[12] I use *Leistung* to refer to two terms interchangeably: "achievement" and "performance" (in the sense of accomplish a task rather than effecting a 'public' presentation). To "achieve something" is to produce a *Leistung*, or one's "performance" (*Leistung*) can be judged.
Interestingly, the verb "enhancement" simply means improvement or augmentation; but this rather generic meaning has been generally submerged by the emphasis on the performance aspect of enhancement.

I asked Klaus Lieb, who had written one of the first books on enhancement, which he terms "brain-doping", about his perspective how the debate developed in Germany and why he thought it was so prominent. He felt that "The debate became important while I was writing my book [published in 2010], and the Memorandum made it a big topic as well. Before that it was occasionally mentioned with certain psycho-pharmaceuticals—like *Prozac Nation* in the USA—but of course now there is the context of the G-8 schools, more work for employees, the Bologna process, and overall the topics of 'Performance society, exhausted society, tired society, burnout—everything is going in this direction."

As Lieb says, the context of concerns in the German debate matters to understanding it: he refers to the changes in primary and secondary schools, changes in the labor market, and reforms to university education, respectively. This suggests that questions of ethics are discursively linked to the specific context in which the technology is being used, which shapes what will become an object of concern in various settings. Thus, In the rest of this chapter, I examine the contemporary German enhancement debate, focusing, in order, on the three sub-debates in which excessive demands for achievement driven by economic arrangements become manifest through attempts to meet those demands with pharmacology: doping at work, at colleges, and treating ADHD among schoolchildren with medications.

Worries around Achievement I: Doping at Work

It was probably going to be the last warm day of summer: sunny, pleasant enough to be outside without a jacket, but the morning light already had a tired golden hue, marking the sun's slow retreat into the fall. I was meeting the head of a study about the effects of work environment on workers' use of performance improving drugs at a government institute. A friendly attendant greeted me, who seemed eager to help, perhaps because there was little going on otherwise. As I was led through several glass-walled hallways, I was struck by how calm and quiet the building was: with lots of glass, white doors, and freshly painted walls, it exuded the understated, organized, and sober, German bureaucratic ethos.

The researcher, whom I'll call Dr. Meisel, had a large office with a view of the garden outside, as well as a round meeting table that only the relatively powerful have. We chatted for a few minutes about the US, where some of her family had lived, before talking about the study itself. Dr. Meisel explained that her department studied the effects of work on mental health. The project we were speaking about was started because it was important now, and was expected to become more important in the future, since "neuro-enhancement is about mental health, and cognitive performance. We have been seeing this topic in the literature for a while. Before the DAK there was the Nature study. …Then there was the Memorandum…it was research that was pretty prominent in the media."

These reports had raised several questions: "Reasons for taking neuro-enhancement are related to work as the DAK study showed, but we don't know which work conditions or causes lead to neuro-enhancement use. We do know that psychological stress in the workplace plays a huge role, it's increased a lot in the past few years. On the other hand, not everyone who complains about psychological stress uses neuro-enhancement. So it's interesting to find out what the relationship is between psychological stress at work and individual personality and coping strategies. That's what we're trying to find out."

"Is there a strong political will to improve work conditions?" I asked.

"Yes, there is. That's what the Ministry of Work deals with. The topic 'mental health in the workplace' has priority. Van der Leyen [the Minister of Work] is very engaged with this topic. She just recently said something about the loss of boundaries of work and leisure time, that we need to limit constantly needing to be available."

"Do you feel like the topic of mental health and psychological stress at work is becoming more important? I feel like it has."

“Yes. Absolutely.”, she replied firmly. She was looking me straight in the eye, and her voice did not waver; she spoke with a measured concentration, conveying her sense of the import of the topic we were discussing. “Mental health—burnout, depression—it's definitely the case that it keeps getting more important. There are three important points here: the prevalence of depression--and possibly burnout, we need better data—is pretty high among workers. Then mental illness plays a big role in work disability, there are lots of people who are [physically] sick because of mental illness. [Finally] of all types of illness, mental illness is the most commonly the cause of early retirement.”

Somewhat later, she returned to this issue, to say that “On the one hand we have the increased importance of psychological stress on the job, we have good data on that. And then there are indications that 20% of people are willing to accept risks to use neuro-enhancement. This combination implies that this topic may be more important in the future.”

Here, Dr. Meisel pointed to the crux of the matter: the confluence of psychological stress with the belief that people would use medications to improve performance on the job. Even though she had a nuanced view, waiting to see the results of her research before judging whether enhancements were widely used, she accepted that the current arrangement of work conditions made it plausible to take medications.

Her interpretation was widely shared. The DAK study from 2009, which was the first data of any sort for a population in Germany, had surveyed 3000 of its members, taking a sample that was representative of their membership as a whole (around 6 million). They found that most of those surveyed did not use medications (either prescription or OTC) for performance improvement at work if it was not “medically indicated”, and thought it unnecessary or illicit to do so. However, 20% of people would consider using them, and 5% had already done so. The DAK had asked various experts for their opinion on how work and neuro-enhancement were related, who concluded that the “increasing psychological pressures on individuals” were important. But “even more causal” was the “ideal of the 24-hour service society. In the service economy, which is active around the clock, in which—depending on the sector—a high concentration and unflagging vigilance are presumably no longer a wish, but perhaps the norm" (DAK 2009:84). The central conclusion the DAK drew was "From the perspective of the DAK the decision to take medications in the sense of 'doping at work' for more motivation or higher ability to withstand stress is not a solution for work-related problems like (excessive) pressure to achieve…concentrated, creative, career-conscious: whoever thinks they always need to be perfect and reach for pills to increase performance is living dangerously" (ibid.:107).

According to the DAK, then, the configurations of the workplace, and the contemporary labor market in general, placed workers under so much strain that taking medications seemed like a "solution". This continued to be the primary explanation in media reports and subsequent discussions, often underscored by dramatic announcements of an epidemic. Strictly speaking, while the DAK results only applied to their 6 million members, who were overwhelmingly in low- to mid-level white-collar jobs (office managers, secretaries, etc), reports rarely conveyed this limitation. Instead, they claimed that 5% of all workers were doping, or that an astounding "two million" of the 40 million workers in Germany were regularly taking pills.

Reports about doping at work reiterated the causes the DAK identified. An article on the second page of the *Berliner Zeitung* from February 13, 2009 claimed that "many employees obviously cannot deal with the increasing demands (*Anforderungen*) in the workplace. Even though they are healthy, they take medications that are calming, stimulating, or help them concentrate…Situations for use are constant deadlines, demanding working conditions, or psychological stresses and exhaustion. Also the wish to work better and faster than colleagues." A (perceived) lack and sense of competition is thematized, which drives people to use drugs; they feel so overwhelmed that drugs seem like a way to afloat: "the head of the DAK, Herbert Rebscher, sees the causes for doping at work—especially in times of economic crisis—as closely connected to increasing pressure to perform and compete".[13] Another report linked different scales of the economy together: "Germany's future is in the knowledge-society (*Wissensgesellschaft*)…that is not without effect not in the labor market. Machines have long replaced human muscles. But brain-workers (*Kopfarbeiter*) live from concentration and creativity. So its not surprising that increasing numbers of women and men try to meet these demands through doping in the workplace. They want to lose their fear, think better, and be in a good mood—even though the demands in many jobs are increasing".[14]

Significantly, the changes in the economy, the anxieties of workers, and the presumed *effects* of drugs intersected. These medications were possible solutions because they were thought to have the kinds of material effects that were needed: producing higher concentration, vigilance, or better mood. One could characterize this work as "immaterial labor", in which "information, communication, knowledge, and affect come to play a foundational role" (Hardt 1999:93; Lazzarato 1996). Work done by "managers" or communication professionals is largely "immaterial", often requiring "psychological" capacities like emotional stability or enthusiasm, and "cognitive" abilities like intelligence or concentration. Workers must display a high level of flexibility; and they must use networked forms of communication like the internet.[15] However, because they are not directly linked to material resources, economic imperatives appear to be able to simply ratchet up demands placed on workers. For instance, advances in communication technology mean that more units of work can be completed in the same amount of time or more knowledge can be required. Drawing on a term from widely used in analyses of labor, this can be termed a "speed-up"[16] (Rinehart 1997; Wright and Lund 1996), which is often seen to be

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[13] Frank, Charlotte. "Viele Deutsche Dopen Sich Am Arbeitsplatz." *Sueddeutsche Zeitung*, February 13, 2009, 1.

[14] Ehrenstein, Claudia. "Doping Am Arbeitsplatz Nimmt Zu - Mit Köpfchen, Bitte!" *Die Welt*, February 13, 2009.

[15] These reified capacities are valorized because they are needed in a "knowledge-society" (*Wissensgesellschaft*), a term that, among others, describes the economic significance of knowledge and information as Germany tries to stay globally competitive. Chancellor Angela Merkel claimed that Germany "has made great headway in recent years towards becoming a knowledge society", even if more investment and education are still needed to be done to get there.

[16] The term used is *Arbeitsverdichtung*, literally an "increase in work-density".

responsible for the recent rise in work-related disability, mental illness, and early retirement. Or in the case of doping at work, it served as an explanation for the use of pharmaceuticals.

Indeed, doping at work could easily be linked to familiar signs of work-induced pathology, alongside familiar signs like the incidence of mental illness (including "burnout"), substance abuse, or early retirement. Neuro-enhancement could be understood as following on familiar attempts to chemically deal with work, like coffee to get up in the mornings or alcohol to relax in the evenings; it was "pharmacological help to dampen or stimulate, whatever is required".[17] But the difference between alcohol and pharmaceuticals was perhaps another source of concern about standards for performance: medications appeared to realize the (disconcerting) fantasy of a worker who perfectly fits her workplace. If Fordism, as Gramsci said, was trying to produce "a new type of worker and a new type of man" whose *habitus* would fit the rhythms of the factory (cited in Muehlebach and Shosan 2012), enhancements brought that quest into the "neoliberal" present: enabling one to be individually and flexibly "tuned" to one's job.

As I have shown, the primary reasons for doping at work were believed to lie in workers' pervasive lack (of capacity, energy, time, enthusiasm, etc.) when compared to what their work demanded. Individual biography, pleasure-seeking, desires for experimenting, or any of the myriad other reasons why people might take drugs (cf. Nichter 2011) were left aside in the face of the naturalized perception of the workplace as a site of overwhelming anxiety and impossible demands.[18] My point here is that in this popular imagination, enhancements are less about making someone *better*; they are attempts to *keep up* to meet inordinate standards, enabled by trust in the almost magical potency of prescription medications.

Beyond worries about the effects of work, doping at work deserved attention because it was a biopolitical problem, in the sense of managing the intersection of the nation's biology and

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[17] Bartens, Werner. "Jeder Wie Ers Braucht." *Sueddeutsche Zeitung*, July 14, 2008.

Or, more fittingly, the "uppers" and "downers" consumed in the US in the 1950s and 60s (cf. Herzberg 2009).

[18] In the next chapter I discuss the particular attention paid to the effects of capitalism on worker subjectivity in Germany (a concern shared elsewhere as well; see Ketagbian 1997).

the economy (Foucualt 1997). The most commonly cited groups of workers that enhance are "managers"[19], academics, "creative professionals" (usually advertising), and those in the financial sector; occasionally, doctors or journalists were also mentioned. On the one hand, they were very important to the "knowledge" economy that was thought to be Germany's competitive advantage in the international market. On the other, if work was implicated in illness and disability (e.g via addiction to enhancement drugs), this represented an urgent political problem. The proportion of those taking early retirement due to psychological factors between 2006 and 2009 increased from 33% to 38% of all those in early retirement, and this group of early retirees was estimated to cost 1.6 billion euros a year, excluding lost wages (Kroll et al. 2011). There was also a reported increase in sick days overall, particularly due to "burnout" (see chapter 5). In any case, work-induced disability was doubly expensive, because it cost the nationalized health insurance and companies money, and lost wages—particularly those of early retirement—meant lost taxes, which many feared would at some point mean that there would not be enough people paying taxes. In short, doping at work was a problem of individual achievement, but also national welfare—explaining why neuro-enhancement at work was important enough to be of concern to politics, and why broad efforts were mobilized to understand it (e.g. extensive funding, drawing the attentions of official institutes).

Worries around Achievement II: Study Drugs

On a rainy Saturday in January, I was in Berlin-Mitte, near the iconic heart of Berlin. If you head west down the picturesque avenue 'Under the Lime Trees', you will come to the Brandenburg Gate, which is around the bend from the *Bundestag* and *Reichstag*. Heading east, you will come to the famous Alexanderplatz, dominated by the candy-striped red and white TV tower. I was meeting Christoph, a student I was interviewing because he regularly used study drugs. He hailed

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[19] Mangers are usually those working in some leadership capacity in small to medium sized businesses that make up most of the German economy, akin to a 'mid-level' manager more than the executive, or manager in a large US/multinational corporation.

from a small city in the south of Germany, and was in Berlin studying mechanical engineering. We were looking for a quiet coffee shop, which was almost impossible; neither of us had considered that we were in the middle of one of Berlin's most exclusive shopping districts. This was the formerly dilapidated East Berlin, but post-reunification huge sums of money had been invested into transforming this part of the city into a cosmopolitan metropolis. As we wandered past designer boutiques and chocolate stores, half an hour later we ended up at a coffee shop. Christoph was becoming agitated. He was in the midst of preparing for exams, and it was the weekend, so time was even more valuable than usual. As we sipped our coffees, he explained how this was not an uncommon situation:

"In the last weeks we had class for 50 hours a week, that means you get up at 6:30am since class starts at 8am. Lunch break, class until 5pm, then we have computer lab. It's an enormous amount of stress…If I'm quick about it, I'm lucky to be home at 9pm. Monday to Friday." It seemed like an impossible schedule to me.

"Is that tougher than usual?", I ask.

"Yeah, that's exam time. I just don't like that you are placed under such a huge amount of pressure, " He paused, then continued, "I think we're being prepared to completely sacrifice ourselves for our jobs. We already put so much energy into this education……I think they are trying to condition the people [to the idea] that with enough work you can achieve anything in life."

I followed up on this: "why is it so intense?"

He explicitly saw this as a consequence of the job market: "I think the economy (*die Industrie*) is producing the pressure. You don't want people who are super talented in math or physics, you want to see people who are able to deal with the pressure." Not that hard work was at all antithetical to Christoph, but he felt that his current situation was enough to warrant taking medications, "if I take Ritalin and ephedrine, I am doing that so I can do what I need to do for my studies….It's just about 'how much can I sacrifice for my studies'? I think that's what the employers want to see later on."

More generally, he explained to me later, it was also related to achievement. "So everyone tries to increase their performance (*Leistung*), because that's just demanded?" I asked.

"Yes, it's just suggested from the outside… if for example the job is really important to you, you will increase your performance. That's what a job is like: everyone wants to improve their performance. Everyone wants to move upwards, always doing more, to be better than your colleagues." He added that it was common for people to take something for their performance already, naturalizing the assumption that one takes psychoactive substances to perform, saying "That's probably why so much coffee is being drunk in Germany."

Bildung ***Reloaded for the 21st Century: Anxiety and Media Hype***

For Christoph, as for other students I spoke with, the pressures they felt to achieve partly explained why they used performance improving drugs.[20] In the debate about enhancement, it was typically declared to be the *sole* reason for taking drugs. Psychologists, who were thought to be knowledgeable because of their experience providing campus counseling services were regularly quoted as saying that "Stimulants, pills, or alcohol are an outlet for pressure to achieve (*Leistungsdruck*), exhaustion, or fears about failure."[21] Various "self-experiments" with drugs like Ritalin buttressed this interpretation, since the authors seemed to voice a generalized "student" perspective: "I feel pressure to shine in my studies, so I have a chance on the job market…I want a job during a worldwide recession."[22]

Claims that students were using study drugs to deal with the workload and expectations were one interpretation of how students were responding (perhaps unwillingly) to recent changes in German higher education, which were attributed to the "demands" of the job market. In the late

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[20] Though it was not the main reason, as I discuss in chapter 4.

[21] Baentsch, Oliver. "Viagra Fürs Gehirn." *UNICUM: Das Hochschulmagazin*, June 2008.

[22] Anonymous. "Ich Bin Ein Zombie, Und Ich Lerne Wie Eine Maschine." *ZEIT Campus*, February 18, 2009.

1990s, a common narrative was that while German graduates were highly educated, they were typically in their late 20s when they received their first degree, much later than the European average. Students were not entering the workforce as productive employees early enough to be competitive with other countries.[23] Those who wanted a more structured and faster education complained that there were far too many *Bummelstudenten* (literally "sauntering students") like Matthias at universities. Defenders of the system argued that the university was an ideal environment where students could explore their interests and truly educate themselves.

In 1999, politicians and educators from the European Union member states met in Bologna, Italy, to discuss the "harmonization" of higher education, agreeing on a set of regulations that standardized how academic degrees were to be awarded and compared. The Bologna Reforms were primarily initiated to increase the EU's economic competitiveness, specifically to promote research and collaboration in the EU, respond to international economic pressures, improve the preparation of students entering the workforce, and further the conditions for a European network of educated, skilled, and mobile laborers (Keeling 2009; Welsh 2010). In Germany, the reforms were put in terms explicitly stating that the personified "economy" (*die Wirtschaft*) needed students to be better prepared for work, and to be finished faster. The most important changes that resulted were standardizing majors, introducing time limits, and adding 'career skills' to the curriculum (recalling Bonnie Urciuoli's point that "the neoliberal imaginary is embedded in a habitus that develops in the lives of young people well before they hit the job market" (2011:167)). Around the same time as the Bologna Reforms, many universities started charging tuition, which added another impetus to finish within normative time.

Quantitative measures of achievement became more central to students' future success and self-development. Curricular reforms essentially split the curriculum into internationally recognizable BA and MA portions that largely corresponded to the "preliminary exams" and "Master's" degrees they replaced. It was widely assumed that students would need a master's

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[23] More cautious voices disagreed with this interpretation, because while it was true for students, it was not true for those who had received degrees in Germany's well developed vocational and apprentice system.

degree to find a job; and a general consensus was that one "was not really educated (*gebildet*) after the preliminary exams", which represented only a basic level of education. However, there was space for only about one third of BA students to continue into an MA program, selected according to the BA grade. The lack of available spots was often termed the "master disaster", and many students I spoke to were preoccupied with their prospects for getting an MA. For one student, her program had told her on the first day that "only a third of you will be able continue", so students' very best efforts were required.

This confluence of structural and curricular changes, and general anxiety about the workplace, seemed to produce a compulsion to achieve among students that provided an apparently self-evident, widely voiced explanation for reaching for drugs. Media reports frequently claimed that students are already using enhancement medications. Even the mere possibility that drugs could be being used for enhancement was taken as evidence that it was taking place. For instance, in 2008, a report by a major German insurance carrier presented data indicating that students were prescribed about a third more antidepressants than their age-matched peers who were working, and antidepressants made up 10% of all medications prescribed to students. In the media, this meant "apparently performance improving substances are being widely used",[24] a trend that professionals could ostensibly corroborate, as the director of an addiction clinic claimed that "in our clinical practice we have the impression that neuro-enhancement has increased among students and in the workplace…ten years ago we hadn't seen this phenomenon, it's surely doubled in the last three to five years."[25]

Attributing drug use to pressure may have been plausible because it was congruent with dominant discourses valorizing achievement. One person, a bioethicist who had several children, pointed out that "We're all getting extremely pushed (*gepusht*). Parent-child relationships, friendships, work relationships, all of that is dominated by 'we need to function, we need to perform (*Leisten*), we need to be successful'…[then] you get a problem in that a significant

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[24] Schuh, Claudia. "Universitäten: Doping-Kontrolle Für Studenten." *Sueddeutsche Zeitung*, March 10, 2008, 16.
[25] Herden, Birgit. "Die Gedanken-Beschleuniger." *Sueddeutsche Zeitung*, December 11, 2008, 16.

portion of the high school and university students *of tomorro*w think they maybe need to use these drugs." Along similar lines, media reports asserting that taking drugs to study was already a "trend" in the USA pointed to America as a place where people were so "pushed" that many students were already using enhancements on an everyday basis. Such a shared space was arguably not incidental: the United States typically functioned as a foil for developments that were seen critically, like demands for work in excess of European standards or the rising use of medications.

And, as in the workplace, the pressure to achieve could become pathological. The worst-case scenarios were anecdotes of students who were hurled into psychological turmoil as the pressure to achieve made them incapable of living normally. "Burnout" might ensue, a condition usually afflicting workers (paradigmatically it affected managers who had high levels of responsibility and stress). I spoke with two psychologists who led student counseling services at universities in Berlin, and both reported that they had seen increases in the symptoms associated with "burnout" (despite their misgivings about the term). The implication, in other words, was that students now had the same demands and expectations placed upon them as the captains of industry.

All of the reports about study drugs were possible *despite* the obligatory disclaimer that very little or no solid data *at all* existed about students using performance improvers. Relatively good data about student use did not exist until 2012—data that was generated partly as a consequence of the media panic about study drug use. At the national conference of addiction counselors in Berlin in December 2012, Elke Middendorff presented results of a project she led, which remains the most comprehensive research study about the use of study drugs by students. She explained that because there had been lots of national media reports about study drugs, and reports from the United States about rising use among college students, the Federal Ministry of

Health felt that there was a need for information. Thus, her project was funded to survey 8,000 students. It showed that about 5% were using study drugs (Middendorf et al. 2012).[26]

I suggest that to a large extent, anxiety about what drugs signified was driving the public discourse. The general lack of data may not have been of primary importance because the media reports were functioning primarily to rehearse tensions in the new model of education that seemed to be overdetermined by market demands—a model which appeared to place students under so much pressure as to make drugs a viable option.[27] University education in Germany has long been associated with *Bildung*, a form of education concerned with forming the whole person. The modern German university founded by Humboldt in Berlin in 1809, was supposed to be the place where the highest institutionalized form of *Bildung* could take place, preparing the cadre of civil servants who would govern an "enlightened" German state (Lenhart 2006; Paletschek 2002). According to the current legal framework of German universities (*Hochschulrahmengesetz, §7*), education should prepare students for "responsible behavior in a free, democratic, and social democracy governed by law."

At the same time, however, it is often claimed that in a knowledge society, "education (*Bildung*) is our most important resource". In recent decades it has become increasingly clear that knowledge is a critical means of value production, and universities are seem to be at the leading edge of generating knowledge; the German President in 2006 said that "the global

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[26] This project had also asked about the connection between pressure students experienced and medication use, and found that those who had 'lots' of pressure to perform were much more likely to take performance improvers. These data reinforced what had already been presupposed, that students took drugs because of the pressure they felt.

The study design also reflected that pressure was the dominant factor: The drugs that counted as study drugs included prescription medications, painkillers, sedatives, cannabis, and stimulants. What should be noted about this list is that it suggests not "enhancement" is being asked about, but "compensation". Painkillers and cannabis are generally thought not to improve performance as much as enabling performance despite pain or anxiety, respectively. The report explained this as follows: "not to be confused with brain-doping for performance improvement is the use of medications or other calming or performance improving drugs to manage the pressure to achieve" (HIS 2012:3; cf. p13).

[27] Some of the media reporting was likely also due to the need to publish in a fast-cycling media environment. In his study of news agency journalism, Boyer (2011) explains that an important principle of what is newsworthy is 'what is an issue right now?', which can be very transient or a "slow burner". It seems reasonable that some of the popularity of this topic was connected to the reporting practices of contemporary mass media, which themselves relied on an imagination of how the confluence of various elements shot through with larger tensions made stories about study drugs interesting; a science journalist I spoke to explained that journalists are always looking at what others are publishing, and you might write a story about the same thing if it seemed important enough.

competition has for some time now been a competition of educational systems (*der Bildungssysteme*).” As politicians and leaders of industry never tire of repeating, global competition demands continual research and innovation to stay ahead of countries like China and India. A common claim is that one competitive advantage of German universities is that they teach students to “understand” and “think though” an idea, becoming able to inhabit its logic as it were, while students in India or China might know the same information but are “unable to creatively apply it”. The idea of *Bildung* hovers as a framework here, providing an education that allows subjects to draw on their creativity or think more deeply to design products, rather than “merely” regurgitating knowledge.

However, for others, this instrumentalization of *Bildung* is precisely the problem. I attended a Berlin-wide protest for “solidarity and free education (*Bildung*)” with university and high school students in November 2011. As large crowds gathered to begin the march near the red-brick city hall, where Berlin’s city government has its offices, trucks were blaring loud music making the atmosphere almost festive, as demonstrators were handing out flyers. Some started unrolling protest banners, which read “We are Germany’s most valuable resource”, or “Do away with the pressure to achieve (*Leistungsdruck*)! We’re against the *G8 Turbo Abitur*”. One I particularly liked claimed that “There are no alternatives to *Bildung*”, which meant both that it is necessary for someone to have a future—and that currently, there were no alternatives to what was seen as a troubled system, where students felt their learning was co-opted by economic interests and rationalities.

Figure 3: *Flyer* "FOR SOLIDARITY AND SELF-DETERMINED *BILDUNG*: **College and Vocational-training spots for everyone! Money for *Bildung* instead of Banks and Corporations! More teachers and smaller classrooms! Do away with the Turbo Abitur!** *(Source: Flyer Avertising portest, posted by OccupyFU in Mensa at FU-Berlin in November 2011.)*

Other commentators, often those drawn from the ranks of the professoriate, variously lamented the effects of reforms on the idea of *Bildung*[28] and the kinds of students produced. One observed that "*Bildung* is more linked with achievement (*leistung*) and career than it used to be. Back then, it meant to be *Gebildet* (i.e. to have *Bildung*). Today, it more means being successful." The Reforms were thought to have completely changed the kind of student who was at universities, from a *Bummelstudent* to a stressed-out and overworked "resume optimizer", a popular term describing the current student generation who were so committed to achievement that they did internship after internship to polish their CVs for the job market. One of Germany's most popular shows, the long-running crime series Tatort, thematized study drug use in a recent episode. The show featured a student interning at the police department. She explained Ritalin to her superiors in highly scripted terms, saying that "my generation is the first to take a 'drug for rationality' (*Vernunftsdroge*)[29] to keep up with others", to which a superior replied "how sad!". Later, in a conversation between the two superiors officers, one voices a stereotypical outrage: "Do you know what I think is really incredible? That they [students] are really all taking drugs to deal with this stress at college. To keep up. That's crazy."

"Panics" about study drugs, then, responded to what were perceived as excessive pressures on students to achieve, demands which were discursively linked to (inter)national-level economic competition. These panics likely also partly stemmed from concerns that market-pressures were producing a new kind of subject, who was oriented towards achievement at the expense of self-development. In short, students who used pharmaceuticals were thought to embody the tensions related around *Bildung* reloaded for the 21st Century, caught between an aesthetic notion of self-development and an instrumentalized project of workplace preparation. I

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[28] However, universities had been continuously reformed since after WWII, which resulted in massively expanded enrollments and many more "economy-related" (*Wirtschaftsnahe*) fields of study (cf. Bartz 2005).

[29] This term is interesting, because it draws a contrast between taking drugs to be more productive, and something like "self-discovery" or "expanding one's consciousness" that was popular in the 1960s and 70s (and has experienced a resurgence, see Langlitz (2012)).

will explore self-development in more length in the next chapter, but first turn to my final topic, ADHD.

Worries around Achievement III: Does Function Follow the Ritalin Prescription Curve?

In early 2013, Barmer GEK, Germany's largest insurance carrier, released its annual report.[30] The focus was on ADHD, and the results seemed startling enough to proclaim that a "Generation ADHD" was growing up: between 2006 and 2011, the number of ADHD diagnoses rose by 42%. 12% of boys ten years old had the diagnosis, and 20% of men and 8% of women had received the diagnosis at some point in their lives (Barmer GEK 2013a). As the physician who headed the research put it, it was a "situation like in America". In Germany, the US (what Richard DeGrandpre called the "Ritalin Nation") has a reputation for "excessively" high rates of ADHD diagnosis; as one phrase has it "there every 2nd kid is on Ritalin, with the support of every 3rd teacher". The small city of Würzburg, where I lived as a child, had less than 150,000 inhabitants but the highest rate of ADHD diagnosis in Germany—and could thus reasonably be called "the world capital of ADHD". The vice-chairman of the Barmer GEK board expressed concern that "pills against educational problems are not a solution", and that "Ritalin cannot be the default first choice for therapy" (cited in Barmer GEK (2013b).[31]

On account of the continual rise in ADHD diagnoses over the past several years, a closed-door session with expert testimony was held at the Bundestag. I spoke with Stephanie

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[30] This was data taken from the Barmer medical files, a (nonrandom) segment of the population. Much of the information about the populace's health comes from the national insurance carriers, who insure 85% of the population. Insurers issue annual reports, which depending on how many people the carrier insures can have a pseudo-representative character, typically form the basis for public debate and further research. Germany does not have a highly institutionalized national public health system, as efforts are mostly on a regional basis. This is largely a legacy of World-War II, when national-level health strategies were abused in the service of eugenic measures (cf. Niewöhner et al. 2011).

[31] Official data showed the same general trend; in absolute terms, government that the amount of ADHD medications dispensed rose from 58 kg a year in 1995, to slightly over 1 ton within a decade.

ADHD diagnoses can be coded according to DSM-IV or ICD-10, and is performed in clinics and offices (schools are not involved). According to the German association of child and youth psychiatry and psychotherapy, standardized guidelines for diagnosis are likely not always followed, which suggests that some of the numbers in the Barmer Report are high. Though the lifetime prevalence rates are typically reported to be around 5%, rather than 20% (Huss et al. 2008), most numbers are comparable with international prevalence rates; it is likely that less than half ofthose who who are diagnosed with ADHD take medication long-term (Döpfner et al. 2013).

Vogelsang, a parliamentarian who had organized the session. We met in her office in the Paul-Löbe-Haus, a mix of glass and steel that houses the workspaces of the German parliament, sitting on the banks of the river Spree that cuts through central Berlin only a few hundred yards from the Reichstag. As I waited to be picked up, I looked through a cafeteria illuminated through many colorful round lights suspended from the ceiling, onto the cold river slowly flowing by below. I was struck by how minimalistic the entire building was, reduced to its functional essentials: concrete, glass windows, and some occasional wood, in the same architectural style as many of the new buildings erected in Berlin the last two decades in Berlin.

Figure 4: Inside of the Paul-Löbe-Haus, looking through suspended glass balls onto the River Spree

(Source: Author photo)

Vogelsang had spent several months researching the rise in ADHD diagnoses, and for her, ”ADHD and Ritalin are a signal of some neglect of children in a rich country (*Wohlstandsverwahrlosung*). Of parents who both work, have very little time for their kids—I’m not judging that—and for whom the goal of achievement and reaching goals is central. Kids need to function."

She meant this as an explanation for the suspicious rise in diagnoses rather than an etiology of ADHD: "I'm not interested in those kids that actually have ADHD; it's more the kids who are said to have ADHD, even though they're maybe just very active, or have some kind of behavior problems of a different kind, but which isn't actually ADHD. I share the evaluation of a lot of scientists, that people reach for the diagnosis ADHD too quickly, too often."

"So you'd see the reasons for the rise in prescriptions on the one hand that parents don't have enough time, but on the other the importance of achievement, that kids can function well?", I asked.

"Need to [function]. Yes." However, the preferable case would be "for children capable of achievement to grow up healthily, they need time for development of creativity, of games, of things that seem abnormal. For me the diagnosis ADHD is a diagnosis that parents like to hear, because then they have a reason why their kid is difficult. And can say 'we didn't do anything wrong'."

"Do you think there is a problem with improving performance (*leistungssteigerung*) through medications?"

Vogelsang corrected me. "It's not really about performance (*leistung*) in the first instance. It's about the *functioning* (*funktion*)."

Still thinking in the frame of "enhancement", that Ritalin was problematic because it was used to increase performance, I tried to re-frame improvement in terms of optimization: "So the function of kids is optimized through medications?"

Vogelsang pointed to the environment in which ADHD medications are often used, and the amount of time in those families: "Well, usually ADHD is diagnosed in households where the parents are academics, but are both in demanding jobs where they are pursuing their careers. And the time the parents have is so limited that they can't deal with it if the kids are out of line. Every day after school kids learn a musical instrument or do sports, this and that is planned, there isn't a free minute in the kid's schedule. The parents need to deal with that schedule as well. And that's only possible if kids function." In other words, optimization was also not at stake, but a certain level of functioning, one that could only be reached if children were always on point.

"Do you think the demands that kids function have risen in the last years?"

"Yes", she replied firmly, "I think so".

"So kids just need to accomplish more ?"

"No, they don't need to achieve (*leisten*) more. They're usually normally smart kids. It's not about accomplishing more, it's about function (*funktion*). The goal is not that the kids are smarter than their parents, or have more degrees, or have jobs that their parents couldn't get, or have some kind of prosperity the parents couldn't fulfill for themselves. The goal isn't to get out of a small 1 bedroom apartment into a villa. That's not it. The goal is—well, Germany is a country where it's less important what you can do, and more important what kinds of certifications you have. What diplomas. It's not important if the kid can speak Italian, but that he has a piece of paper that says he can speak Italian. That's the goal, to pass all the exams, all the certificates, all the diplomas, all the degrees."

While I had been thinking only in terms of "improvement", Vogelsang had a more nuanced view. She was pointing to a level of achievement that was expected in a particular socio-economic class, indexed by things like afternoon music classes and sports, as well as language and school diplomas. But, and this was the crucial point, this social norm could only be reached if children always cooperated and did as they were told. Parents and children did not have time to wait for someone to calm down from a temper tantrum or get focused on homework, because so much needed to be done.[32] In other words, a level of achievement had been naturalized that was *so high* it could only be reached with *medication-enabled* functioning. Vogelsang was troubled by the correlation she saw between the rising rate of giving medication and the increased

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[32] Arlie Hochschild has diagnosed a "speed-up" in families, related to shifting patterns of employment: "there is no more time in the day than there was when wives stayed home, but there is twice as much to get done" (2003:8).

demands that children's function be more goal-directed and less often "off-target". As she said at the onset, children would be best able to achieve later if they were allowed space to grow up without inordinate demands for "functioning". Her political intervention aimed to change the therapy, and to defer the demands that were placed on children.

The* Zappelphilipp*: misbehavior, nature, and pharmacology

The rise in ADHD diagnoses and Ritalin use was widely thematized, often in relationship to school and achievement. Often, the significance of academic performance was stated baldly. In one of the country's leading newspapers, the *Frankfurter Allgemeine Sonntagszeitung* (February 16, 2012), a report critical of ADHD and pharmacological treatment was published that was widely cited for some time afterwards. In it, a mother detailed how Ritalin had greatly helped her son focus at school, and that he would probably need to take the medication in college as well, since "we live in an achievement society (*Leistungsgesellschaft*). I want my kids to be at the head of the pack". As far as medical criteria were concerned, her children legitimately displayed the syndrome complex of ADHD and needed treatment. Conversely, another middle-school student the article reported on, who had ADHD but was not receiving Ritalin, wondered about his chances for future academic success. These kinds of cases alarmed critics, who were suspicious of how easily trouble achieving in school could be interpreted as a "sickness" (*Krankheit*) that needed to be medicated. Many imagine that the rise in ADHD diagnoses and drug treatment is a sign that perceived deficits in *performance* itself are being medicalized. Thus, defining the boundaries of the illness has become a social and political priority; at least two hearings in Parliament have dealt with this issue.

Figure 5: Hoffmann's "*Der Zappelphilipp*".

The *Zappelhiliopp* is fidgeting and rocking back and forth so much that he, and his mother's best tablecloth, come crashing down

(Source: http://de.wikipedia.org/wiki/Struwwelpeter, accessed May 5, 2014)

These competing claims reflect longstanding tensions in categorizing children who are colloquially called "Fidgeting Phillip" (*Zappelphillip*). The term was coined in 1844 by the physician Heinrich Hoffmann in a classic children's book, which described a child constantly in movement, bouncing and rocking on his chair. Hoffmann did not think of the *Zappelphillip* as a medical pathology, and the label remains popular in common usage to describe very active children; though it is also claimed as the first medical description of ADHD. What Hoffman moralized as poor behavior in the genre of children's books intended to warn children of misbehaving (to which classics like Grimm's Fairy tales can also be counted), became associated with nervousness and the changes wrought by industrialization in the late 19th Century. At the start of the 20th Century, it was seen as a consequence of poor parenting by the Berlin pediatrician Adalbert Czerny (Seidler 2004; Rothenburg and Neumärker 2005). However, around the middle of the 20th century, a neurological basis was posited, termed 'minimal brain dysfunction', which was later termed ADD[33] and determined to be treatable with the amphetamine derivative methylphenidate (e.g. Ritalin), discovered in 1954 (Lakoff 2000; Conrad 2007). Nonetheless, an alternative explanation has remained popular: the disease 'ADHD' and its variants does not exist, but are attempts at medicalizing behaviors that do not fit into the fast-paced, industrial age. However, even many of those who accept the diagnosis believe that the best therapy is non-pharmacological, like "more time in nature" (see the next chapter and cf. Leuzinger-Bohleber et al. (2006)).

Vogelsang situates herself in this dispute by making a distinction between function and achievement. She calls attention to the collapse of a certain standard for the latter into the smooth operation of the former. She points out that medications like Ritalin are often very effective at helping children who are unable to function in the desired way, because they are distracted or fidgety rather than "sick". Medications help to direct their efforts, which in turn enables the kinds of achievement hoped for (by parents, educators, children). If a child does not have ADHD, then she is receiving medications, so the argument, to help her perform. And even if she does have ADHD, medication should not be the answer, but perhaps more time to play and explore, or a lowering of standards altogether. To insist on medication as a "solution" is to be fixated on pharmacologically disciplining the child's *achievement*, rather than on giving her the non-pharmacological support that she is said to need to "properly" or "fully" develop. In short, the claim is that poor performance is medicalized, or ADHD treatment is pharmacologized, both of which are evidence that acknowledging children's "needs" or truly "helping" them is taking a backseat to meeting higher standards for performance.

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[33] Actually referring to a symptom complex of with both 'attention deficit' and 'hyperactivity' manifestations, ADD (Attention deficit disorder) was later combined with the 'hyperactivity' subset to become ADHD (Attention deficit and/or hyperactivity disorder).

Turbo Achievement, Made in Germany

Two points are important to my argument here. The first sheds some light on why enhancement is frequently mentioned together with rising ADHD use in the debate.[34] It may be that parallels between enhancement and Ritalin are made partly because the same medications given to children can also be taken for improvement. More importantly, it seems that giving pills to ensure "normal" children can function at a desired level is, in its essential logic, similar to "healthy" individuals taking medications to improve performance at college or at work: in both cases medication produces an increase in performance despite not being necessary (again either because individuals are otherwise healthy, or because drugs would be "really" used for performance, under the pretense of treatment).

Second, the obviousness of the assertion that standards for children to variously "function" or "achieve" have risen. But why would it be self-evident that children "need to function" or perform more, especially in school, than in the past? One reason could be the rising significance of school achievement in Germany in the last years. In 2001, the so-called "PISA Study" was released, a triennial report comparing the academic performance of elementary through high-school students in OECD countries (Stanat et al. 2002). The report came as an unpleasant surprise (referred to as the *PISA-shock*), because German students scored worse than the international average in reading, math, and the natural sciences. Germany has long prided itself on having an excellent educational system and on having citizens with *Bildung*, in addition to the perceived importance of having a highly-educated workforce. In response, resources were

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[34] One bioethicist told me that "the whole [enhancement] debate was also linked to the whole discussion around ADHD treatment, at least in Germany. The idea is that there is the widely-known phenomena that there is a large grey-zone where it's not clear if something requires therapy or is 'normal' childhood behavior at the edge of the bell curve, or if parents should rather spend more time outdoors with their kids. Concerns about medicalizaiton, or parents manipulating and forming their kids all spills over into the enhancement debate."
See also claims like that by the German news service *Tageschau* (August 9, 2007) "When the topic is treatment with the medication Ritalin[:] Many think that [therapy with Ritalin] is necessary to make the lives of those who are affected easier. Others say: that's brain-doping, to push the kids to achieve".
Or in the *Süddeutsche Zeitung* (May 31, 2012), discussing a hearing on ADHD, states that "It can't be the case that every 4th boy has taken Ritalin during his time in school…'One should think about making it more difficult to prescribe'", before moving to explain that "Experts use the term brain-doping to describe the use of medications to increase attention, alertness, and contration. Around 5% of employed individuals admitted to have used performance or mood-boositng drugs in a representative survey by the DAK. Extrapolated, that's about 2 million people. Studies about the behavior of schoolchildren and students show similar rates."

poured into education, overhauling teacher training, increasing individual help, and setting new standards for what students needed to know. Perhaps most centrally, the idea of school as a place where the focus on what students were expected to "achieve" (*leisten*) became paramount. In many places children could start school at an earlier age, grades were introduced in grammar school, and school hours were expanded. The minister of Bavaria pledged that the state government would reform the schools with an emphasis on "quality, achievement (*Leistung*) as well as self-responsibilty and discipline" (Stoiber 2003). This is of course not to imply that there was no emphasis on performance before the PISA studies. Rather, the increased emphasis on achievement came to dominate the *meaning* and *purpose* of education.

Parents frequently felt that achievement had become central. One parent voiced a widespread feeling, that "I have kids in school, and the pressure on them to perform (*druck zu leisten*) is palpable", while others said it was "huge (*enorm*)". On a sunny fall day, I was walking with a friend who was a high school teacher, close to retirement. I asked him if the standards for performance (*leistung*) had changed in the past years. He told me that he felt the standards had not necessarily changed, but performance was much more important than it was 10 years ago. Teachers and students, he said, were constantly concerned with it. Another teacher I knew, Thomas, taught natural sciences at a high school in northern Germany for the past 20 years. He felt that the pressure to achieve had increased so much that there was "huge pressure now. Huge. Much more [than in the past]." When I asked how he could tell, he responded that "The student we have here Monday to Friday is not the same student on the weekend." He explained his feeling was that there were more cases of students abusing alcohol and drugs to deal with the pressure, and increases in things like clinical depression and eating disorders.

Here, Thomas took a rise in the disordered subjectivities he saw as being related to the changes made to shorten the time needed to finish high school. The highest level of school that qualifies pupils for college, the *Gymnasium*, traditionally finished after nine years (the "G9 Diploma"), but was reduced to eight years. The political rationale was that it would both make the curriculum more rigorous, and allow students to graduate from college and enter the workforce sooner, complementing the Bologna Reforms. This became known as the “G8”, or “turbo Diploma” (*turbo Abitur*), and was made responsible for many of the increases in pressure on students. Because many parents, students, teachers, and politicians felt that the compressed curriculum demanded too much achievement and put children under too much pressure, there were constant calls for re-reforming the system.[35]

At the same time, school-reforms and the attendant focus on achievement was clearly linked to the economy: school was seen as having shifted too far towards preparing students for entering the workforce. Some pointed to the internships to gain experience in different fields that many schools require or the “open house days” where company representatives spoke at schools. Others felt that the reforms themselves were driven by the “economy” and business interests, to ensure that students were better trained than the international competition (indeed, the ranking on the PISA studies was often understood to be a measure of knowledge as well as an index of competitiveness). Parents were likely to complain that there was too much pressure on performance (*leistung*) in schools, which was unavoidable if their children wanted to get a good job later on—but that their children were too young to worry about grades and achievement, which they would surely have to do when they were older. In other words, parents were troubled by the similarity they saw between work and school in terms of emphasizing achievement, which to them seemed like the ethos of the former was encroaching into what was supposed to be a space free of such demands (see the next chapter). When drugs were thematized against this backdrop, they became an index of how high the standards had risen, and how important achievement had become.

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[35] Many of the high-school students who attended the protest that I discussed in the previous section were there specifically protesting the felt pressure to achieve (*Leistungsdruck*) they thought the G8 curriculum was responsible for. In the past year or two, several states decided to revert to the G8 diploma because of public pressure to do so.

I have argued that in the German debate about enhancements, doping at work, study drugs, and the increase in pharmacological ADHD treatment are bound together, because all rely on a narrative linking the felt increase in pressures to achieve (*leistung*), widespread competition, and anxiety about performance to "neoliberal" changes that have taken place in the last decades in Germany. Medication has seemed to offer a "solution" by helping individuals meet the increased demands. But what is troubling about this solution? In brief, I claim that in the three sub-debates I traced, performance improving medications became comprehensible through—they entered a stage already occupied by—fears about global competition, the Euro Crisis, the rise of economic logics in everyday life, and the decline of the welfare state, in which the system of capitalism driving improvement was being questioned.

*Posing the "***Systemfrage***"*

In March 2011, I attended a conference on human enhancement in southern Germany. Held in small conference center, we were ensconced in a large room looking out on the Black Forest, with floor to ceiling windows on both sides. It had felt somewhat surreal, being in an idyllic setting in a small city discussing futuristic scenarios. Then, late in the afternoon after a full day of talks, the chief of the German Technology Assessment Office (TAB), Armin Grunwald, rose to give a summary. After mentioning a few themes, he suggested that enhancements might be troubling because, "Could it be that we feel, in a highly competitive society, that we always need to be better than our neighbors? That endless improvement is expected by us? But if competition is at the heart of capitalism, perhaps we need to, as the Germans say, '*die Systemfrage stellen*' [ask if we want this system]." Here, Grunwald placed performance improvement in the context of social life shot through with the logic of competition, questioning whether capitalism's emphasis on accumulation was desirable.

A few months later, I met Grunwald in his office in Berlin, wanting to know more about this comment. "At the conference you said 'if we live in a world where we are constantly competing with our neighbor, we may need to pose the '*Systemfrage*'.' I feel that this question is everywhere: doping at work, in sports, in the everyday. There seems to be an emphasis on achievement (*leistung*) that flips into something inhuman?"

He pondered for a moment, and responded:

> In Germany in the last 10 years we've had an intensification of competition in many areas of life, as in many other places. It has to do with globalization from the '90s onward, in Germany with the *Hartz IV* reforms. A lot of people here have the feeling that we need to exploit ourselves (*selbst-ausbeuten*) more and more to even continue existing. That work is encroaching into private life more and more: email, cellphone, work hours. Burnout fits into that as well, and that's how the media talks about it. This sense of stress is there, of continual competition, where you constantly need to prove you're better than your neighbor…With the '*Systemfrage*', I mean whether we want to live in a system that is sustained only by increasing competition more and more. At the moment Germany is doing surprisingly well economically, and the British, the French will notice this and will step up their game as well. Then they'll improve, and pass us again, and then we'll increase the pressure again, and so on.

As Grunwald pointed out, enhancements as "solutions" were troubling because they placed the system itself into question. Grunwald invoked a common phrase with the *Systemfrage*, which renders a complex and heterogenous network (in this case "capitalism") concrete. *Systemfrage* can prosaically refer to the arrangement of people or things, or the hidden but powerful forces of social life. More pertinently, before 1989, both Germanys were engaged in a competition of systems, as the capitalist West squared off against the socialist East.[36] As I discussed above, a major political task in post-War Germany was to build a market-based economy whose effects on individuals were tempered by a strong welfare state. Yet, as the controversies around the reformed unemployment laws showed, many thought the "system" was being allowed too free a reign as the state stepped back from its obligations in this regard.

Challenges to the "system" came from other quarters as well. In the midst of the Euro Crisis from 2010 onwards, as Spanish unemployment rose over 20%, and the Greeks were setting up new governments on a regular basis, Germany remained the most powerful economy in Europe. Instead of assuaging public anxiety, economic success potentiated it: in an effort to

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[36] The idea of returning to socialism was not popular at all; nonetheless, the existence of an alternative to capitalism for over 40 years made it possible to think about capitalism as a contingent arrangement.

save the Euro Germany agreed to be the largest guarantor for the European "rescue" fund. Within national borders, the government was bailing out several major banks as well. This willingness to provide large sums of money to "save" the economic system contrasted with ongoing laments about the fiscal problems of German individuals and communities: funding for schools was being cut, taxes on individual income remained high, unemployment benefits were trimmed, and cities were limiting public services (several post-industrial cities were even hopelessly bankrupt). In the face of what were seen as glaring mis-prioritizations of public funds, the phrase *Systemrelevant* (often ironically) firstly identified the market as the contemporary political priority, and secondly named what was deemed was indispensable to the market (for instance "major" banks earned the predicate *Systemrelevant*). Politicians argued, as Chancellor Merkel did, that "if the Euro fails, then Europe fails", making the survival of the currency essential to maintaining Germany's high standard of living, as well as its political and economic identity as part of a trans-national, cosmopolitan union. A popular counter-punch from those left-of-middle on the political spectrum was "we are also *Systemrelevant*". They claimed that the everyday average citizen mattered just as much, if not more, than the political truism that fluid capital was the lifeblood of the world economy and thus of everyday consumption and production.[37] My point here is that the Euro Crisis intensified an anxiety about individual welfare that was already present, by throwing the absolute hegemony of economy and the pursuit of profits into stark relief (recall the comments above that "true capitalism would have meant letting the banks fail" like any unemployed worker).

Conclusion

The concerns named when the *Systemfrage* was invoked fit into the larger trajectory of questions about the role of the market in social life in contemporary Germany: once it became difficult to

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[37] *Systemrelevant* points to what Harvey terms a general bias of neoliberalism, that "in the event of a conflict, neoliberal states typically favour the integrity of the financial system and the solvency of financial institutions over the well-being of the population" (2005:70).

sustain economic growth after the “economic miracle”, the *Agenda 2010* reorganized the market and welfare state along neoliberal lines to make achievement a guarantor of future national prosperity. Yet, the costs of this emphasis were questioned by those who argued that the demands for individuals to achieve had become to high, and had expanded into too many settings that had discursively been linked with economic “success”: the development of children in school was threatened, and pathologies of work (like “burnout”) were on the rise. Enhancements seemed to enable a subjectivity more closely attuned to the demands of performance and the market, and thereby offer individuals a way to deal with their anxieties about performance and meet the standards that (they or commentators thought) were set for them.

A central claim in the debate about enhancements was that if one could only meet rising demands with drugs, then there was likely some deeper problem with the standards themselves; a certain level of “achievement” required by the market had been widely accepted as “natural”, which recent demands nonetheless seemed to surpass. In other words, I argue that in the German debate the “solution” of performance improvement became a symptom, as contemporary crises in economic rationalities of capital accumulation and its disregard for human limits were materialized in the numbers of individuals who felt they needed to take drugs to achieve. Here, I mean symptom both in the biomedical sense of a sign of (social) disease, and in the Marxian sense of an index not of radical rupture but an evolving component of the demands capitalism places on subjects (Sunder Rajan 2006:11). It is in this sense that one might understand the anxiety about enhancements in the German public debate, the preoccupation with generating more information about enhancement use, and the references to the US as the undesirable future of Germany (as the US is the place where “capitalism runs wild” (*Entfesselter Kapitalismus*), where the bleak future of an unconstrained market has become real).

In terms of my overall argument about situated ethics, grasping how the German debate problematizes enhancements depends on the kind of ethnographic analysis I have outlined above. In turn, by historically and culturally locating the kinds of “improvement” at issue, the underlying assumptions can be denaturalized: In the German debate, enhancement use casts doubt on whether neoliberal market arrangements could really bring about a desirable kind of progress and political future, in the form of imaginations of an economically robust state with a high standard of living. As David Harvey notes, neoliberalism is based on the idea that increased individual freedom and welfare are best advanced by a free market, because “continuous increases in productivity should […] deliver higher living standards to everyone” (2005:64). It would seem that enhancements are ideal tools to increase productivity and thus lead to the kind of advances Harvey mentions, the debate problematized this kind of progress. Nonetheless, as I showed, each sub-debate is animated by a particular set of concerns about structural changes that have taken place in Germany in recent decades, including rearrangements of state services, labor conditions, and education. Together, these are felt to have created widespread anxiety about achievement, economic security, and welfare. Thus, the German debate shifts the meaning that drugs to improve performance usually have in the bioethics debate: medications are not a way to increase the potential of human action, as much as they are a technological supplement pointing to what seems to be individuals’ inadequacy in the face of heightened demands to care for themselves. Enhancements are viewed, one might say, according to the logic of the supplement, in which something that is added to *help* can end up producing a *lack* in the “originary” thing to which it was added: “The supplement adds itself, it is a surplus…But the supplement [also] supplements. It adds only to replace…it is as if one fills a void” (Derrida 1997:144-5).

I am interested in the supplement because of the ambiguity it opens up, by destabilizing the naturalized neoliberal narrative that claims increased human welfare flows from more productivity and more entrepreneurship. Rather, more productivity seems to result in more efficiency in economic terms, or rises in measurable outputs, but not necessarily more “welfare”. In other words, the supplement accentuates the gap between “improvement” in terms of productivity, efficiency, or surplus value, and in terms of desirable forms of life. I take this stance to be basic to many of the critiques of performance improvement in Germany, and indeed the basic tenor of the debate. The tensions circle around the question: what are tolerable limits to the drive towards more productivity and value? Or, stated differently, where should one draw a line between capital and (social, biological, or affective) life? The answer will be as situated in social practices as the critique was. In the next chapter, I explore where the debate about enhancements in Germany tends to draw a “line”, which I will argue affirms “natural” capacities, and space for self-development.

3

The "Anthropology" of Enhancement in Germany: Overcoming Anthropos?

This chapter continues the task I began in the previous one, describing the ethical stakes of enhancements in contemporary Germany. Chapter 2 showed how many of the concerns voiced in the current debate make enhancements an indicator of economic changes and the perceived expansion of regimes of profit maximization and performance optimization. These regimes are commonly seen as problematic because they ask individuals to conform to *economic* rationales. As the German anthropologist Nicolas Langlitz put it in an editorial, the wide-ranging debate points to the "uneasiness" (*unbehagen*) about the "growing invasion of economic rationality into ever more areas of life".[1] Yet, that in itself is not necessarily taken to be problematic: in the United States, for instance, more harmony between the market and individuals is frequently valorized. President Obama, speaking to Congress in 2009, said that the "destiny of this nation…[is] in the imaginations of our entrepreneurs and the pride of the hardest-working people on Earth. Those qualities that have made America the greatest force of progress and prosperity in human history we still possess in ample measure."[2]

Chapter Argument

To understand what troubles many Germans about taking drugs to become "better" workers or entrepreneurs of themselves, this chapter suggests that the demands imposed by what have been termed "neoliberal" regimes are an instance of a more general case: they raise questions about the desirability of overcoming human limits through technology. This question is fundamental to

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[1] Langlitz, Nicholas. "Das Gehirn Ist Kein Muskel." *Frankfurter Allgemeine Zeitung*, January 3, 2010, 52.

[2] Obama, Barack. "Transcript: Obama's Speech To Congress Feb 24, 2009." Accessed April 12, 2014. http://www.cbsnews.com/news/transcript-obamas-speech-to-congress/.

enquiries into the ethics of enhancement, variously answered with recourse to arguments about preserving or overcoming a human “nature” or an ethos of “evolving” (Fukuyama 2002; Sandel 2007; President’s Council 2003; Harris 2007; Bostrom 2005). Rather than answering this question directly, one might, as Paul Rabinow suggests, see enhancements as a variant of questions that are not about “an epochal shift with a totalizing coherence but rather as fragmented and sectorial changes that pose problems, both in and of themselves and for attempts to make sense of what form(s) anthropos is currently being given” (2003:14).

Thus, to continue my overall argument about ethics as situated and emergent problems, in this chapter I show how the German debate about enhancement poses the general question of overcoming the constraints of human capacity as it deals with a very concrete problem, commonly termed ”brain-doping”. I begin by establishing the significance of the debate about enhancements as “public”, and the importance of an “enlightened” public debate. I briefly review other troubling scientific developments that have been broadly debated, as pre-implantation genetic diagnosis and stem-cell research have been seen to potentially violate human dignity (*Würde*), an important ethical concept in post-War Germany that prohibits instrumentalizing others. This ethical stance first became relevant to enhancements in the ‘Sloterdijk Debate’, in which the eponymous philosopher was accused of proposing a wholesale program of creating “super humans”. His vision was in conflict with the widely held Kantian ethical stance of dignity, which calls for vigilance against purported “instrumentalizing” of some for the benefit of others, or against devaluing some forms of life.

Relying on the semiotic insight that “interactionally relevant concepts indexed (cued) by words and expressions in text are cultural concepts” (Silverstein 2004), I turn to the contemporary debate, in which “brain-doping” points to concerns about systemic abuses in the name of performance (*Leistung*), and to the crossing of “natural” boundaries, and give a very brief history of “doping” and of current notions of bodily “nature” and health. Having defined the kinds of troubling boundary-crossings that brain-doping signifies, I conclude by arguing that its specific concerns mobilize the ethical stance of non-instrumentalization to critique technologically improving performance. In particular, this critique is about constraining self-development and self-realization, particularly as these are related to the economic arrangements I described in the last chapter.

Making "Brain-Doping" Public

My train from Berlin arrived in the bustling Hannover central station in mid-afternoon. I had made the trip to take part in a conference "Brain-Doping in Society. Performance-Improvement in the Everyday: Dangerous, Immoral, but Allowed?" The event was organized by the Konrad-Adenauer Foundation, associated with Angela Merkel's politically conservative Christian Democrats. After I jumped off the train, I needed a moment to orient myself before I found the south exit. Closely following my map, I headed down the main shopping avenue through the heart of the old city, which was busy with shoppers enjoying the mild weather, as the November sun had already begun to cast long shadows as it descended towards the horizon. When I turned onto the cobble-stone *Schmiedstrasse*, I immediately spotted the "Old City Hall", a restored red-and-black brick building from the 15th century, graced by several turrets. I had been told that it was a beautiful building, which it was. Trying my luck with a heavy wooden door, I found myself in what seemed to be a large atrium with a glass roof, and wandered through, up a sweeping staircase to a spacious, bright hall.

As I sat down near the front, I did a quick headcount. It came to around a hundred people, almost all of whom were well-dressed. I reached for one of the bottles of water that was set out for visitors on the table in front of me, trying to work out if I had misjudged my attire since I was one of only a handful of people who was not wearing at least a sport coat for an event that started in mid-afternoon. I began speaking with my neighbor, a middle-aged woman who said that she was a former teacher, and now administered the state teaching exam to education students. When I asked how she got interested in the topic of the conference, she explained that she often saw students simply to advise them, outside of her official capacity as an examiner. Nonetheless, many of them seemed to be very anxious about speaking to her, as if it were a testing situation, and she had noticed that some of the students seemed to have "altered mental states". Her explanation was that they had taken drugs to be less afraid, more calm, or to improve the impression they made in the conversation. Her daughter, also studying to be a teacher, had told her that several of her classmates also used drugs for performance improvement. When I asked what reasons her daughter reported, she responded emphatically: "fear (*Angst*)". This troubled her because she felt using drugs was unnatural and inauthentic (*Inauthentisch*); she surmised they would be influencing their emotions and reactions in an unfamiliar way, and would thus be in danger of responding to others (especially their students) inappropriately and unpredictably.

I was left musing over this comment about how drugs alienated self and sociality, as the moderator welcomed the audience and introduced the topic by suggesting that the label "brain-doping" tried to make the problems of technological improvement easily comprehensible. The conference organizers hoped, he said, to begin a "discussion about values" and to educate people so that they would know something about this topic when they encountered it in their everyday.

The first speaker, a historian who had published extensively on sports doping (and who led a study on doping in Germany I discuss below), spoke about the relationship between sport- and brain-doping. He argued that the latter was on the rise, describing use by adolescents with ADHD who targeted their Ritalin use to improve performance in specific settings. From his perspective, legalizing doping would violate Kant's categorical imperative, which mandated "a purpose that does not harm society". The second speaker, a press officer from the DAK insurance, reported on a study of "doping at work" his firm had done to "shine a light in the darkness and illuminate the topic". The study found that 5% of workers in Germany had used medications for performance improvement, and the colored bar-graphs flashing by on the screen behind him made the point that many more would be open to doing so. Recalling my seat-neighbor's view, the reasons for using pharmaceuticals identified by their study were related to stress at work and to expectations of performance. One speaker, a physician, believed brain-doping was "incompatible with the medical ethos". Another viewed it as the "first step" toward a range of future technologies; he mentioned that the federal government had commissioned research on brain research that discussed pharmacological "enhancement" alongside other technologies like pre-implantation genetic diagnosis (PIGD) or brain implants, that "imagined a brave new world" (*schöne neue Welt*, a phrase borrowed from Aldous Huxley's dystopian novel by the same name).

After a break, the guests and panelists returned for a forum-style discussion. An energetic evangelical pastor[3] refocused the crowd's attention, elegantly putting into words a worry that other speakers had gestured towards. He questioned the emphasis on performance that seemed to animate the wish for doping, stating that "achievement does not determine one's worth". Members of the generally middle-aged or older crowd, many of whom identified themselves as doctors or other professionals, mentioned the various dangers of doping or threats to identity by undermining "authenticity". "Doping" was often used as a broad label to apply to any intervention that was viewed as "unnatural" or "unnecessary", because there were non-technological means available (for instance in reducing stress rather than taking pills). Doping also promoted the ideal of the "achievement-society" (*Leistungsgesellschaft*), capturing the idea that society is organized around and values achievement (see chapter 2), but if individuals were valued on the basis of performance rather than their "intrinsic" worth this would come at the expense of "dignity" (*Würde*) and "solidarity". Commentators generally made the "ideal of the 24-hour service society" that has led to "time pressure, increased communication, and competition" responsible for the spread of (brain-)doping.

After the conference ended in the late evening, I briefly spoke with one of the organizers, who said that the "audience was very mixed…doctors, pharmacists, teachers, and the educated-

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[3] Religious voices are sometimes invited to give a theological perspective, since many Germans, though avowedly secular, view "judeo-christian values" as being part of Germany's "cultural heritage" (*Kulturgut*).

middle-class (*Bürgerliche Gesellschaft*)", which was exactly the public they wanted to reach to begin a "discussion about values".

On the train back to Berlin, I was struck, if not confused, by the broad swath cut by the conversation I had just witnessed: technological improvement was related to children with ADHD, but was somehow incompatible with medicine; psychopharmaceuticals were of the same category as advanced reproductive technologies and physical body-augmentation, all of which pointed towards a brave new world; troubled boundaries between bodies and technology which implicated a disruption in society at large; the different subjectivities at stake in arenas ranging from educating, to sharing in social life, to developing oneself as a human being; how deeply the market, achievement, and technological manipulation were entangled; the threat that was posed by the new (communication technology/marketplace/global connectedness) and the seeming suspicion of utopias; and the recurring question of where the boundaries to bettering the human should be drawn. But most central was the apparently overwhelming significance of informing the "public": In some form or another, this conferences, as others I attended, seemed to be part of an effort to help the public participate in reflecting on whether the human capacity should be technologically expanded.

Experts and Publics

The significance of "public" discussion is an important feature of the enhancement debate in Germany. Part of the impetus comes from politics: given the presumed significance of public debates about "doping—both for sports and the brain—the German Ministry for Education and Research (BMBF) funded a program called "Translating Doping". It was intended as an interdisciplinary attempt to make research and reflection on doping accessible to a wider public, relying on the "translating" capacities of the social sciences and humanities (Asmuth 2010:5).

One of the important components of the project was a website containing the research results to issues like “what is doping”, “doping and nature”, or “the spirit of sports”.[4]

Intrigued by “Translating Doping”, I spoke with one of the project leaders, the philosopher Christoph Asmuth. After telling me about the history of the project, he explained that this is also an issue affecting adolescents. “We are also making school materials. That’s about prevention—not in terms of saying it [using pharmaceuticals for improvement] is bad, but about educating people about using medications. People need to understand that taking medications has two sides”.

He went on to speak about the many unresolved questions scientists they had consulted raised, like why pharmaceuticals work (or fail to do so), and why their effects vary so widely between individuals. He felt it was important to make people aware of these issues, given the many reports about apparently rising use of drugs for sports, work, school, or recreation. To get a better sense for how this complexity could be conveyed, I asked about the goals of the project.

“So you seem to have a pretty expansive vision of what you’re trying to achieve?”

Asmuth pointed out that the issues were not straightforward, and what this entailed: “Let’s take the question of pharmaceuticalization: you need a responsible and mature citizen (*mündiger Bürger*) who can decide that. That’s why education is so important, why projects like this are so important. To clarify some of the underlying processes. To translate it, so people have a chance to deal with these complex problems, not just say yes or no. That [alone] can’t be the answer.”

Asmuth points out that it was necessary to help citizens form “educated opinions” about the complexities of medication use, a process that ideally began in school. Yet, having an opinion is an issue of *reflection*: the goal is to give people tools to think about the questions at hand, rather than ready-made answers.

As Stefan Sperling shows, helping citizens to understand scientific developments and become *mündige Bürger* has been important in Germany at other times as well. He describes the

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[4] See: www.translating-doping.de. Accessed Mar 26, 2014.

first “citizens’ conference” (*Bürgerkonferenz*) held in 2001 at the Dresden Hygiene Museum on the topic of pre-implantation genetic diagnosis. The conference convened nineteen “citizens”, gave them background information on the topic, and allowed them to ask questions of “experts”. Then, the group of citizens was asked to formulate an opinion that represented the product of a now “educated” conscience. As Sperling says, the “assumption was that ordinary persons, when given the relevant facts, were capable of arriving at well-reasoned conclusions that ought to be respected” (2013:121). But as the citizens’ statement itself noted, the rapid pace of science and technology requires education (*Aufklärung*) beginning at a young age, often in school, to produce citizens able to reach considered judgments (2013:138).[5]

Several have argued that in Germany, these attempts aim at promoting a responsible and ethical stance towards new technology to guard against abuses like those that occurred during National Socialism, which are perceived as a historical obligation. Such civic pedagogy encompasses both national and individual conscience (*Gewissen*), since it is always possible that “citizens may be exposed to risk, health needs remain unmet, human dignity may be violated, and the state itself prove derelict in its constitutional obligations to serve the public good” (Jasanoff 2005:184; cf. Sperling 2008, 2013).

It is often considered to be the specific role of politics to mobilize debates, which attempts to *create* publics through the “reflexive circulation of discourse” (Warner 2002:90). Public debate is believed to be essential for reaching public consensus on controversial or potentially controversial topics; various attempts at constituting and involving publics in deliberating science have been particularly prominent in Europe (cf. Joss and Durant 1995:9; Hagendijk and Irwin 2006). One can understand the purpose of a recent citizens’ conference in this vein. Addressing the topic of “High-Tech Medicine”, which included neuronal implants (a potential form of mechanical enhancement), telemedicine, and palliative/intensive care, the final

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[5] The effort in Dresden was marked by a tension between the natural “reason” that laypersons have, and the “expert” knowledge necessary to reach a sound conclusion. This tension repeats itself in the public debate in many forms, as citizens are believed to be able to make “good” judgements, if they are properly guided.

Bürgerreport stated that new technologies "raise questions that can only be answered in a broad discourse between citizens and representatives of science, the economy, and politics. Democracy depends on citizens who are informed and able to make judgments. And it depends on citizens having the opportunity to add their perspectives to the public debate" (Bürgerreport 2011:5).

Yet aside from the prominent role of the state, there were other actors who were interested in broad and reflective debate by an informed public. I spoke with Bettina Schöne-Seifert, one of the authors of the Neuro-Enhancement *Memorandum*, who had in the past served on the National Commission for Bioethics (*Nationaler Ethikrat*) and is one of Germany's most prominent bioethicists. She pointed to the role of the article about enhancement published in *Nature* in 2009 in catalyzing a broad debate about enhancements (mainly in the US and Europe), and drew a parallel to the *Memorandum*. "I'd say the *Memorandum* was the chance to present a somewhat more liberal position—not, as was suggested, that the authors of the *Memorandum* wanted to give their children Ritalin. We wanted to call for a more open debate, similar to what the *Nature* article by Greely had done. We thought that we had found an interesting way to contextualize the arguments and present our own position. So we asked: do we want a publication that reaches the public? That is ultimately what we ended up doing. *Gehirn und Geist* [where it was published] is a popular science publication…I think the *Memo* was probably part of what mobilized the opposite side that had serious concerns." Importantly, this was congruent with Schöne-Seifert's view of the task of bioethics, as she explained "I have a relatively modest view: bioethics, regardless of whether it is about enhancement or euthanasia, should prompt and catalyze public debate." Bioethics, like politics, can be said to deal with issues that have shared public stakes.

Johann Ach, a colleague of Schöne-Seifert's, who heads the Bioethics Center at the University of Münster, agreed that it was important to have an objective debate that was free of prejudices, which was already an attempt at education (*Aufklärung*). He also pointed out that a debate like that about enhancements could be useful, because

> The enhancement debate teaches us less about what we will do or experience in the future, but something about our present. It teaches us firstly because the enhancement debate is a good opportunity to discuss some basic questions, like what society owes it's members. That's a political debate that we are having anyways, but that you can—and must—debate using these examples [of enhancement]. And second, I feel that in much of the debate there are arguments are about anthropology (*Anthropologisch*) rather than ethics. In those areas I think you can learn something about how we currently understand—or want to understand—ourselves as human beings. Sometimes you only begin to assure yourself of something the moment you feel that you are losing it. I think we have been in this stage for quite a while. We are asking questions about the value of human contingency (*Kontingenz*) when we are afraid of losing exactly this value. So I think it's a kind of debate about self-assurance, and it's important as such.

Using "anthropology" in the sense of a *philosophical* anthropology, which can roughly be defined as a theoretical exploration of the metaphysical and relational nature of human beings, Ach points out that the debate around enhancement deals with questions not only about an ethics of 'right or wrong', but also with more fundamental questions about what enhancements entail for how human beings are understood. As he says, one question might be what the ramifications for long-standing historical understanding of humans as being dependent on the occurrences of existence—injury, suffering, limited capacity—are if technology promises to eliminate precisely those contingencies.

Overall, then, those involved in the debate about enhancement were interested in placing what they saw as important ethical questions on the table, propelling a public conversation that could variously help individuals develop their own stance towards technology, or perhaps develop a more collective position. At the same time, these debates could also be a way to negotiate shared social ideals about critical questions. The significance of *publicly* discussing enhancements reflects the broader significance of publicly addressing controversial issues in Germany, especially scientific and technological ones, and expresses the significance of having "educated" or "enlightened" (*Aufgeklärte*) citizens.

Public(s), Humanism(s) & Enlightenment(s)

In a 1784 edition of the *Berlinische Monatschrift*, Kant argued that enlightenment (*Aufklärung*) was "*man's emergence from his self-incurred immaturity*". But to progress out of immaturity, one needed freedom—“and the freedom in question is the most innocuous form of all—freedom to make *public use* of one’s reason in all matters” (Kant 1991, italics original). Kant argued that only by educated citizens’ free use of reason could the state develop to the point at which political principles were in conformity with “universal reason”, and thus also with man’s “dignity” as a rational creature. Public debates in contemporary Germany are not dissimilar to Kant’s model. Both are a kind of ethical technology to discern how the state (as a legislating authority) can be in conformity with the moral nature of human beings. And for both, the emphasis is on letting individuals speak their minds (in the former case they are educated first to allow them to do so).

Rather than being interested in how closely the German debate approximates the Kantian ideal of producing educated citizens, I am concerned with how the “nature” of human beings is established in the public debate. I will examine this by attending to how the relationships between technology and humans are marked. In Foucault’s (2003) terms, this could be characterized as the relationship between ‘humanism’ and ‘enlightenment’. Foucault defines these terms by offering an alternate reading of Kant’s short text, in which he takes Kant’s title as his own (though he reproduces his forerunner’s ideas with less fidelity). Foucault claims that Kant demonstrates a mode of thinking that seems familiar today, but at the time was perhaps entirely novel: trying to establish a reflective relationship between the moment that prompted his writing, and the knowledge that he was writing about. In this, Foucault discerns “the outline of what might call an attitude of modernity”. He takes this to be an attitude of “permanent critique”, which is itself *the connection to* enlightenment. That attitude takes shape in an ethos which, roughly, tries to articulate the (contingent) form of the human, through what Foucault termed genealogical and archeological approaches. Knowing how our subjectivity is constituted should, in turn, make it possible for us to re-fashion ourselves. In other words, a history of subjects will open “the points where change is possible and desirable, and […] determine the precise form this change should take”. Foucault intends this to be specific, rather than radical change; he has in mind, for example, “relations between the sexes, the way in which we perceive insanity or illness”.

To remain an ethos of critique, Foucault argues that this philosophical stance must avoid conflating “humanism” with “enlightenment”. He characterizes the former as a set of value judgments about specific characterizations (of science, religion, nationhood, persons, etc) that have varied throughout the last three centuries. Thus “the humanistic thematic is in itself too supple, too diverse, to inconsistent to serve as an axis for reflection”. The latter, *enlightenment*, names the ethos of being *reflexively* related to the present (which emerged out of that complex set of historical events and developments related to epistemologies, technologies, and rationalities that is termed *the* Enlightenment). In short, *enlightenment* is a stance, while *humanism* is a theme; they are in a relationship of tension because the theme, and one’s relationship to it, must always be examined anew.

Foucault’s characterization is helpful because humanism and Enlightenment are frequently made more or less synonymous; for example, the notion of human “dignity” or certain “rights” is often seen as necessarily entailed by any “enlightened” notion of citizenship. Similarly, enhancement is frequently posed as a question about *what type of humanism* might be entailed by “enlightenment”: what stance towards the form of the human being is compatible with the Enlightenment (which is presumed to name a kind of rationality, secularism, etc.), or with an enlightened view of the world?[6] Thus Nick Bostrom, one of the most prominent advocates of the view he delineates, writes that “[t]ranshumanism is a loosely defined movement that…can be viewed as an outgrowth of secular humanism and the Enlightenment. It holds that current human nature is improvable through the use of applied science and other rational methods" (Bostrom 2005). Opponents of the likes of Hans Jonas or Michael Sandel would refer to this as a kind of *anti*-humanism, that would end up being a subjugation to technology rather than mastery of it

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[6] Nietzsche’s *Zarathustra* perhaps most famously articulated an the position that he has come to “teach you the overman (*Übermensch*). Human being is something that must be overcome”, provocatively asking “What have you done to overcome him?” (2006:5).

(Habermas 2002:48; Sandel 2007). In short, the important question is to understand what kind of reflexive stance is being voiced about enhancements in the German public debate. In the rest of this chapter, I will work out what kind of "humanism" is assumed in much of the debate, and what this implies about "enlightened" uses of technology.

Humanism: Instrumentalization and Dignity

In Germany, the relationship between humanism and "enlightened" reason or society (particularly with regard to technological intervention) is often understood in terms of the ethical prohibition on "instrumentalizing" human beings. This is frequently expressed in the idiom of "dignity". Such an ethical stance is related to the events of WWII, which seemed to demand a coming to terms with the past, termed *Vergangenheitsbewältigung*. It most often refers to accepting culpability for WWII, though the duty to constantly remember has been called into question especially by younger Germans, who see themselves related to National Socialism only insofar as their grandparents (many of whom are now deceased) were involved, and who reject "responsibility" for the War. Nonetheless, *Vergangenheitsbewältigung* remains a key public project in post-War Germany, for instance through acts of public remembrance (Boyer 2005; Hogle 1999; Mandel 2008; Sperling 2013).

In no small part, Germany enacts its responsibility to the past through the value of "dignity". Its importance is signified by the very first sentences of Article One of the Constitution: "the dignity of the human being is inviolable (*die Würde des Menschen ist unantastbar)*. All government authority has the duty to respect and protect it." This statement is a direct response to National Socialism, where the Nazis had categorized individuals along racial lines, and identified those deemed a "threat to society", like the "anti-socials" (*Asoziale*), which included the homeless, alcoholics, prostitutes, those who were "disinclined" to work. By interning huge numbers of these individuals in concentration camps, the Nazis made them "useful" to the Nationals Socialist vision of the aims of the *Volk*, firstly by forced labor, and secondly by *Selektion* for the gas chamber. Further, as the Nuremberg Trials made clear, the *Volk* was served also through heinous medical and scientific experiments meant to help the military and buttress racial ideology (Procter 1988). Post-War, the founders of the new German state saw dignity as the necessary ethical bulwark against a repeat of NS horrors, and the foundation for Germany's ethical legitimacy. At the heart of the notion of dignity was that an individual's well-being may not be sacrificed for *any* reason, be it for the greater good of society, the advancement of knowledge or economic gain, or otherwise. As has often been pointed out, this interpretation of dignity has a deeply Kantian inflection (Hogle 1999:55-7; Sperling 2013); dignity might be said to name that quality of human beings that prohibits any instrumentalization of individuals. As Kant put it, "persons" (rational beings) are "ends in themselves…whose existence in itself is an end, and specifically such an end that no other end can be set in place of it, to which it should do service merely as a means" (2002:46).

Dignity is frequently appealed to in more political debates or formal contexts, as well as in evaluating everyday experiences. In some cases, dignity is used as a concept that grounds a set of individual "rights". Thus, society's obligations towards those who sought political asylum in Germany were calibrated by a concept of dignity, as political groups routinely pointed out what they saw as violations of asylum-seekers' dignity (i.e. treatment that happened only because someone was a foreigner (*Ausländer*)); occasionally this involved protests against marches or activities by right-wing groups to "get the asylum seekers out" (*Asylbewerber raus!*), coming closer to issues of dignity at stake in WWII. Or, in another instance, conforming to the Basic Law, the obligations of the government are expressed in terms of dignity, as in 2012, when the supreme court ruled that the current levels of financial support for asylum-seekers was at a "level not compatible with human dignity" (*Menschenunwürdiges Eixistenzminimum*).

In other instances, perhaps more deeply historically inflected, dignity is cited when someone's welfare seems to be subjugated to another interest. For instance, drawing recent headlines was the cooperation between the government and US intelligence agencies, as media reported that “German intelligence services give information to US agents that can be used for targeted killings of terrorist suspects. [And] German ministries give millions to a company that abducted people for the CIA”,[7] in addition to letting planes carrying suspects who were supposedly tortured in the “secret prison” network land on (or fly over) sovereign territory. For many, this represented involvement in torture, perhaps considered to be the gravest of contemporary violations of dignity.

Dignity is also used in the context of work situations, when individuals felt their jobs paid them a salary that they considered to be “not worthy of the dignity of persons” (*Menschen-unwürdig*), which they interpreted as their interests being made subordinate to the goals of company profit. In a related vein, people regularly went to court claiming that the federal unemployment agency was violating their dignity through cutting their checks or medical benefits, which were sometimes cost-cutting measures, but other times intended to pressure people into getting back onto the labor market more quickly. Here, dignity functioned as a minimum standard that the state needed to secure for all its citizens, despite its interest in strengthening the labor market or cutting costs. Dignity could also mean respecting someone’s limits. A psychiatrist I spoke to said that “if you need to use pills to do something, that's a problem. *Need* is the key word. I have this stupid picture of a racehorse who is overwhelmed by the race, and only gets things done with self-exploitation…I think performance should always be appropriate to the person performing—maybe that has something to do with justice or humanity”, which points to a necessary respect for someone’s capacities and needs. As I showed in chapter 2, precisely this troubled many, who felt that enhancements were a symptom of contemporary economic arrangements that demanded excessive levels of achievement (*Leistung*).

In Germany, addressing such *systemic* violations of dignity (as opposed to offenses of single individuals) is often seen as a shared responsibility of society towards its members that

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[7] NDR. “Geheimer Krieg.” Accessed April 12, 2014. http://www.geheimerkrieg.de/#entry-70-7761-panorama.

must be discharged; for society to be united in solidarity, not only must vocations of dignity committed by individuals be rectified, but a dignified existence for the (ideally) entire population (present and future) should be secured. Perhaps partly for this reason, commentators have often turned to dignity when scientific advances are at issue. In the wake of the National Socialist era, and particularly since the emphasis on individual rights in the 1960s, various commentators have repeatedly discerned a (pre-)figuration of violations of persons and bodies that rendered some as being outside the usual bounds of protection and vulnerable to abuse by ideology or science, which they contested by invoking the notion of dignity. Resistance often seemed to be premised on the notion that the first step down the slippery slope is taken when "the instrumentalization of the human body [takes place], converting life into usable matter", an interpretation Stefan Sperling points out likely comes from the early reconstructions by German intellectuals of how physicians enacted and justified their abuses through a series of "procedures" and rationalizations (2008).

While certainly euthanasia in all its forms has been highly controversial because it is taken to so closely resemble Nazi violations,[8] dignity can be invoked whenever boundary crossings seem to threaten shared understandings of human beings. In the early 1990s, there was a wide-ranging debate about brain death in Germany, which preceded the adoption of a transplantation law.[9] A main argument against brain death came from a coalition of conservative philosophers and theologians who argued that it was based on a "reductionistic" view of the person, and was "yet another utilitarian, technocratic…discrimination against the weak" (Schöne-Seifert 1999). Schöne-Seifert interprets this to essentially be charging that brain death made it ethically

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[8] See the "Singer Affair" (Schöne-Seifert and Rippe 1989; Singer 1992), when the Australian philosopher Peter Singer was prevented from lecturing in Germany because of his position on euthanizing severely disabled infants, and the ensuing backlash against "bioethics".

[9] Brain death had been diagnosed in Germany since 1968, and had been relatively unproblematic until the public interest was sparked by the "Erlangen Case" (Schöne-Seifert 1999): In 1992, a woman who was 13 weeks pregnant was declared brain dead. Physicians wanted to continue the pregnancy, so they kept her alive, and tried to mimic some of the "normal" physiological environment the fetus would experience (adjusting the woman's hormones, moving her limbs as if she were exercising). Critics were troubled by how the woman was "dead", but "alive" enough to carry a fetus; Linda Hogle reports that the coroner refused to sign the mother's death certificate, so that the baby would not be born without a mother, making her "legally" but not "officially" dead (1999:81).

unproblematic to take advantage of someone who actually needed protection because of their incapacitated state, and did so to further a coldly rationalized and utilitarian end of organ transplantation. Indeed, a (still) prominent evangelical bishop and current member of the National ethics commission, Wolfgang Huber, at that time argued that brain death favored an "ethics of interests" over and "ethics of dignity" that aimed to "submit man to the disposition of other men. It is precisely this claim to power that the 'ethics of dignity' opposes" (cited in Schöne-Seifert 1999). Linda Hogle's (1999) ethnography of German organ transplantation shows how the rhetoric of organ transplant, and physicians handling of organs, meticulously avoids any suggestion of instrumentalizing one person to save another, which Hogle sees as a way of dealing with the burden of history in everyday medical practice.

A decade after debates about brain death, politicians and the public were trying to puzzle out questions about the status of embryos. Debates about Preimplantation Genetic Diagnosis (PIGD) focused on whether the technology would be used to abort embryos who were genetically "unfit". Critics, many from disability groups, charged that this would transgress against the dignity of the less than ideal fetus, willingly judging some lives as "being not worth living", as the infamous Nazi formulation put it (Poore 2005). In 2001 the President of Germany, Johannes Rau, spoke about PIGD specifically and embryo research in general, asking what the measure of human (*Menschlisches*) research should be. For him, research and technological advance was desirable, but it was also a question of the limits of research, because "without limits, with out limitations, there can be no measure", i.e. no research in the proper relation to ethical values (2001). Rau claimed it was clear that "certain possibilities and intentions of bio- and genetic-technology are in opposition to fundamental moral ideals of human life" (ibid.). He went on to warn that "we need to be clear what the consequences are of questioning the canon of values that we have developed in a long history [and that are] the basis of all state action. Would we not be prisoners of a vision of progress that has the perfect human as a measure? Would not selection (*Auslese*) and boundless competition be the highest principles of life?…that would be a new world, and not a beautiful one (*keine schöne*).” Though Rau’s tone was overwhelmingly critical, his speech was for the most part well-received, and the phrase “research according to a humane measure” has persisted as a call for limits.[10]

Drawing even more public attention was the German debate about stem cell research that took place around the same time, at the turn of the last century. The sheep Dolly was cloned in 1996, and two years later, stem cells were widely hailed as promising the future cures for a range of diseases. Because it was believed that pluripotent stem cells could only be garnered from embryos, the ethical and legal acceptability of research was called into question. Many argued that “instrumentalizing” embryos for research purposes would infringe on their dignity. Two different federal ethics commissions were established to judge whether stem cells should be used for research, which formed the basis for a highly publicized debate in the parliament that culminated in a law banning stem cells from use unless certain criteria could be satisfied. As Stefan Sperling shows in his ethnography of this controversy, the ensuing law took the historical significance of dignity seriously, by ensuring that no forms of life would be devalued by prohibiting the use of embryos created after a certain date (several months before the law was passed); that the stem cells used could not have been created by selecting (which would created “waste” embryos that were “unfit”); and created from donated rather than purchased embryos (recalling Kant’s prohibition on instrumentalization, in this case through payment). Parliament saw the 2002 law as a tangible way to set the borders of scientific progress, so that “protecting embryos became a way of showing that even the smallest and weakest were treated with the respect that every human being deserves” (2013:20). Moreover, Sperling argues that the debate itself, like others before it, was framed by legislators as an opportunity to shape a “national consciousness” that respected human dignity, in essence a pedagogical attempt to reproduce a responsible attitude towards scientific progress in German citizens.

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[10] PIGD was not legally permitted until 2014 for fear of “eugenic” abuses, and then only for a restricted set of uses (if the parents have a known genetic defect, or the child is at risk of death or severe defects) by a limited number of centers.

In each of these cases in recent history, the key ethical stance was that individual wellbeing cannot be violated for another, ostensibly higher good; and that no form of human life is outside the bounds of legitimate protection. Thus commentators warned against advances in medicine and/or biotechnology that threatened to instrumentalize some forms of life. One might say that the "humanism" at stake was based on a vision of human "imperfection" (in the sense of being limited), the inalienable worth or value of each life that gave it its significance and justified its existence.[11] The positive content of this humanism was named by "dignity"; when dignity seemed to be imperiled, it sparked resistance. Further, this humanism was linked with an "enlightened" view that valued technological progress, at the same time as its respect for human beings emerged out of the experiences of the Second World War, transforming a mark of past collective sins into a badge of moral vigilance.

***Sloterdijk's Genetic* Übermensch**

As I will argue below, a humanism connected to an ethic against instrumentalization plays an important part in the opposition to enhancements named by "brain-doping". However, before moving to the recent history of enhancement, I want to briefly turn to a wide-ranging debate about something like "enhancement" (a term that was not common until a half-decade later). What is important here is how critics, self-consciously citing the Nazi offenses, closely aligned humanism and enlightenment so that the "nature" of humans, shared understandings about "humanity", and an enlightened society necessarily demanded prohibiting genetic manipulation.

In 1999, the German philosopher Peter Sloterdjik gave a lecture entitled "Rules for the Human Zoo" (2009), in which he argued that the humanistic project had failed. He voiced Nietzsche's Zarathustra, who had seen the "secret of the domestication of humanity" by humanism in the form of "priests and teachers who pretend to be friends of man". These

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[11] Though the "value" of each life is often imagined in absolute terms in these debates, there is a tension with the recognition that national welfare (in the form of scientific progress or sheer cost) might limit the sacrifices taken to sustain certain forms of life.

humanists, according to Sloterdijk, had articulated a "basic conflict…for the future: the battle between those who wish to breed for minimization and those who wish to breed for maximization of human function, or, as we might say, a battle between humanists and superhumanists [i.e. the *Übermensch*]" (ibid.). Sloterdijk argued that "it will become necessary in the future to formulate a codex of anthropotechnology", that would guide the future transformation of humans, a transformation which need not be exclusively technological but could "eventuate in a genetic reform of the characteristics of the species".

This difficult text was primarily intended as a response to Heidegger's mediation on "being" rather than as a program for scientific intervention, and was identical with one he had delivered in Basel the year prior.[12] The lecture triggered a slew of articles in the German media. Reports and replies took place primarily in the *Feuilleton*, roughly the "arts and culture" section of leading newspapers where issues seen as politically or culturally significant are debated. Questions like whether the Nazi crimes were particularly egregious compared with other fascist regimes during the "historian's quarrel" (*Historikerstreit*) in the late 1980s, the controversial Holocaust Memorial in Berlin, or the changing role of Germany as the most financially potent member of the EU in the Euro crisis were carried out in the *Feuilleton*, and it is the preferred forum for writings by figures like Jürgen Habermas or Ulrich Beck in their role as public intellectuals.

The *Feuilleton* is, in other words, a forum for articulating what Kant called "public reason"; it is a venue for debate among the educated bourgeois classes of Germany, or the *Bildungsbürger*. The *Bildungsbürger* emerged in the 19th Century,[13] who Dominic Boyer shows were instrumental in promulgating key tropes of German nationhood like *Bildung* and *Kultur* in

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[12] My account draws on Coenen and Kehl (n.d.), who also provide a history of the *Feuilleton*.

[13] The *Bildungsbürgertum* was are part of the *Bürgertum,* a broad mix of social groups, including civil servants, salaried employees, managers, artisans, and shopkeepers (Hau 2003:10). As many have pointed out, it is extremely difficult to conclusively define either the *Bürgertum* or the *Bildungsbürgertum*, which does not follow clear class or occupational distinctions. In the latter, most, but not all were professionals like doctors, lawyers, publishers, as well as writers and artists; most had university education, and most participated in public "knowledge exchange" (Boyer 2005:53; Kocka 1988).

the 19th Century. Part of my argument is that the debate about enhancements, as those about other technologies I outlined, took place among the *Akademiker,* who comes closest to a contemporary *Bildungsbürger*.[14] Many of the educated bourgeois I spoke to considered themselves responsible for maintaining the core values of *Kultur*, claiming for themselves an ethical consciousness that in post-War Germany often meant establishing it as a nation that has put its National Socialist past behind itself and defends human dignity.

In an important early article on Sloterdijk's lecture by the *Feuilleton* editor of the influential weekly *Die Zeit,* Sloterdijk was accused of advocating a "Zarathrustra Project" in which philosophers and scientists, "in no case could abstain from the 'role of the selector (*Selektor*).'"[15] Sloterdijk "soberly survey[ed] the diabolical potential of genetic research. He knows that….genetic breeding of humans (*Menschenzüchtung*) is no longer science fiction" (ibid). Other articles discerned what they saw to be Sloterdijk's "fascist" rhetoric, calling for "targeted genetic selection under the guidance of a cultural elite",[16] and outlined a history of eugenics from Plato's philosopher kings through the Nazis, and contemporary genetics, which Sloterdijk had to intentionally want to invoke because "his words could not have been interpreted otherwise".[17]

Jürgen Habermas published a broader reply to the visions he saw as underlying the arguments of Sloterdijk and others.[18] He judged that "[w]hat is so unsettling is that the dividing line between the nature we *are* and the organic equipment we *give* ourselves is being blurred" (2003:22, italics original). In response, society should reflexively realize the limits of modernity,

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[14] This seems to be defined largely along the lines of those who hold a university degree, which appears to be a prerequisite for *Bildung*, though it does not guarantee it. Though Sperling (2013) does not attribute the efforts at *Bildung* to a certain group, arguably it is they who are most concerned with the national project of forming "ethical" citizens and nation.

[15] Assheuer, Thomas. "Das Zarathustra-Projekt." *DIE ZEIT*, September 2, 1999.

[16] Mohr, Reinhard. "Züchter Des Übermenschen." *Der Spiegel*, September 6, 1999.

[17] Evers, Marco, Klaus Franke, and Johann Grolle. "Zucht Und Deutsche Ordnung." *Der Spiegel*, September 6, 1999.
Genetics in Germany has long labored to emerge from the shadows of eugenics in the 20th Century (Weingart et al. 1988). In the recent past, physicians have struggled with how to frame reproductive choices in genetic screening (Nippertz 2006; cf. Taussig 2009).

[18] Specifically, the *Feuilleton* of the *Frankfurter Allgemeine Zeitung (FAZ)*, perhaps the most influential newspaper in Germany, had been publishing articles about techno-scientific advances, and about the visions of American techno-futurists and transhumanists who were promising a bright, technologically-enhanceed future.

which Habermas saw in the biological fact that humans are born of chance rather than made by design, a "natural" boundary he believes can be guarded by appealing to dignity: "'human dignity'…is in a strict moral and legal sense connected with [a] relational asymmetry…indicat[ing] the kind of 'inviolability' which comes to have significance only in interpersonal relations of mutual respect" (2003:33). In short, for Habermas "human nature" and dignity are essential to arbitrate the legitimacy of technological interventions, particularly those that attempt to redesign humans and threaten to alter society. The weekly *Der Spiegel* elevated "nature" to a value that Germans were unique in taking seriously. It claimed that "German philosophy" viewed ethics such that "ethics starts with an understanding of the nature of the human being, and draws criteria for action from that".[19]

Again, critics of enhancement like Habermas claim that enlightenment demands a certain form of humanism. In what follows, I will explore the kind of humanism that seems to be at stake in the debate about cognitive enhancement, which shares the acceptance of humans as having limited capacity and the significance of different forms of life. Yet, I will also show how the links between humanism, nature and and enlightened society are not quite as tight as someone like Habermas might suggest; moreover, while many of these earlier discussions about instrumentalization and dignity in relation to technology were haunted by the specter of National Socialist programs to manage the species, debates about cognitive enhancement put instrumentalization in relationship to norms of achievement and political consensus about individual self-development.

"Brain-Doping": Norms and Boundaries

Half a decade after this spate of debates, the term "enhancement" began appearing in the German media, often referred to as "doping."[20] On the one hand, this debate again placed the figure of the

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[19] Evers, Marco, Klaus Franke, and Johann Grolle. "Zucht Und Deutsche Ordnung." *Der Spiegel*, September 6, 1999.

[20] *Gendoping* (genetic enhancement/engineering) or *Hirndoping* (pharmaceutical enhancement).

human into question, highlighting the significance of human "nature": "with novel brain-drugs the essence of the human is within reach: [through] neuro-enhancement…By reaching for pills, we may well be able to dispose over intelligence, memory, learning ability, and emotions in healthy individuals".[21]

On the other hand, the label "doping" points to problems related to increasing performance (*Leistung*) through technology. During a conversation with Thorsten Galert, the organizer and lead researcher of the group that wrote the *Memorandum,* I asked him "Why is achievement (*Leistung*) so prominent in the German debate?"

He believed that

> The uneasiness (*unbehagen*) with the primacy of achievement (*Leistung*) seems to me to be at the root of the neuro-enhancement debate. At least in Germany. I think a lot of the negative responses the topic generates are because many people are just plain suffering under the demands of the achievement society (*Leistungsgesellschaft*). Most people feel--and this is just my opinion as a citizen who has thought about these issues on a certain academic level--most people suffer a lot under the demands of achievement society. And for a lot of them, as soon as the topic psycho-pharmaceuticals is mentioned, this crosses a bright red line.

Galert's observation encapsulated much of the debate, pointing out that the role of achievement in society was a crucial issue that was related to much of the resistance to enhancement.

Based on my reading of the German public debate, I suggest that in the German public debate, the term "brain-doping" captures concerns related to an interplay between norms of achievement and shared understandings of what it means to be human. While the label "brain-doping" has typically been taken to mean that enhancements are "unfair" and "unnatural", I suggest that more is at stake: first, doping points to meanings beyond gaining an unfair advantage in a competitive setting, by referring to forms of systemic abuse that are detrimental to the individuals involved. Doping is thus a *judgment* about the legitimacy of technological improvement, as well as about the standards of performance involved. Second, the "natural" marks a social and ethical boundary, though perhaps different from the meaning of the term in

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[21] Bahnsen, Ulrich. "Neurologie: Denken Auf Rezept." *DIE ZEIT*, January 8, 2003.

sports. I suggest that individuals largely think about what is “natural” with reference to the register of health (i.e. treatments, exercise, and food), and with regard to self-control (i.e. “control over” or a kind of “agency” in one’s actions). In other words, the natural can function to *delineate* the borders of the self. Thus, to understand the historically freighted judgment “brain-doping” makes, it is also necessary to track how the natural is invoked to define the borders of one’s self and one’s capacities in practice. I will turn to the meaning of ‘doping’ first.

Varieties of Doping

Various concerns about *doping* are at stake in Germany. In the media and public debate, the shorthand *Doping* (from *Sportdoping*) generally refers to attempts at improving performance in some kind of organized sports (e.g.club or professional) through the use of chemical substances or technological procedures,[22] which are thought to somehow be “unnatural” because they “add” to the body’s pre-given capacities, which in turn imperils health.

On the one hand, professional sports is a common topic, which seems to demonstrate an unease with the “systemic” character of doping practices. By undermining the ethos of fairness in sports, doping was said to “destroy sports”. In the wake of revelations involving the last German Tour de France winner Jan Ullrich (and especially the American Lance Armstrong), many questioned whether it made any sense to watch the races since everyone was doping anyway, so there was no worthwhile competition taking place, and whether the public TV channel should support such a “dirty” sport by broadcasting the event. Another question was to what extent athletes were being victimized. Though often portrayed in the media as “fallen heroes” who doped for their own advantage, others suggested, as someone who had done research on doping did, that “It's not clear that athletes even have that much freedom to dope. If

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[22] Strictly speaking, doping refers only to using those substances which are banned by international sports authorities, and occasionally epidemiological reports will point out the difference. I use doping to refer primarily to substances, though methods are also prohibited (like transferring red blood cells to increase oxygen carrying capacity).

you listen to what cyclists say after a long career, they say that they didn't want to. But they wouldn't have been able to do their job without doping."

On the other hand, there is a growing focus on the presumed health risks of doping in wider society. In 2011, the Robert-Koch Institute, Germany's federal center for epidemiological research, released a report about the use of "performance improving substances in the everyday and leisure time". The report itself stated that "the prevalence of doping substances [i.e. those banned by international doping agencies] is under one percent" (Hoebel et al. 2011). However, some figures in the report were interpreted to indicate a pandemic, as a newspapers wrote that "23 percent of men who regularly go to fitness studios use anabolic steroids",[23] making the report's findings an indication of a "broader trend" of increased doping in recreational sports and fitness studios.

Worries about too many drugs being used in sports and risks to recreational athletes are familiar from other places as well. Yet, a report from late 2013 shows how contentious doping is in Germany, and how deeply its is imbricated with recent history. Of course, when enhancement was termed "doping" in the years before the report, this could not have possibly referred to the case I outline. Instead, I cite this controversy because it made some of the submerged meanings at stake in "doping" visible.

"Doping in Germany": Controversy and History

To rewind: in 2008, the Federal Ministry of Sports, which belongs to the Ministry of the Interior, funded a research project "Doping in Germany from 1950 to the Present". The goal was an "unprejudiced and thorough examination (*Aufklärung*) about doping in Germany over the past 60 years" (BISp 2013b), since most of the information available was limited to doping in the former East. The study was supposed to be published in mid 2012, but it was not until the fall of 2013 that media widely reported that the full results were being allegedly held up by the Ministry of

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[23] Aichner, Christian. "Leistungssteigerung: Doping in Fitnessstudio Und Hörsaal." *DIE ZEIT*, November 23, 2011. http://www.zeit.de/sport/2011-11/doping-ritalin-hirndoping-begriff.

Sports because of their explosive content. For the next several weeks, the Ministry and those researchers who had conducted the study were in public disagreement, as the former underlined their interest in full disclosure, while the latter claimed to want to publish their data but were being prevented from doing so because they feared legal repercussions for naming powerful political and sports figures who had been involved in the doping system.

According to the published report, a summary of the full version in which most of the names of those involved had been redacted, the West German government systematically doped its athletes and established doping research programs. It was already well-known that the German Democratic Republic (GDR) had developed an extensive, state sanctioned doping system. Werner Franke, the most famous anti-doping researcher in Germany, cites data showing that this included a secret law that made doping the (clandestine) official strategy, and elaborate schemes for testing athletes before they departed for international competitions. Starting in the 60s, the GDR set up a large network of training schools, and tested the effects of what were mostly anabolic steroids on performance. Doping was so effective that in 1977, the deputy medical director of the sports system was quoted as saying "At present anabolic steroids are applied in all Olympic sporting events, with the exception of sailing and gymnastics (female),…and by all national teams" (cited in Franke 1997). Minors were also given steroids from their early teens onward and forced to continue taking their "vitamins" despite visible and painful side-effects—or face removal from school.[24] The most common interpretation of doping in the GDR is that it was seen as a way to validate the socialist character and work ethic, as "the primary motivation was apparently the state's international prestige and the demonstration of the superiority of Socialism" (Franke 1997; see also Hoberman 2005; Johnson 2008:3-6).[25] In short,

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[24] Access to education was a common technique of coercion in the DDR. It is frequently thematized in contemporary fiction about the DDR, perhaps because future chances for work, as well as *Bildung*, were used coercively by the state.

[25] China was accused of GDR-like practices before and during the 2008 summer Olympics. Newspapers claimed this was a fear the Chinese populace itself had: "the public in a country that disregards human rights and persecutes nonconformists can easily believe that the government would willingly risk the heath of its citizens for medals" China was seen as the leading-edge of doping, from which "99%" of worldwide raw materials for doping were sourced, and was the topic of documentaries like one entitled "Olympia in the Kingdom of Substances-Doping in

doping illegitimately improved individuals through technology, was done in secret, came at a high cost for those involved, and was a tactic used for competitive advantage—all of which are summoned when what some call "enhancement" is labeled as "doping" by others, to which I return below.

In contrast to its totalitarian neighbor—which from the West German perspective illustrated the claim that communism was essentially a dehumanized, technological dystopia of industrial modernity—liberal-democratic West Germany had seemingly managed to keep its hands clean, and reunified German sports had followed the path of "clean" (*sauber*) sports rather than the "dirty" (*schmutzig*) East German one. Though research showed that the West also had a doping program before reunification, and many of the top coaches from the GDR were given posts training the athletes of reunified Germany (see Hoberman 2005; Berendonk 1991; Franke 1997; in the popular press, see *Der Spiegel* 1990), doping in the West was not "officially" recognized, and sports functionaries generally insisted it was not an issue. Given the official denials, an article ironically entitled "Doping, Tested and Approved by the State" summarized the fault lines: "Here the Eastern Block (*der Ostblock)*, in which athletes are brought up as sport machines in a collective from an early age onwards, there the West with its individual performers, whose success was founded on talent, hard training, and strong will. The West against the East, good against bad—the roles were clearly assigned. This picture is the lie…that can no longer be sustained".[26] According to the Report, the former West also had an systematic doping machine: "over a period of several years and with high levels of stability in personnel, research was realized and funded that encouraged doping and gave indications for…how anabolic steroid use could be optimized" (BISp 2013:12). Further, "even in the years after German reunification doping in Germany continued to be seen as harmless, and at least in parts was lied about" (BISp 2013:21). Journalists who had access to the full version of the report

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China", which in German is *Olympia Im Reich der Mittel*. The word *Mittel* ('substances' or 'means') is a play on the word "*Mitte*" (middle).

[26] Binnig, David. "Doping, Staatlich Geprüft." *DIE ZEIT*, August 8, 2013.

(which has not yet been released) reported that minors had been doped as well; this was suspected before, but in the report one former athlete interviewed was quoted as having told his coach “You are a pig [bastard], basically, because you gave it to a 14 year old girl, because you gave it to us 16 year old guys, and in general are giving this doping stuff to the entire team”.[27]

After its publication, the report prompted calls for further investigation and strict anti-doping laws. News articles emphasized a crucial conclusion of the study: doping was “not a reaction against the State-doping in the GDR, but parallel to it”.[28] This, it seemed, was the crux of the issue: in the West, doping in the GDR had been viewed as a tactic used by a repressive system to pursue its own glory, trampling individual dignity and rights; it had supposedly been antithetical to the free, democratic West that claimed to regard the individual as the highest good. And the GDR’s practice of doping minors, who were considered to be most in need of protection, had been condemned as being especially egregious. As Ines Geipel, an author and prominent anti-doping activist who helped found a “victims fund” to help those who have suffered as a result of being doped in the GDR (as she herself was) told me in an interview about a year earlier, “the GDR system is the synonym for absolute evil for the West Germans”, to which she added “That's the connotation at least, not the reality.”

In other words, the apparently irrefutable evidence for widespread, government-funded doping in the West undermined an ostensibly strict boundary between the former adversaries, a distinction that had been regarded as a prototypic example of the *natural* and *inherent* advantages of a democratic, capitalist system. As several scholars have pointed out, after World War II, both the former East and West projected the negative aspects of “Germanness” that had led to the War onto the other side, and claimed the positive features for themselves. Thus for the West the GDR incarnated the German authoritarianism that threatened a future Germany, while

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[27] Reinsch, Michael. “Du Bist Ein Schwein.” *Frankfurter Allgemeine Zeitung*, June 26, 2013, 23. See also Sonnabend, Lisa. “Brisante Auszüge aus der Dopingstudie.” *Süddeutsche Zeitung*, August 15, 2013.

[28] “Doping Im Westen Studie Belegt: Auch Minderjährige Betroffen.” *Frankfurter Allgemeine Zeitung*, August 4, 2013, 19.
See also BISp (2012:10).

for the GDR, the West was said to display the values of aggression and self-promotion, fueled by international capitalism. As Boyer says "the other Germany…stabilized a benign Germanness by holding a worse Germanness at bay" (Boyer 2005:187; cf. Borneman 1992; Behrdahl 1999).

After 1989, projections of the other continued to be used as an index of Germany's progress towards becoming a fully modern nation: twenty years after reunification, there was a wide-ranging discussion about how much the former East still lagged behind the former West in terms of economic growth or employment, where many claimed that "the Wall in the head" still existed, indicating an incomplete subsumption of the East into the more "advanced" West. Against this backdrop, doping in the former West and reunified Germany troubled the othering of the totalitarian East. At the same time it threatened the project of building a new state: if the West was hardly better than the East regarding doping abuses, realizing a modern, liberal Germany that had shed the burdens of its past seemed to be pushed further into the future. Ultimately, some defined the goal as creating a society in which doping was not practiced: Horst Seehofer, the President of the powerful CSU party (the Bavarian counterpart of the Christian Democrats) claimed "I would be happy if Germany could claim honesty as a distinguishing feature for itself in the fight against doping. We should accept disadvantages in the total medal count to do so".[29]

Again, my argument is that the use of "brain-doping" indexes the background of "doping" more generally in Germany. Thus, attending to the controversy around the Report is useful, because it makes the *range* of meanings associated with doping visible in a single event. In sum, comparisons of doping and enhancements in public discourse raise a range of anxieties related to technological improvement: as the fallout around "Doping in Germany" shows, this is at one level about using chemical means to secretly better individuals, thereby securing an illegitimate competitive advantage. Historically, it recalls systemic abuses which took place in the GDR, and which were considered to be antithetical to the liberal and democratic project of Western

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[29] Backhaus, Michael, and Roman Eichinger. "Ich Unterschreibe Keinen Koalitions-Vertrag Ohne Die Pkw-Maut." *Bild Am Sonntag*, August 11, 2013, 6-7.

Germany. More generally, those abuses point to a system that is itself highly suspect, in which individuals must technologically improve themselves to meet certain norms (regardless of whether they are not given or feel they are not given a choice). An important assumption here is also that the state can and should have some role in setting these systemic expectations for performance (a position the GDR leadership abused). Moreover, curbing doping—and ultimately creating a society free of doping—is perhaps best seen as a vision of overcoming the troubled past to establish a social and political context that sets limits on how much it valorizes pushing the boundaries of achievement. In the next section I turn to how the limits of achievement can be defined, which is generally only possibly through demarcating "natural" capacities.

The Natural and the Pharmacological

Labeling pharmacological enhancements as "doping", raises concerns about what is considered to be "natural". Doping refers to *adding* biologically active *substances* to the body, producing a result that goes *beyond* "core" capacities or attributes. The crucial boundary seems to be the skin, as if the body served as a "container" fully encompassing the self that should only be broached by ostensibly natural substances like food (Turner 2007; Warnier 2006; but see Farquhar 1994). Yet, enhancements are not necessarily "unnatural" in the same way that doping is since they take place in different contexts, in which the desired forms of improvement differ. As anthropologists have long made clear, what is considered to be "natural" has always depended on, shifted, and been contested by practice (Strathern 2001; Franklin 2007). Hence, I am interested in specifically how enhancements are "unnatural", which I suggest requires attending to questions of nature and health. Following Haraway's suggestion that "[b]y the late 20th century…we are all chimeras, theorized and fabricated hybrids of machine and organism; in short, we are cyborgs" (2006:118), I track how boundaries are redrawn in practice, and how these depend on ideologies of wholeness or unchanging natures (Latour 1993; Sahlins 1996). Thus, I pay particular attention to common oppositions that are made between “nature” and “technology”, or “uncreated” versus ”created”, which are articulated with reference to medications and health.

Many of the contemporary practices and meanings around “natural” bodies or substances were popularized in the late 19th and early 20th Century by the emerging *Bürgertum*.[30] They established a figure that has become common in debates about the place of nature in modernity, marking an enlightened (bourgeois) standpoint that acknowledges nature at the same time as it reflexively transcends it: humans have culture, and can transcend their ‘natural’ instincts; but at the same time one must reflexively live in ‘accord’ with nature. By valuing a rational, moderate lifestyle, in which physical activity and time in nature was valued, the 19th Century *Bürgertum* distinguished itself from the nobility, which was associated with profligate luxury, as well as from the irresponsible and sexually immoral lower classes who were unable to control their bodies. Moreover, a healthy body was believed to enable an increased ability to perform (*Leistungsfähigkeit*) and thus to achieve social and economic success.[31] Sickness, personal and professional failure, and general malaise were attributed to “modern”, industrial and urban ways of living. The path to a “lifestyle in accordance with nature” (*naturgemäße Lebensweise*) propagated by the “lifestyle reformers” (*Lebensreform*) included a panoply of practices, like proper nutrition (often vegetarian), and plenty of exercise and gymnastics in sunlight and fresh air. Natural therapies encompassed various types of baths and showers, and healing springs and sanatorium visits (Hau 2003:9-20).

Both the natural movement of the body and nature in the form of the outdoors was particularly esteemed. The nudist “free body culture” (*Freikörperkultur*) of the slightly later Weimar era was premised on allowing individuals to reveal who they “authentically” were by removing the distorting effects of clothing, and create a community of equals (Hau 2003:176). A range of alternative and complementary therapies based on “natural substances” (*natürliche*

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[30] See footnote above on the *Bürgertum*.

[31] Barbara Duden (1991) argues that in the 18th century bodies became more individualized and subject to one’s control, which made the prospect of counteracting modernity’s impingement on the body through practices possible in the first place.

Mittel) also became popular, like homeopathy, "biochemistry" based on balancing eleven basic salts in the body, or plants that were specially prepared.[32] All of these treatments emphasized the healing properties of natural substances (which needed to be extracted or potentiated), and promised a more "holistic" treatment of the body, in contrast to standard medicine, which reformers thought to be reductionistic and ignoring the individual (Jütte 1996). During the Weimar period, physicians increasingly began to offer alternative treatments as part of their practice, a syncretization that was continued under the Nazis, who valued "natural" therapies for their connection to the "soil" and *Volk* (Hau 2003; Procter 1988).

In contemporary Germany, "natural" is still inflected along the above lines. Both nature as a privileged location, and the status of natural substances remains important. Activities "in nature" are highly valorized for their positive effects. "Time in nature" (*in der Natur*) was cited by many of my informants as the ideal solution to their stressful everyday, if not as a necessary counter-balance. (It was also viewed as a solution to prevent burnout, which I discuss in chapter 5.) During my fieldwork, a debate flared up again about what to do with the *Tempelhofer Feld*, an enormous abandoned airport that had served West Berlin, and which has since become a refuge from urban life, where popular activities included gardening, flying kites, sports, or simply relaxing on the grass. In this case it is a minimalist version of nature, literally a flat grass field with runways that sits in the shadow of an airport building built by the Nazis, that marks a space of freedom from the pressures of urban life (see Stoetzer 2011).

Natural substances, as well, remain significant. Particularly older Germans insist on regularly doing a *Kur*, or a few weeks in a sanatorium (which insurance often covers), in one of the "State-recognized Healing baths (*staatlich anerkannte Heilbäder*), a special designation that is conferred by the regional government if certain criteria are met. Recognition is based in part on the "scientifically" validated presence of a natural "healing substance" (*Heilmittel*), like water

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[32] Even hormone treatments were claimed to be natural and offer to restore vitality, most famously by the Vienna physician Eugen Steinach. Others count Steinach as among the earliest example of "modern" enhancements (Hobermann 2005; Rothman and Rothman 2003).

with a certain mineral content. In Germany's highly-developed Western biomedical system, physicians are more comfortable with medical pluralism than their US colleagues: biomedically trained doctors routinely prescribe homeopathic treatments, which were in the past covered by insurance (see Frank 2002).[33] Natural or plant-based treatments are frequently viewed as being particularly effective, and advertisements suggest that this potency comes because they offer "natural support" (*natürliche Unterstützung*) for the body to "heal itself". Common treatments for ailments like a sore throat or cold are likely to be plant-extracts or homeopathic, and it is impossible to purchase many of the treatments offered over-the-counter at US pharmacies. My German interlocutors were often surprised at the kinds of remedies available in the US, seeing them as "too extreme" (*zu hart*) for minor ailments, which also were thought to "suppress" symptoms rather than "support" healing. Perhaps the appeal of natural substances can best be captured by the phrase "power of nature" (*Kraft der Natur*), which seems to describe a kind of essential potency that substances, by virtue of their contiguity with "nature", can give to the ailing body. (Again, however, this potency must be *made* useful through proper preparation that relies on a high level of expertise.)

Biomedical treatments are in an interplay with "nature". On the one hand, they seem to be popular primarily for more serious ailments. Acknowledging that sometimes "natural" treatments are not enough, the border between natural/unnatural can be re-drawn to maintain an overall commitment to "natural treatments". Such a concern may be related to strictly patrolling the boundaries of one's body, as Thorsten, a student said: "I'm generally anti-drug. I have a tendency to get ear infections, so I will take antibiotics then. But people who buy cough syrup, I don't do that….I decided that I would take few things, and do it consciously (*bewusst*)."

On the other, "natural bodies" are hybrids whose meaning is calibrated in relationship to biomedical notions of pathology. Judging how "natural" using prescription pharmaceuticals was partly depended on whether a disease was being treated. Thorsten explained to me that he felt

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[33] Of course, many also dismiss alternative therapy's claims to efficacy.

using enhancements “is unnatural. There are some people who can't take up the neurotransmitter like dopamine, so they're not as happy. So if you help them become more normal, I think that's good. And I can understand that. But if there's not just a deficit, but it's normal and you make it permanently better, that's a step *beyond* nature” Another student, expressing misgivings about herself using medications to study, said that she thought the medication was unnatural because “the drugs are supposed to be used for disease. Ritalin is for ADHD. It's for neurological problems, not to pass exams.” Here, it seems that authoritative biomedical pronouncements of pathology, which must also implicitly identify some suffering, can supervene on basic oppositions, naturalizing pathology into something “unnatural” and health as a “natural” state; when natural:unnatural corresponds to normal:pathological, treatment then becomes somehow continuous with nature, by “restoring” it (a fundamental distinction mirroring much of the academic literature on enhancements, which I argue in chapter 6 is more tenuous than often assumed).

Nonetheless, biomedical authority is also contested in public laments about the expansion of medical categories. As an article charged, antidepressants are prescribed very quickly, “even though sometimes simply a tea from the supermarket to ease sleeping[34] would help”, which both limits biomedical claims and asserts the potency of natural substances. In the same article, it is observed that American students are taking Ritalin to study, and though there are no data for German students, a report released by a health insurance carrier claimed that “1 in 10” medications students take are psychopharmaceuticals. The article goes on to assert that unnecessary treatment is taking place, providing a speculative explanation of hard numerical data—thereby indicating that medication is being used for every need in the “everyday”, conveying shared anxieties about the spread of medicalization generally.[35]

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[34] Magerl, Sabine. “Die Welt Als Pille Und Vorstellung.” *Sueddeutsche Zeitung Magazin*, February 15, 2008.

[35] Some have applied a very strict standard for medicalization: Several years ago a new category known as the “individual health-service” (*Individualle gesundheits-leistung*) was introduced, which doctors can offer to patients but are not covered by insurance. Typically this includes blood tests, ultrasounds, or travel medicine, as well as cosmetic and reproductive medicine procedures. This category has been seen by scholars in Germany as an example

Boundaries of the "Inner Self"

Medicalization frequently seems to imperil subjectivity. In the last chapter, I discussed the controversial increase in ADHD diagnosis and Ritalin prescriptions, which many thought attempted to improve academic performance in school. Since drugs alter children's brain chemistry, pharmacological therapy has long motivated strong resistance. Books, newspapers, and reports about ADHD—like "Family at war about the Fidgeting Philip"—frequently depicted parents' struggles and misgivings about deciding whether their children, who could reasonably benefit from *some* form of treatment, should receive medications. Parents almost invariably expressed doubts, like a mother wondering if "I am giving him Ritalin so I have some peace and quiet, or so that he can find some peace for himself?"[36], often to the extent that pills were seen as a last resort when the children were so disruptive that they were constantly in conflict with their parents, and when parents were unable to work because they were spending so much time trying to help their children who were failing school or were socially isolated because of their behavior. I spoke with a psychiatrist who specialized in children's ADHD, who felt the tensions in giving children medication himself, carefully expressing that he thought it was sometimes inevitable: "Let's say your kid is very intelligent but also very nervous, but can't do schoolwork, do the *Abitur*, or then go to college. It's important to protect kids and the natural is the best, but you may need to treat the kid so he can express his capabilities fully. I don't want to give my kid pills either, but if I'm blocking his future, I need to give him the treatment."

This kind of struggle seemed necessary before reaching the conclusion that medication should be given. Here, biology functioned as a visible boundary, making material interventions somehow more invasive than talk therapy or environmental changes (like switching schools). As

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of "wish-fulfilling medicine" (*Wunscherfüllende Medizin*), which has been defined using medical knowledge to "change "one's own physical constitution to achieve exactly that proximity and fit to the kind of life that he or she wishes" (Kettner 2006). This presumes that insurance pays for essentially all of the necessary and helpful tests or procedures, leaving the remainder as a sign of presumed loss of medicine's curative ideals, in addition to being "useless" or "harmful" treatments.

[36] Schmitz, Thorsten. "Mach Mich Lieb." *Sueddeutsche Zeitung*, November 5, 2011, 3.

an alarmed editorialist writing about a report indicating rising Ritalin treatment for ADHD suggested, "Maybe we should simply extend the treatment. Before Ritalin can be prescribed, every father and every mother should try the pill themselves. The parents would immediately recognize how potent and strong and consciousness-altering this medication that they want to give their children is".[37] Such a comment reveals deep-seated anxieties about altering children's' biology, and by extension their development and self-determination. Rather than the widespread rhetoric (particularly in the US) that pharmacological treatment "uncovers" something hidden (Singh 2005), drugs were thought to necessarily produce some kind of loss for children. Preferred treatments for ADHD were those that restored a "natural" state by undoing negative influences, which were seen as corrupting children's "needs", like giving them time to play, and space to be creative and "freely" express themselves. Thus, favored approaches were changes in diet, less media, and most frequently, more time in nature. In short, one might say that children seemed to have an "inner nature" that needed to be protected from pharmacological discipline; the same held true for adults, but to a lesser extent because their self-development was less inchoate (see below).

A first main opposition between "natural" and "unnatural", then, relates to the substance itself, and whether its origins seem to come from "natural" sources. By this logic, pharmaceutical enhancements are "unnatural." Transgressing this boundary was itself enough for many to reject enhancement.[38] People often felt that their bodies had enough "potential" (for health, activity, or

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[37] Bohnsem, Guido. "Amerikanische Verhältnisse." *Sueddeutsche Zeitung*, January 30, 2013, 4.

[38] For most of my informants (regardless of age) the perception that enhancements were unnatural was considerably more significant than their being potentially illegal. However, once the category of the "natural" is established (or projected retroactively), it seems to form the basis of other evaluations. Ideas about what counts as "natural" are implicated in instances when informants told me that they saw no issue drinking coffee, but considered caffeine in pill form (only available over the counter in pharmacies) too much (*zu hart*).

In the popular debate, as well as in academic writings, prescription pharmaceuticals are typically opposed to other, less objectionable forms of performance improvement. These usually include coffee, energy drinks, and caffeine pills, substances that are presumed to be functionally and practically similar to medications, i.e. they are neurobiologically "effective" and are used to "improve cognitive performance". (Here *function* is used as a calibrating standard (cf. Bowker and Star 1999).) Research indicates that these three substances are similarly effective to some prescription medications, but they are generally not considered to be instances of brain-doping. According to Franke and Lieb, two psychiatrists who have written most extensively on pharmacological enhancement in Germany, brain-doping "consists of prescription substances used without medical indication and illicit drugs" (2013). Coffee is generally seen as entirely unproblematic, since it has historically been a *Genussmittel* other demands of life), which only needed to be released. As one academic put it, his sense was that "the acceptance of pharmacological enhancement doesn't meet such fruitful soil here [as in the US]…it's purely compensatory: you take something to not have pain, to not be depressed and so on. But this idea of making your life better or more relaxed through pharmacology—I haven't met that idea in Germany.…I know for certain that the Germans are opposed to leaving the natural basis [of their bodies], or to do something about that basis. That's a *Bürgerliche* perspective." They worried that using enhancements would probably lead to disease, either because of known risks to health (insomnia, addiction, etc), or some kind of general sickness.

Crossing into the territory of the unnatural was also perceived as alienating. One student explained that "I also want the feedback about my performance when I study and take an exam. But I don't get a feedback about my *personal* performance, I get a feedback about my performance on some kind of braindoping drugs". I asked if this meant that "So the work that you [hypothetically] did on Ritalin would not be your work?"

She replied: "Well part of it yes, but I think there is some kind of additional effect. That's why I wouldn't take it." She continued, "I can imagine that if I learned a lot, I want to *show* that as well. And if it's based on something like concentration--and for me it's often based on that--I took an exam, and [I might be] really upset afterwards, because I made typical mistakes like not reading the question well enough."

In some sense, here the "natural" seems to be a horizon that cannot be precisely pinned down or reached, but which orients practice, in the sense of making distinctions between oneself and substance. In another sense, mixing oneself with drugs was undesirable because my informant, like many others, preferred to retain control (*Kontrolle*) over her body, which sometimes meant being responsible for failing. This recalls older notions of what a "self" is: an

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(foods eaten for their pleasurable taste and excitatory effects, like coffee, tobacco, or sweets), and "[f]or centuries, caffeine [presumably in the form of coffee] was the most important substance for enhancing one's own cognitive abilities" (ibid.). Likewise, energy drinks and caffeine pills are unproblematic and familiar forms of improvement. These categorizations of brain doping seem to reflect naturalized assumptions about the legality and social acceptability of using certain substances, since "doping" is stigmatized as an illicit practice, as is "misusing" medications. (Neither taking a medication without indication, nor doping is *illegal* in Germany.)

individualized, bounded, self-contained unit in control of her physical, cognitive, and affective processes (Schepher-Hughes and Lock 1987; Strathern 1988; Comaroff 1992; Taylor 1989). This self uses her biological abilities, as John Locke argued in the 17th Century, to create value, taking things out of the “state of nature” and mixing them with one’s labor (Lock 2003:111-2). As Stephan Palmié puts it, this makes her body the “archetypical motor of the generation of utility and […] satisfaction” (2006:856). But of course, since it is precisely one’s self as a “motor utility” that is at stake in technological manipulation, one could observe that “when the sense of social order is threatened…the symbols of self-control become intensified along with those of social control” (Schepher-Hughes and Lock 1987:24). That is to say, the general anxiety about one’s productive capacity or fitness (indexed in part by purported increases in medicalization, the thematic of “brain-doping” itself, and the general problems around achievement) may have made it particularly important to assert control over one’s creative powers, including over the authority to choose (rather than be forced) to be rendered “insufficient”.

The Body in Balance

Almost all of my informants drew on some version of this basic contrast between natural and unnatural kinds of substances, to which biomedical categories were laminated. Often, it was not elaborated further, as they seemed comfortable drawing a bright lines relying on general categories of “natural”. Users made an additional set of oppositions. They centered on the dyads *harmony:disequilibrium*; the closely related *sustainability:in-sustainability*; and *self-control:dependence*. My sense is that these oppositions were shared with those who did not use drugs, but users often seemed to have reflected more carefully on these categories as they were trying to find their own boundaries with regard to what use was “unnatural”.

I asked Max, a law student who had just finished his bar exam, how he felt about his Ritalin use.

"It was always short-term for me; I wouldn't be able to see it as ok over the long-term, because I know I would be demanding too much from my body. And I would pay for it later, regardless of whether that's Alzheimer's or something—your body has certain potentials, and you should use those potentials. [But] if you take too much from your body, that will be missing somewhere else at some point. You don't want that, you want to be in harmony (*im Einklang*)."

I returned to this a little later in our conversation. "It sounds like 'natural' (*natürlichkeit*) is an important idea for you?"

"Yeah, exactly, it is. That's why I'm not a fan of medications, because those kinds of things don't exist in nature in the same concentrated form. So it would be chemical or synthetic—then I'd rather have something that nature made. Nature is a model of how perfect everything is. I think many of the diseases we have these days are due to unhealthy food, preservatives, industrial sugar, stress, etc., are all things that don't exist in nature. "

Though he disregarded his body's "harmony" for a certain period of time, Max's claim that nature is a "perfect model" appeared to be a commonly held sentiment, pointing to an overall order that seemed to flow from nature, mirrored in the body's arrangement of potential to act (sometimes "evolution" was gestured towards as an overall organizing principle). Trying to improve on one's "natural" capacities, then, ran the risk of disrupting the body's harmony, creating a disequilibrium that could not be surmounted. This balance would be disturbed by pharmacological substances that would initially supplement, but later become a lack.

At the same time, *im Einklang* also seems to refer to being in a kind of harmony *with* nature, since precisely the disjunct between normal life and "nature" seems to be responsible for sickness, recalling the point made a century ago with a life "in accord with nature". This point also relates to the second opposition, sustainable:unsustainable. By pointing out that something will be "missing" in the future, Max seems to be making a claim about how fleeting technological improvement is: it cannot continue into perpetuity, because at some point, the costs of "demanding too much" would come due. Stated differently, maintaining the body in its "natural" state implies that it has the potential to be sufficient and renew itself. However, once one intervenes too much, the body becomes a finite resource, modeled as a closed system in which a surplus in one area produces a deficit in another. This again represents a perspective that does not naively accept one's 'natural' body (or nature) by acknowledging that one can intervene in nature, but does so reflexively. Here, one might note an iconic similarity between the body and ecology. A major debate in Germany, as elsewhere, is about how "sustainable" current forms of production and habits of consumption are. A common trope is that the "future" can only be secured by respecting the "limits of nature"—how much can be produced, how long ecosystems need to regenerate themselves, how many people can be supported. My point is that there are similarities between how the limits of "natural" organisms or systems are imagined—boundaries that could be put in "scientific" terms, as Lisa did:

> I want to be certain that I myself can learn as much as I need to. And I don't want to ruin that, since you can build up tolerance to drugs. That probably changes you in the head if you take it. Like if you take something, your body stops producing that substance, or if you drink too much alcohol, you body doesn't make the endorphins anymore (*Glückshormone*). I don't know if this is how it works, but if you're constantly taking something to improve your concentration, at some point you may not be able to concentrate on your own anymore. I'm afraid of that, so I wouldn't want to use it too much.

This was because, as she had said earlier, "I want to be able to control when I take the drug myself. That's why I'm happy I don't have really bad problems with concentration. There are some people who have it really bad, they can't even study at all. [That would be a problem because] I'd be dependent—not because I was addicted—but because I wouldn't be able to do it without the drug." Here, the concept of "tolerance" does the work of describing the disequilibrium produced in the body by drugs. Given too many pills, the body becomes unable to act (it loses its potential). By extension, Lisa would lose control over some of her capacities. Again, the "natural" body is important: Lisa does not have the biological limitations that others have, and it is her unmarked body producing the "happiness neurotransmitters" that she needs to concentrate. The opposite to control through technology, then, is dependence on it.

In sum, I argue that while my interviews and analysis of the debate showed that there was a reflexive relationship to nature/natural in the sense that intervention was possible if it remained in concord with nature, enhancements were problematic: the relationship between enhancements and meanings of the "natural" embedded in habitual forms of life become visible largely through oppositions articulated in practice. Most fundamentally, between substances valorized because they transport an "essence" of the natural world, and those based on the sometimes dubious potency of scientific manufacturing. Intersecting with this is an understanding of "natural" for bodies that closely follows the distinctions between normal/pathological established by biomedicine. Enhancements, being substances from the outside, would transgress the boundary of "natural" capacities by being a technological augmentation. Enhancements might also undermine the inherent potentials of the body, possibly ending in sickness and loss of control over one's capacities. This view was perhaps related to notions that nature was a model of harmony which could be disrupted by drugs; and that such an unsustainable use (what many called "exploitation") of one's body could easily lead to dependence.

***What's Wrong with "Brain-Doping"? Intersections of Dignity,* Leistung*, and* Bildung**

In this section, I want to bring together the threads developed in this chapter and the previous one, to sketch the ethical stakes that are at issue in "brain-doping" in Germany. In the last chapter, I showed how neoliberal discourses around work and education have emphasized the centrality of achievement to individual and national welfare, which has resulted in an increase in the felt pressure and widespread anxiety about maintaining and increasing performance. Because enhancements seem to produce the subjectivities seemingly required by these regimes of achievement, the drugs have been interpreted as a sign that individuals, in their "usual" or "natural" form, are inadequate to presently existing demands.

In the debate, many claim that it is deeply problematic if humans are being constructed as insufficient and in need of technological remedy. This claim is grounded in a (Kantian) ethical stance, which has often been expressed in terms of “dignity”, which prohibits “instrumentalizing” individuals for any end whatsoever, and values the “given” or “natural” human form in itself. This stance tries to move between on the one hand the demands of enlightenment, which include altering or overcoming the “natural” world, at and on the other accepting and protecting human weaknesses, militating against technologically overcoming human limitations if that were to “harm” or “devalue” some people.

My claim is that the widespread use of the term “brain-doping” is an implicit critique of enhancement, which functions by mobilizing the ethical prohibition on instrumentalization. Doping indexes a kind of systemic pathology in the technological pursuit of improvement, and the “natural” functions as a way to delineate the edges of the self and its capacities. Thus, “brain-doping” functions as an ethical judgement about overcoming limitations through technology, marking *boundaries that should not be crossed*. But what is the *specific* content of the critique? In other words, what form of humanism is being defended?

I argue that a particular form of the human seems to be at stake, one characterized in terms of the development from “potential” to “actual”. Most broadly, enhancement negotiates tensions between achievement (*Leistung*), as productive capacity “instrumentally” directed towards some pre-given end, and self-development (*Bildung*) as a creative, auto-telic, or aesthetic process. At least two related kinds of critique can be identified in the German debate.

Firstly, a version of autonomous self-development associated with the classic domain of education seems to be at stake. *Bildung*, as Dominic Boyer argues, is a key trope of German nationhood. Difficult to translate directly, it captures something claimed to be unique about German *Kultur*, which Norbert Elias’ study of manners shows was a result of attempts on the part of *Bildungsbürger* (educated bourgeois), to define themselves against the German nobility in the 18th century (Elias 1994). While the nobility were engaged in court life and its “superficial” behaviors, the *Bildungsbürger* valued “natural”, sincere behavior and self-development. Significantly, to have *Kultur* one first needed to have *Bildung,* which is to say that cultivated subjects needed to be *developed* as such. Along with figures like Schiller, Herder, and Goethe, Kant emphasized *Bildung* as an aesthetic and ethical process. In *On Pedagogy*, he writes that the purpose of *Bildung* is “education towards an autonomously acting person, that can persist and be a member of society, as well as have an inner worth for himself” (Kant 1803:12; Cf. Sperling 2013).

As I showed in the last chapter, one important part of the debate about enhancement in Germany was the use of Ritalin to treat ADHD. Many interpreted the increase in pharmacological treatments as thinly veiled attempts to medicate performance. They felt it was especially important to protect children from unnecessary medication, because they were thought to have a kind of “inner nature” that needed to be nurtured in a supportive environment. I asked Ines Geipel, a prominent critic of doping and enhancement, what she would propose against what she saw as the excessive use of medications.

She paused. “It's related to how you see what being a human means. Is it a question of functionalization? That's part of the chemicalization [of individuals]. I would hope that childhood is an arena free from this functionalization. That kids can play, experience, most of all that they can make mistakes—these days in Germany, three year olds need to learn Chinese. The kids are being trimmed, and this pressure of society is being transferred into this early formation period absolutely linearly. What is the end result supposed to be? Do we want machines or do we want humans?” Instead, “we need to have childhood be a maximally free space. The question needs to be: what do our children need to be to become individual persons? Without being closed off by other demands to discover their own internal freedom? But the trend is in the completely different direction.”

“Do you think it's a social task to decide on whether adults can take enhancements, or an individual question?”

“I can imagine that if you have had a childhood with maximum freedom, you might not fall into this efficiency thinking. I think it's fatal that childhood keeps getting shortened…If you're in a good environment, childhood is the best phase. It's not at all clear why kids should have their peace for 3 years, and then they need to function. So I think that if this early phase were longer, they would be protected *out of themselves* from these social pressures."

Geipel saw the primary reason to use enhancements to be an "efficiency thinking". She linked childhood to the mature self, believing that the "inner nature" of children, given enough space for self-development, might develop its ethical potential in the form of individuals who were resistant to the desire to technologically improve.

Others echo Geipel's views on self-development. Primary school was seen as a critically important "free space" (*Freiraum*) of *Bildung* for children. Parents and teachers claimed that the emphasis of early education was supposed to be on giving children the time and freedom to cultivate their interests and capacities at whatever pace, and in whatever direction, they chose. As a parent, I got to know several others with children during my fieldwork. Whenever the conversation turned to school systems in different countries, most said that they preferred the German model, in which children are supposed to only play (*spielen*) until at least second grade. They saw play as an essential step in their child's formation, a self-directed development that needed time to unfold (cf. Schiller 2004). Thus, these parents felt that when children received medications to help them do better in school, this was contrary to their development. A similar position was taken by an article in the *Frankfurter Allgemeine Sonntagszeitung*, a widely read Sunday newspaper, which carried the subtitle "Ritalin is a pill against an invented disease, against the disease of being a difficult child".[39] By making the children, usually boys, calmer, the drug made them better able to perform in school, but also made them "smooth, and docile, and quiet. And dependent", drawing a contrast between children on Ritalin, and those who had the space to develop autonomously. As a mother quoted remarked "[my child] has a strong character, like I do…you can't just treat that away". Pharmacologically fixing children's performance seemed to undermine the idea of *Bildung*, and children's chances at self-development. Claims

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[39] Hoffmann, Christiane. "Wo Die Wilden Kerle Wohnten." *Frankfurter Allgemeine Zeitung*, February 16, 2012, 2-3.

warning of an "ADHD generation" would seem to underscore anxieties of a systematic disregard for the dangers of medication.[40]

Secondly, these concerns seemed to be related to market regimes. As I showed in the previous chapter, many wonder whether contemporary arrangements of the market and social life have created a system which routinely demands too much of individuals. In this context, "doping" appears as a troubling solution. This anxiety takes up older German attentions to consequences of changing regimes of capitalism for conditions of social life and for forming subject-workers, first articulated by Marx, and thematized again in the turn away from the corruptions of "'modernity and capitalism" at the beginning of the 20th Century that I discussed above (cf. Hau 2003), or in post-War critiques mounted by the Frankfurt School (Horkheimer and Adorno 1987).

A common problem with contemporary achievement at work is that it led to what is called an "elbow[ing] society" (*Ellenbogengesellschaft*), where everyone was trying to get ahead regardless of the consequences for others. The trouble with a *Ellenbogengesellschaft*, I was told, is that it undermines national "solidarity"—an important part of the post-War political consensus—often leaving the "weak" behind. Particularly with reference to the economy, the state was supposed to temper the vicissitudes of the market, to protect the weak and maintain solidarity among the population. Though the *Memorandum*, the brief arguing that there could very well be benefits to enhancement, is generally viewed as taking a permissive stance, its authors nonetheless felt they needed to address this point. In a section entitled "On the way to the *Ellenbogengesellschaft*?", they argue that "those people who try stimulants or smart drugs without thinking carefully about the risks are probably under high pressure to perform. That is troubling, and no one could want that the social pressure to compete, which is already high, to rise even more through the spread of neuro-enhancement. A thoroughgoing orientation of life towards performance (*leistung*) and efficiency would be inhuman and exclusionary….the central

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[40] Arguments about university students would appear to function according to a similar logic, in the sense of lost opportunities for Bildung (though fears about corrupting an "inner self" are less pronounced).

ideals are a flourishing life (*Gelingendes leben*), inner wealth (*Innerer Reichtum*),[41] and humane society" (2009:43). Here, achievement (*leistung*) is explicitly problematized as something that must be limited, or it becomes "inhuman" and "exclusionary", both of which speak to the disregard for those who cannot achieve at the highest levels, as well as the dearth of meaning associated with productivity (i.e. efficiency and maximization) that is an end in itself. Several of those I spoke with at length about enhancement who did their own research on the topic thought that more performance must have a "why" (*wozu*), or it risked being meaningless, becoming what one described as "a kind of perpetual motion machine".

I take this to be an *ethical* stance, because it presumes that there is a hierarchy of "value" or "meaning" governing human activity. Thus human activity that exclusively serves some end like more efficiency for its own sake is less desirable than one that orders efficiency in an *overall* ethic. This could be seen as a variant on the idea that human activity should not be instrumentalized. One reason for this stance is surely the value of "dignity". Another might be related to self-realization *vis-à-vis* alienation. Marx's argument about alienation is helpful to illustrate this point. Recall that Marx argues that in the capitalist system, humans' productive capacity is materialized through objects in which producers, because of the fetish of the commodity form, cannot recognize themselves. Importantly, this alienation becomes problematic because humans have what Marx termed a "species-being", which he imagined as humans' potentials to unfold themselves in (non-alienated) activity. Marx's characterization of humans as self-conscious beings who must "express and authenticate [themselves] in being as well as in thought" (1964:208) entails that humans come to understand themselves through their creative activity in the world. The point here is that a self-perpetuating pursuit of achievement for its own sake seems to be worrying to many in the debate because, like alienation, it drives a wedge between humans creative activity, and self-realization *through* that activity.

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[41] This refers to a mix of self-realization, fulfillment, inner peace and happiness.

This point is not specific to capitalism. These frictions around self-development might be said to reproduce a long-standing tension between subject and system. Dominic Boyer (2005) argues that a recurrent theme in German history has been finding the individual possibilities for self-development and self-fulfillment in the existing institutional and social regime, or between *Bildung* and *Prägung*. Thus, one could say that the attention paid to the possibility of a society in which enhancements are commonplace raises more general questions about social relations. Anxieties about achievement are tied up with the liberal project of Post-War Germany, in which each individual should have the space and resources to develop themselves. A very broad meaning of *Bildung* is at issue here, going beyond the development of politically informed citizens (able to participate in public debates) or self-directed adults. It overlaps with self-realization, and perhaps most generally is related to freedom. The contemporary form of self-development at stake is indebted to the "alternative social movements" of the late 1960s and 70s. These valorized self-development and independence, and deemphasized work as a means to that end, primarily because the "capitalist" arrangement of the latter limited the former. Though originally *counter* to reigning social norms, these ideas are now central to the middle-class imagination, commonly invoked as justifications of the individual's potential for self-directed growth (cf. Reichhard and Siegfried 2010:9-22).

In regard to enhancements, it follows that an excessive focus on work or improvement can be antithetical to one's self-development, something condensed in an article in the most popular weekly, *Der Spiegel*, which several of my informants cited. It hyperbolically praised the effects of Ritalin in reporting about a very active professional mother, who "could do more than ever before, and knew more than ever before".[42] But, in trying to maintain this level, she began taking too many medications, and started living in a "tunnel" and "hated herself". After treating what had turned into an addiction—to drugs, but also to achievement—she recalled it as the "'dark time'…in which I was walking through thick fog'". The trajectory outlined here is interesting

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[42] Blech, Jörg, Ulrike Demmer, Udo Ludwig, and Christoph Scheuermann. "Wow, Was Für Ein Gefühl!" *Der Spiegel*, October 26, 2009.

because it paints a picture of "brain-doping's" spectacular effectiveness in terms of very desirable results with Ritalin (able to manage one's day, do more than before, expand one's knowledge and understanding). At the same time, this surfeit of improvement leads to a complete loss of self (going to the addiction clinic was like an "execution", the woman says), dramatizing the dangers of pharmaceutically surpassing one's limits rather than living with them. As the doctor, voicing what seems to be the moral of the tale in the final lines says, "someone who knows his potentials and how to develop them does not need these medications".

Conclusion: Humanism and Enlightenment

In sum, "brain-doping" seems to fuse different modes of historical attention: to preserving pedagogy and self-development; to maintaining possibilities of self-realization in the face of market demands; and to protecting "natural" capacities that seem open to intervention. Through these claims, an imagination of humans as sufficient in themselves is being mobilized: individuals have an inherent limit and pre-given proportion which should be "good enough" without intervention.[43] The ethical stance that the label "brain-doping" captures is that no individual should be pressured to technologically alter her "natural" capacities. To do so would seem to violate a key ethical norm about technology frequently voiced in Germany's recent history, namely that individuals should not be "instrumentalized" or made to be so insufficient that they risk being excluded unless they "improve" themselves. Thus, at the same time as potential violations are pointed out, the boundaries of the human being are also reasserted.

It is essential that this work of characterizing the human be carried out publicly: post-War commitments dictate that controversial topics be widely discussed, both as a matter of historical obligation to affirm key values like dignity,[44] and of forming citizens (at least potentially). In the past public debates have frequently turned on whether new technology would prevent some

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[43] Note that the current standard of "good enough"—capacity, health, desire, etc— is thereby naturalized.

[44] Historical obligation can also mean a particular sensitivity, so that important lessons from the Nazi past have been learned, so that Germans are "more aware of new types of dangers" that others, particularly Americans (Poore 2005:314).

(biological) forms of life from existing *at all*, by eliminating them or preventing their ever being born. With brain-doping, it would seem that the debate is more concerned with whether certain (social) forms of life remain possible. Arguably, these debates are premised on the recognition that some question of the "good" life is at stake, as various actors attempted to marshal expertise, "public opinion", and research data in the service of "public debate" intended to *work through* problems.

By circling around the question of human constraints, the German enhancement debate works through tensions around "humanism", in the sense of some inherent value to humans' "nature", which is variously threatened by scientific or capitalist rationalities. At stake is a relationship between humanism and enlightenment: it is an enlightenment which accepts an instrumental stance towards the world, but emphasizes that true enlightenment is distinguished by its regard for a form of humanism that values human limitation, imperfection, and (reflexive) dependence on nature. Importantly, as I have tried to show throughout, the idea of the human is not an absolute idea, in the sense of being fixed or easily visible. Rather, it is closer to something like a "present norm", a kind of naturalized "standard" or "normal" idea of what is human.

In some sense, the tensions around preserving a certain figure of the human being have dominated concerns in post-War Germany, as the vigilance with which dignity is guarded attests to. However, my point is not that understandings of technology in Germany are overdetermined by the legacy of the Nazi era. Nor is it to claim that the German debate is any more or less "enlightened" than any other one; many would regard it as overly "conservative." Rather, I my concern is with how ethics emerges in a public forum. In this chapter, I have been interested in the enhancement debate not as a 'mirror' or 'generator' of public opinion, or as an idealized forum for rational exchange. Instead, I have tried to understand the debate in Germany in terms of Foucault's question about the relationship between humanism and Enlightenment. Tracing how these two are imagined shows how shared meanings are re-worked and historical concerns mobilized to make ethical claims. As mentioned in chapter 1, I depart from recent attempts in the ethics of anthropology to limit the analysis to individual subjectivity (cf. Zigon 2010), suggesting that one could see the German debate as an instance of a problematization that is worked through on a collective level, trying to define desirable forms of social life.

In these last two chapters, I have described opposition to enhancements. In the next chapter, I turn to those who use the medications for performance, to understand how they view the intersection of achievement and self-development.

4

Productivity Aesthetics: Enhancement Drugs and Self-(Maximizing)-Fulfillment

In the previous two chapters, I argued that changes in markets, social safety nets, and demands for achievement wrought by state economic policies are frequently perceived to have created pressures on individuals that demand more performance than is reasonably thought possible. In popular explanations for why individuals use enhancements, "neoliberalism" figures prominently. Using self-improvement medications is taken as a symptom that many are taking drugs in a desperate attempt to deal with the anxieties and pressures to self-care and "self-maximize" brought about by recent political-economic changes.

At the same time, realizing one's potentials fully and being successful through drugs can also be valorized. An article in the popular weekly *Der Spiegel,* that was cited by several users whom I spoke to as having made them aware of using pharmaceuticals for enhancement, described one woman's experience: "just a few minutes after ingestion [she] felt the effects. 'Wow, what a feeling! I was immediately awake, and could read incredibly fast. I was recharged!' What a temptation: take a pill, be a high-achiever….be able to turn your intellect on like a motor—who wouldn't wish for that?…finely tuned brain chemistry would make it possible to beat out the competition, get your dream job, and have a brilliant career". This euphoric (if not unrealistic) assessment claims that taking enhancements would make all manner of professional success possible, reaching one's personal maximum through a 'finely tuned' biological intervention. It assumes that the primary reason for taking pharmaceutical enhancements would be for this kind of professional success, seeming to posit an achievement-oriented subject who is intent on maximizing her capacity (indeed, in the article, the person reported on was pushing herself to higher and higher heights of productivity and insight).

One might say that this subject is a variant of what has elsewhere been characterized as a "neoliberal subject". Wendy Brown argues that neoliberalism is a political rationality whose aim is not only that "the human being [is] configured exhaustively as *homo œconomicus*, but all dimensions of human life are cast in terms of a market rationality", which forms how subjects think and act: "equally important is the production of all human and institutional action as rational entrepreneurial action, conducted according to a calculus of utility, benefit, or satisfaction against a microeconomic grid of scarcity, supply and demand, and moral value-neutrality" (2005:40). Importantly, this rationality even extends to the ethical sphere, as "neoliberalism equates moral responsibility with rational action; it erases the discrepancy between economic and moral behavior by configuring morality entirely as a matter of rational deliberation about costs, benefits, and consequences" (2005:42). With this conflation of all action into economic terms, Brown claims that by erasing distinctions between economic and political spheres, all communal political action is ultimately rendered impossible. Instead, politics and the state are repurposed to further the market in all its forms, and individuals are figured as apolitical individual entrepreneurs. Brown believes that this process is already well underway, indicating that neoliberalism is, for her, not only a discursive form, but is socially effective in the way that she outlines.

What is striking about Brown's account how it parallels the German debate—positing that statecraft aims at producing neoliberal subjects, that individuals have taken on these forms of thinking and acting, and that neoliberalism ultimately threatens a particular form of social and political life (see chapter 3). In the debate, these fears are intensified by the apparently widespread use of medications for enhancement.

In this chapter, I draw on interviews with users of medication for enhancement to engage claims about the kinds of subjects produced by the confluence of neoliberal logics and pharmacology. One question is to understand what effects these kinds of pronouncements have—do subjects act in ways that could be characterized in "neoliberal" terms? And if yes, what kind of "ethos" would such subjects have—is neoliberalism really as all-encompassing as Brown claims? She also suggests individuals rationally calculate in regard to scarcity and demand, but what would a pharmacological subject "maximize"—his chances of success? His serotonin levels? His income? Perhaps all of these? Another question is to track how these large-scale discourses become part of everyday experience, or how they are mediated into significance. In short, the question is about *how* these large-scale social formations manifest in the details of practice, and through which *means* they become effective.

Chapter Argument

I argue that rhetorics of about maximization and self-care become meaningful for users by harnessing and giving sense to their "affects". Capitalism and affects are closely related, as Adam Smith argued first with his notion of the baker acting out of self-love, not love for others (Muhlebach 2012:28-30). For Max Weber, the protestant ethic was a matter of practicing an ascetic lifestyle, of disciplining one's affects to be a hard and thrifty worker. Here, I follow others who are interested in how affects can generate value and produce contemporary "neoliberal" subjects (Hart 1999; Richard and Rudnyckyj 2009). However, I will focus less on how affects serve the ends of neoliberalism, than on how neoliberal imperatives reconfigure individuals' affective attachments (cf. Edmonds 2010). I show how neoliberal rhetorics become effective for users through shaping how they understand their self-fulfillment, installing a kind of ethos of maximization that drives them to "make the most" of their lives.[1]

I draw on data from interviews with 20 students who had used prescription pharmaceuticals to study. All of them had tried enhancement medications at least once, and almost two thirds had done so regularly, over several weeks or months. Some of those within this group had used the drugs for only the most intensive last weeks of exam preparation. Most had

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[1] I am not trying to make an epochal pronouncement about an ethos that is necessarily dramatically different. Still, "[r]ecognizing the extent to which political economy entails problems of meaning", as Carol Greenhouse (2010:4) writes, I am interested in understanding an ethos that seems to be prevalent in the contemporary moment, for which neoliberalism plays a leading role.

used drugs regularly as part of their everyday, usually over a period of 6 months or longer, and are the focus of this chapter.

First, I review current research on enhancement pharmaceuticals, before describing the "affective" changes users attributed to the drugs. Then, I explore how user's pre-existing affective attachments motivate their enhancement use. Anxieties play some role, but more importantly medications help them realize a kind of productive self, which is embedded in their "ordinary life". I argue that the drugs' effects come to represent desirable subjectivities compatible with neoliberalism, and thus get folded into users' self-fulfillment; importantly, I claim that their self-maximization cuts both ways: it signifies self-realization, at the same time as it incites a desire for productivity congruent with neoliberal efforts at subject-formation. I term this double register productivity aesthetics, to point to the ways in which affects can be both signs of freedom and tools for governing.

Specifying how contemporary market-oriented rationalities shape individuals' ethical attachments—which in turn makes drug use meaningful in particular ways—serves my overall argument in this dissertation, demonstrating the purchase of studying enhancements as 'situated problems'. Simultaneously, as I try to untangle the significance of "neoliberalism"—as a powerful "force" implicated in producing various social facts—for ethical attachments, I build on the recent literature on the anthropology of ethics that resists conflating the 'social' with the 'ethical' (Laidlaw 2002; Zigon 2008). However, as I have argued throughout this dissertation, one of the main purposes of "situating" ethical problems is to reflect on the norms involved, which in this case means that the "ethos" of the neoliberal subject (often uncritically adopted by bioethics) can be interrogated.

Epidemiology and Psychology of "Cognitive Enhancement"

The literature on cognitive enhancement medications univocally describes them as improving cognitive "function", "boosting brainpower", or as "brain doping" (*Hirndoping*) (British Medical

Association 2007; Maher 2008; Lieb 2010). Much of the scientific research on enhancements is indebted to, on the one hand, the style of thought of biomedicine, whose ontology focuses on the material (Foucault 1994; Lakoff 2005), and on the biological brain as the site of meaning and action, splitting it off from the body (cf. Scheper-Hughes and Lock 1987; Choudhury and Slaby 2011). On the other hand, modern psychology, which prioritizes function and measurable capacities like "cognition" (Hacking 1996; cf. Kehl 2012).

Much epidemiological research exists, which has characterized the frequency of use, and reasons for use that students report (McCabe et al. 2004; Desantis and Hane 2010; Smith and Farah 2011; Webb et al. 2013). The most reliable data comes from the US, where estimates about use by college students range widely, but are generally in the low to mid single digits for the past year, and are often in the low double digits for lifetime use (though it can be as high as 35% on single campuses (Desantis and Hane 2010)). These studies typically asked about using drugs for "studying" or "partying/recreational" use, which may have intensified the association between drugs and cognition by assigning cognition to studying and pleasure to partying. Studies for Germany are less conclusive, because they are based on smal sample sizes, use various survey methods, and most importantly often have divergent definitions of 'enhancement'. Those studies that are available show results in the low single-digits for lifetime use (Franke et al. 2011a, 2011b; Middendorf 2012).

A substantial amount of research has tried to evaluate what effects pharmaceuticals used for enhancement might have. The data are inconclusive; some experiments have shown modest effects on "cognition", while many have shown no effect at all (Repantis et al. 2009, 2010a, 2010b). These are typically psychological tests, that use standardized tasks to evaluate performance, like the popular "n-back" test, in which research subjects must view a set of numbers, and decide whether the numbers they see now are the same as a set they saw prior (being 1, 2, 3…sets in the past, so "n" equals the "number [of sets] back"). The "n-back" test examines working memory, the "temporary store of information" available to a task. In this context, a positive result showing "improvement" simultanously has a highly precise and very general meaning: "stimulants probably do enhance working memory, at least for some individuals in some contexts", as the authors of a meta-review state (Smith and Farah 2011). In another example of positive effects, recall and recognition can be improved on psychological tests, an effect that seemed to be more pronounced over time (i.e. if the recall tests were repeated a week later rather than immediately).

The point is that while these tests try to model "cognitive enhancement" by students, they seem to be unable to capture the reality of use in several regards. Most basically, the tasks seem fundamentally different, as few students are performing such specialized tasks while studying, and it is difficult to generalize from these tasks to "real life" use (Ragan et al. 2013). Moreover, the drugs are typically given only once, so long-term effects are impossible to discern (Repantis et al. 2009).

These shortcomings have led some to wonder whether drugs enhance "motivation", which is, as several psychologists pointed out to me, difficult to test "objectively" since it usually relies on self-reports. Psychologists have recently turned more attention to this area, reporting that users feel increased "motivation"[2] from study drugs, or find tasks more "rewarding" when done on drugs (which is also taken as an index of increased motivation (see Ilieva and Farah 2013 for a review)). From a neurological perspective, this is not altogether surprising: stimulants like Ritalin affect the mesolimbic domain system, which is associated with motivation and "addiction behavior" (Ilieva and Farah 2013; Volkow et al. 2004). Despite rising interest, to my knowledge the only study to date that has examined "motivation" at length is a series of interviews with US college students, which showed that medications enabled users to be more productive as a secondary consequence of their primary target: "affect" (Vrecko 2013).

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[2] A recent research report uses the term motivation to refer to a "broad set of affective states that influence whether a person will voluntarily use their cognitive ability in the performance of a task" (Ilieva and Farah 2013).

Affect Theory

Affects, defined most basically, determine what we care about or fear by orienting our attachments and energies (Ahmed 2004; Clough 2007; Stewart 2007). Durkheim famously showed how affects are effective in mediating the organization of the group (its categories and symbols) into the lives of its members in ritualized moments of effervescence; he also argued that these affects depend on "symbols", without which the social feeling would be fleeting (Durkheim 1995:232). Recently, "affect" has enjoyed a surge of interest among the social sciences and humanities, which many see as an attempt to account for embodied as well as discursive meaning, the latter of which has long dominated social analysis. Some theorizations engage the material by re-interpreting experimental scientific data (i.e. physiological measurements and experimental subject reports) that try to establish the features of affect as a general category (Massumi 2002; Leys 2011). Many others focus primarily on group-level affects, which are important in inciting resistance to existing suppression, creating communities, or advancing nationalist sentiments (Allen 2009; Masco 2008; Ahmed 2004; Berezin 2001; Clough 2007; Muhlebach 2011). Here, I want to keep both group level-structures and materiality in play, focusing on how individual affective states are amplified though medications at the level of potential, which then are modified by shared discursive structures.

Brian Massumi (2002:25-30) argues that affects are elicited in the body in the form of what he terms an "intensity", like when a disturbing image incites a sensation. The key idea I take from Massumi is that affects are potential that can be "qualified", or modulated: intensity can be amplified or dampened as it takes on a more solid form. The sensation elicited by the photograph can be amplified into terror by the demagogue, dampened into uneasiness, or become a vague satisfaction as an image flickers past on the evening news. This sensation has a history, as previous experiences have left "traces" in the material body, ready to be reactivated, making *certain* potentials of affect available. As he says, intensity's "incipience", or its initial stages, "cannot *just* be a conservation and reactivation of a past. [Intensities are] *tendencies*—in other words, pastnesses opening directly onto a future, but with no present to speak of" (2005:30, emphasis original).

Being sensuously experienced, affects are a subset of the broader category of the aesthetic, which includes all of human sensation and perception. The aesthetic, or the materially sensed counterpart to the immaterial world of ideas, has typically been counterposed to signification (Eagelton 1990:13). Massumi claims that "affect is unqualified", but is "captured and clos[ed]" when it begins to signify through emotion, which is "the conventional, consensual point of insertion of intensity into semantically and semiotically formed progression…intensity owned and recognized" (2002:28; cf. Shouse 2005). However, this does not mean that affects only matter to social life when they are still spontaneous and not yet "owned". As William Mazzarella points out, for speech, practice, and interaction to be effective, both "intensity as well as qualification" must be enacted (2007:299). In other words, *affects* must be activated alongside their counterpart *discursive* registers.

Two things follow from the dual quality of affects. First, the exercise of power depends on affects; if power is not enacted through sheer force, it "must be affective in order to be effective" (2007:299). At the same time, the consequence of affect being both rooted in the senses and modified by discourse is that a gap always exists between someone's felt condition and the discursive ideal: "when we are offered such identities, our identification always 'fails'" (ibid.). This gap is the means through which power becomes effective, because an incomplete identification drives individuals forward, inciting them to attempt a more complete identification with the discursive ideal. Second, affective potentials can be discursively ordered in ways that index traces of the past. For instance, affective potentials can be oriented to a space and its significance (Navaro-Yashin 2009). Or, regarding affects and capitalism, what has been called "post-Fordist" affect refers to how potentials formed by traces left on the body during the "Fordist era" of production and consumption can "linger" on into the current "neoliberal" era (which at times co-exists with that past "stage" of capitalism). These potentials were arranged by economic and social formations that valorized certain practices of private life, production, consumption, and temporality. Andrea Muhlebach (2012) argues that in Italy, the potentials for affects shaped during the Fordist era can be triggered and made meaningful by discourses about volunteer work, which gives retired industrial works a sense of "belonging" they crave at the same time as those volunteers fill a gap left by the withdrawal of the state (cf. Muhlebach and Shosan 2013; Berlant 2007).

In sum, then, affects are a sensuously experienced potential, both individually experienced and socially shared, and open to being "qualified" or mediated by social practices and discourses. This duality makes affect crucial to structuring social life and deploying power: I argue that study drugs create an affective potential that enters into familiar circuits of experience, which have been formed, among other things, by desires and demands compatible with the neoliberal present. I will first describe the sensation that drugs produce, before showing how these affects become part of the entangled web of users' attachments.

Affected by Drugs

In his exploration of individuals' ability to work at heightened levels, aptly titled "The Energies of Men", William James writes that affects are critical to unlocking the "vital energy" latent in our economy of action, giving us power to act that ebbs and flows with the demands at hand (James 1982:132). Affect can push us beyond the edge of habitual effort, inciting a release of energy; by altering affects, this is exactly what the medications achieve despite their 'cognitive' moniker.

As Ivan, a 28 year old law student who had just finished exams, for which he used Modafinil to prepare, explained,

"When I've taken 200mg I have a strong interest in what I'm doing; it doesn't matter if I start learning, or do things I don't usually do like paint a picture. I'd have a lot of interest in it, and I'd be a little euphoric while doing it. I'd be very motivated to do it. It's kind of a basic attitude."

First, Ivan pointed to users' strong desire to do *something,* saying he was "motivated". I often heard this described as a generic desire, which created an affective potential that could latch onto different things, so users needed to guide it. Motivation to act and an interest in the object are often closely related, though the former is perhaps the key effect of drugs by driving users to productivity. They are already motivated to work, but cannot work as well as they would like. By augmenting motivation, the drugs seem to amplify their affect, giving them a surge of potential for action that is searching for a target. It becomes very easy to channel this desire to work towards something, though users must take care to let their affects latch onto the right target. In the worst case, they would end up cleaning their email account or apartment rather than studying. Hence, users took care to ritualize their use, for instance only taking pills when they were ready to start working at the library. The increased desire to get something done appears to be the crucial effect because it allows the other effects—like focus or energy—to be used towards a single goal. By being motivated, focus and energy are used to work longer and more intensively than they would do otherwise (rather than just focusing on several things over the course of a few hours, or bouncing on a chair suffused with excess energy). Motivation merges with interest in the activity, further binding one's desire to a specific activity.[3]

Second, the feeling of power that somehow needed to be used, and the compulsion to remain directed towards an object, was maintained by a feeling of being energized. Users unanimously described that the medications inhibited feeling tired. Depending on dose and type of pill, they could study for long periods of time, ranging from 2 to 10 hours with few breaks.

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[3] "Interest" (*interesse*) is an interesting term, which seems to have a straightforward "everyday psychological" meaning, but is in fact quite complex: 'Interest' could mean finding the task inherently interesting, i.e. the task was somehow fascinating or stimulating and drew users in. Usually, interest seemed to mean taking an interest in doing the task, i.e. being stimulated to engage the task whatever it might be, a kind of generic orientation towards productivity (and hence the need to prevent developing an interest in cleaning one's apartment). But interest could also mean being more "interested" in something else, to which the current task served as an end (e.g. the example of Ivan below who was more interested in competition and thus in studying hard).
These various meanings point to how difficult it is to "capture" the many potentials of drug-amplified affect.

For several, the energy allowed them to go to class, and then work at a job afterwards. Since Ritalin is related to amphetamines, and Modafinil is an anti-narcoleptic, one might think that the stimulating impact of these drugs was central. This was true to the extent that users would not get as tired as usual.[4] But more importantly, energy was primarily useful because it was paired with motivation (often a general sense of motivation that needed to be directed into a heightened sense of motivation for the task at hand): when the effects of the drug had worn off, people stopped working because of flagging motivation rather than fatigue.

Third, users often feel happy on the medications. Euphoria mostly ranged from mild to moderate, in most cases giving a mild feeling of well-being; it was rarely described as powerful, and always produced less euphoria than street drugs like methamphetamine. This background affect of happiness made working pleasurable, and was important to the drug's effectiveness. Particularly for tasks that were not pleasurable or repetitive, the euphoria made working much easier; to put it hyperbolically, occasionally there seemed to be no limits to the euphoria. Lisa said that "If I haven't taken [Ritalin] for a couple weeks or a month, then a single tablet is enough to become euphoric…I am happy that I will become a veterinarian at some point, and then I'm motivated and am summarizing here and there, and have new ideas." Here, euphoria seems to take the form of a general increase in creative energy or "vitality".

The combination of pleasure, motivation, interest, and energy resulted in a feeling of productivity and speed. Users felt good about what they were doing, and were doing good work (in terms of understanding or reading more, etc.), which they wanted to continue. Thus they kept on working, and usually reached a state of focused activity in which they were entirely absorbed by their work.[5] Once they had focused on a certain task (which, as I mentioned above, sometimes required ritualized activities to limit the things one could 'latch onto' to productive activities), there seemed to be a kind of feed-back loop that sustained itself.

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[4] Users felt they could access the same level of energy without medications. However, the length they felt they had lots of energy was the one effect they could only produce with drugs.

[5] This approximates what Csikszentmihalyi (2004) termed "flow".

A final effect is increased concentration or focus. Often described as being able to stare at the page for hours even if “trains were going by”, users described being utterly concentrated, as if their entire energies were being directed towards a single thing. Despite implying that solely brain function is at issue—i.e. that concentration is a matter primarily of thinking—concentration is also affective: as Marie, another law student who was 26, said “Work was fun, and I was completely focused and fixated; this was a problem before, because I couldn't focus on anything because I felt so much pressure. I always had in the back of my head that it was like a carousel, I didn't really have time to concentrate on what I was doing since I needed to move on to other things. With the Ritalin I suddenly had blinders on, and was completely in the material, and didn't even want to take breaks”. Concentration orients your energies towards what you care about at that moment; Marie was able to direct herself so intensively towards work that she could cut out her anxieties about needing to achieve. An alternative explanation is that Ritalin cut out the other desires. However, I take the former interpretation to be more plausible, since Marie’s intense anxiety was matched by a strong desire to get her work done (indeed, this longing for productivity could become crippling). It seems likely that the medications amplified her already strong affects, and once she could focus them on work, everything else receded into the background. Even focus arguably can be a consequence of affect, as as users feel so drawn to the object at hand that they can direct their entire cognitive capacities into that task.

In sum, users experience the drugs as altering affects, specifically what they describe as motivation, interest, energy, and focus. Though all these effects are important to the medications’ effectiveness, the key affective change seems to be the increased motivation. When users take a drug, it amplifies their affects to make them feel motivated and interested in the material. I say “amplifies”, because, to put it in Massumi’s terms, the *potentials* of users’ affects were oriented towards being productive; as I will argue in the rest of the chapter, this stemmed partly from desire, shaped by discourses about achievement; and partly from anxiety. As one person pointed out, you *must be* motivated to work; otherwise taking a drug to work wouldn’t make any sense.

Users want to work, but are not able to get motivated or focused enough; they are unable to discipline their affects to the desired end. But because users' affects are already *potentially* oriented towards work, medications can amplify this potential, enlarging it to the point where it can much more easily be realized; users then use up this potential by converting it into actual mental and physical[6] labor, channeling their efforts to the target. Thus before affect is mediated by signification in registers of political and social discourses (to which I turn next), it is being amplified at the level of its potentiality.

Anxious Competition

I showed how users describe their affects as being amplified at the level of potential, which they feel heightens their productive capacity. Here, I am interested in how this "potential" can become meaningful through registers of competition and maximization, which also speaks to why it may have been plausible for them to think in terms of having a potential for work they could increase with drugs.

In Germany, increasing EU integration and the *Hartz IV* welfare reforms have been a major driver of neoliberal reforms, which in the end result has valorized individual achievement in a setting of competition as the solution to a smaller welfare state and globalization (see chapter 2). I frequently heard that people felt they were directly exposed to the market, so that market demands were translated into demands they needed to meet; for instance, if "employers" now wanted potential employees to have international experience, those users I spoke to said that they were now making sure they would do an internship abroad since "being sedentary is associated with a lack of progress and of flexibility", as a magazine giving students advice wrote.[7]

For Christoph, a 23 year old mechanical engineering student, every moment of his day was valuable. "Any freedom I take, like going out under the week or not going to class, I have to

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[6] Users report their autonomic nervous system is activated, as they feel "amped up" ("*gepusht*"), which curiously co-exists with intense focus, as their entire bodies are intensively directed towards the task at hand.

[7] "Wie flexibel muss ich sein?", Baurmann, Jana Gioia. *DIE ZEIT-Campus*, Jan/Feb 2013, 18.

compensate that, especially in the exam phase. Or I could just take longer." But not compensating and taking longer to finish his degree was not ideal because "if an employer sees that person A finished in 6 semesters and the other in 8 semesters, why? Well it's clear, person B wasn't motivated. That's the entire problem."

This view of the university as an outpost of the market was popular among students, who saw the recent changes in the educational system as intending to prepare them to be productive and efficient workers. Yet Christoph also described what many felt, a constant feeling of needing to do something, even if there wasn't that much to do at the moment. Short and compact, filled with a tense energy, he was himself an icon of this imperative to get the most out of his time.

> "So the pressure is always there." It seemed the inescapable conclusion, so I posed what was really a question as a statement.
>
> "I'd say, yes", Christoph responded, "if there weren't so much pressure I wouldn't [enhance] so excessively. If I had more time."

The pressure was in direct relationship to taking enhancement drugs: For Christoph, the demands of the job market had created a nearly ubiquitous pressure, in which most things you did would somehow affect your chances on the labor market.

Anxiety about the future job market is among the reasons most commonly cited in the media to use medications, and commentators often speculate that anxiety is the necessary and sufficient reason why students take drugs, assuming that students feel completely overwhelmed and unable to deal with the demands on them otherwise. Many of those I interviewed had some anxiety about their future prospects on the job market, but were generally not worried about reaching this standard; straightforward anxiety about falling out of the circle of the working elect did not play a large role, and certainly not for regular users.[8]

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[8] Only in one case did I speak with someone for whom this anxiety was so pronounced that it was the major (though again not the only) reason for trying study drugs.

However, rather than motivating drug use by setting impossible standards and creating pressure to perform, users were typically driven by a different anxiety. When I asked Ivan where the pressure he felt to perform came from, he replied:

"There is also something that all law students have, except the best, I mean the *very* best"—laughing with a tinge of irony, and raising an eyebrow at me, as if to say 'we both know that we aren't those people, you can't ever be one of them'—"and that's that you always feel stupid. …when you're alone, you only see 'the others are faster, they're sitting here 10 hours a day, and they're always successful—only I've gotten bored after 2 hours and want to go eat." Yet he knew it was deceptive: "No one is reading for 10 hours in a row. But you don't know that, because all you see is yourself, that you're bored after 2 hours. But in the library, you look around, and you are always seeing the same faces… And you're constantly thinking to yourself 'they're all fantastic, they're all getting it done with no problem'."

The ideal painted here is of someone who can discipline her productive capacities despite being bored, which everyone but oneself seems able to do. My informants (regardless of whether they used study drugs) shared this view, as they seemed to feel that others were necessarily better, or that they were intrinsically behind. One might understand the disjunct between a felt inadequacy and a reflected realization about the inappropriateness of that inadequacy to point to how powerfully effective this idea of an almost transcendentally productive self is. I suggest that this kind of anxiety was a response to the overall trajectory of recent discourses about achievement in Germany, in which individual achievement was the solution to the withdrawal of the state from many areas of public life and welfare, and to the competition for "good" jobs in the national and international labor market. This discourse functions according to a logic of lack, in which it is not about being the best, but of keeping up with the rest. Ivan's comment reveals this feeling of perpetual inferiority, inscribed in his affective perception of others. His affect is not grounded in actual subordination—he realizes that some of his peers are posting to Facebook, while others are working harder than he is—but in his feeling of being constitutionally inferior, embroiled in permanent competition.

Desiring the Optimum: Work & Play

Despite being a source of anxiety, Ivan also described enjoying competition, which fused with his interests: “If I'm not interested in something, I'll just go home after 8 hours. But stopping yourself--that's difficult for me…I still keep going--partly because I like competing. And you're just in the competition. It doesn't matter if its the number of clients or cases you won, there is always some kind of system for evaluation, and you just want to play along in that system and try to be as good as possible."

On one level, Ivan sounds like a perfect “neoliberal” subject who is “competing” for scarce resources. On another, he is describing his own pleasure in doing so, as competition has become imbued with affective significance for him. Regarding the former, competition is, of course, an old idea,[9] and became a significant model of social organization in the guise of ‘survival of the fittest’ after hijacking Darwin's evolutionary theory in the Victorian Era. It is central to a fairly functioning "achievement society" (*Leistungsgesellschaft*), as Germany is commonly described (see chapter 2), in which society guarantees that achievement would be rewarded (Bolte 1979; Hartfiel 1977). But as jobs were cut and competition increased since the 1980s, the Schröder Era reforms exposed how Germany is *not* a meritocracy (see also Neckel 2008:80): at the same time that social safety nets were thinned out, job loss created a double bind in which many were shut out of the workplace through no fault of their own, and lacked the support to undo the damage. Despite such extensive evidence that “achievement” was not a guarantor of well-being, the notion that the burden of achievement (and even basic welfare) rests on the individual and that she can realize her aims remained persuasive to users. For many, competition seemed a

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[9] Competition was the central mechanism of the liberalism that emerged in the early 18th Century, installing market-based competition as the paradigmatic means of governing. In later formulations of neoliberal theorists, competition was the logic of all areas of social life, in which rational, maximizing individuals sought to maximize their ‘human capital’ and well-being (Foucault 2008:222-9).

naturalized state of existence, which they put in terms of having "internalized" the dictums of maximization as part of a their subjectivity, always searching for a better solution than the present one.

The idea of a motivating gap between someone's felt condition and the discursive ideal is helpful here. The contemporary achievement society produces subjectivity by engendering certain dispositions towards performance (something Max Weber tried to formalize in his *Zur Psychophysik* in 1908). Perhaps the most telling was how users clung to what I will call the ‘Rule of 100% Effort’ to explain how they viewed achievement. Many felt the only way to do something was to do it as well as you possibly could, i.e. by exhausting your potential to perform the task. Otherwise, so the implication, it was not worth doing at all; indeed, some said that their adherence to this Rule was precisely what made them different than the unemployment recipient, who was just waiting for a government payout. The Rule of 100% was paired with a trust that if you gave 100%, things would turn out fine. Despite how tenuous this assumption was, the Rule was effective because it transformed the evident risk and uncertainty about the future into something that could ben imagined as controllable.

One can see the Rule as a way of transforming the exhortation to achieve and the promise of reward accompanying recent political economic discourses into an ethical imperative that users could embrace. Thus, while maximizing seems to be demanded to keep up, it can also become an emblem of excellence. Rather than only engendering anxiety, users were proud to identify with achievement, which made anxiety productive; thus, getting the most out of their abilities became a central aim. To be clear, in trying to make an argument about the experience of the present, I do not intend to imply that something like the Rule of 100% did not exist before. Instead, desire for maximal effort represents a transformation of anxiety and anchors shifted responsibilities in an ethic pursued by the individual, which functions to distinguish the “winners” from the “losers” of the recent political economic transformations, those who were furthering national prosperity versus those who were a financial burden to the state. As one female student in her first year said, “I think those who don't even try, those are the people who end up getting *Hartz IV* . They say no, I don't even feel like trying. Because if you try and cope with the pressure to achieve, then you have the chance to belong to the upper class, have a good job, be successful….That's what upsets me: if they [*Hartz IV* recipients] wanted to, they could succeed as well. Regardless of how many setbacks.”

Indeed, achievement bears the traces of the past: Getting a good exam grade was linked in a larger ideal, which Ivan described as "very early on you're told that if you want to be successful, that [doing well] is ideal. There are these huge law firms, where you earn 100,000€ starting out, and you're working 70 hours a week--so you are prepared for that. Not necessarily by the profs, there are enough who say 'you've done enough today, go for a swim'--but there is a lot in magazines or on the internet, glossy pictures of people in super-looking suits, and there are a lot of desirable things shown."

Though as trivial as a well-tailored suit, I submit that Ivan was making the point that the suit was metonymic for certain visions of achievement circulating among his peer group (matched by corresponding visions among other groups), that incited a powerful attraction. This vision was usually framed in terms of a secure income, status, and a self-determined job ("being your own boss"). Projected into the future, such a job was a major goal of getting a degree. It was essentially a vision of a secure, middle-class existence. Despite the evident precarity of many in contemporary Germany, this vision seemed enticing because for users, it was possible if they only worked hard enough. In other words, they themselves could “guarantee” that they would realize what seems like a throwback to the previous Fordist economic era when workers had secure jobs with good pay for a lifetime, what Berlant (2007) terms an affective "remnant" from a bygone era (see also Shosan and Muhlebach 2012; Muhlebach 2011). I heard this desire so frequently from users and others alike that it seems to be a vision that is continuously reactivated, in which the German middle-class still has something akin to a claim on a secure, stable, and fulfilling existence. The tenured civil servant (*Beamte*) remains the paradigmatic figure, who has reasonable work hours and good pay, a job someone of the educated bourgeois (*Bildungsbürgertum*) might expect. It is as though the ideal of solid employment and a high standard of living forged during the Post-WWII "economic miracle" has left "traces" that can be re-activated, making the ideal of individual achievement desirable and effective.

The desire to maximize was not, however, confined to work. For Lisa, medications made it possible to be productive, helping fulfill her desires "to push herself to those who can do it well" (and the middle-class existence that it promised), while also realizing her longing for a fulfilled life:

"Why does it make sense to take Ritalin to get done more quickly so you can do other stuff?"

She seemed somewhat exasperated, because the answer was both obvious, and difficult to put into words. "I just want to *live*. Traveling is really important to me, I travel two to three times a year, with my boyfriend. I like diving, that's expensive [she worked a job at nights, for which she took medications]. I don't want to be 30, and say 'from 22-27 I did nothing but study'….I want to look back and say 'you had a good life. You saw a lot of the world. You're only 30, and have already been all the places you wanted to visit, and still finished school with an acceptable degree and ok grades'…Family is also really important. And you need time for them as well."

Lisa's emphasis is less on work, but she nonetheless speaks about maximizing that range of things she cares about, to be successful at college and in private life.

"So you are really trying to achieve a group of things for your life, and Ritalin is important because it helps you with that", I ventured.

"Exactly, yes."

"So how do you think about time? Somehow Ritalin helps you deal with time differently", I followed up.

"Yes, because time passes so quickly. I noticed that in the past few years. Now January is over, and there are only 11 months [left] in the year. In the last years, time has passed too quickly. At this point, I want to use every day, I want to achieve something every day. So of course I want to reduce the time for studying to a minimum, because it's a priority in life right now, but there are other things as well: family, friends, travel, work."

Two things are important to me here. First, Lisa illustrates how maximization depends on time. Studying and working without a pharmaceutical supplement would take so much time that it would prevent her from engaging in the other things she cared about. Thus, maximizing the time she spends studying allows her to have time for these other pursuits. Medications seemed to *expand*[10] the overall amount of time users had available by speeding up work, enabling more overall maximization of one's day(s). Nancy Vuckovic (1999) has written about what she calls "time famine", or individuals' sense that there is not enough time available in the day to get everything done. Particularly for the working mothers she interviewed, time was in such short supply that they "didn't have time" to get sick, prompting them to take medications to continue functioning for work or at home. But while Vuckovic's informants used medications to limit the disruptions of illness, I take users to be trying to increase their efficiency or effectiveness at work, which has the result of expanding their net available time for other spheres. They are less interested in *maximizing* time than in *managing* it most effectively in order to maximize other things.

Second, and more significantly, the regime of maximization extended beyond work. Lisa is intent on maximizing the time she spends away from studying, fulfilling her desires for family, friends, and new experiences. In his account of the genesis of the protestant ethic, Max Weber (2001:104), pointed to the Calvinist teachings of time as useful to fulfilling some end to the utmost, originally in service to God, and then later of capital, as Benjamin Franklin's dictum 'time is money' expressed it. Yet, for users time is useful for maximization of even ostensibly non-productive spheres like 'leisure'. For them, time has a potentiality that can be maximized, by

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[10] Compare this with David Harvey (1989), who talks about the space-time compression of capitalist modernity, in which the familiar relationships between space and time are altered by new technologies that reduce distances, and faster production cycles and return on capital.

conversion into productivity, experience, etc. To use a term I discuss in chapter 2, users seem to be orchestrating their own "speed-up" of their lives to do more, seeing their time as expansible through medications (paralleling—with a positive rather than negative valence—how new communication technology is said to lead to a "speed-up" of work that many made responsible for enhancement use). Time not used was lost, as the inexorable pressure of turning older (of progressing time) demanded a maximum of experiences. As Christoph expressed a similar sentiment, "if I'm 30 and I look back, I would feel terrible if I wasted time. Each phase of life has things that you can enjoy *then*."

Maximizing "Ordinary Life"

For users, being productive was an important part of their identity, as they thought of themselves as people who *achieved* something. On another level, productivity was part of their larger project to realize themselves through certain kinds of careers and lifestyles in the future. But their "fulfillment" also lay in other things like relationships or avocations, various desires that constituted their everyday life. By increasing users' productivity, medications can be seen as a means to pursue *self-fulfillment*, enabling forms of life more congruent with users' desires.[11] Indeed, everyday life brought their desire for professional achievement to its limits by functioning as a litmus test: when their social relationships or personal fulfillment outside of work began to suffer, their striving for achievement or maximizing productivity had gone too far. They repeated that one needed to draw a line, because they wanted time for other things they "cared about".

User's attempts to maximize their daily lives can be understood as one ethos to have toward one's self-fulfillment through "ordinary life". Here, I am focused on ordinary life less in the sense of its being the naturalized and "unremarked medium of life itself" (Comaroff and Comaroff 1997:30) through which "power is generated, sustained, and challenged" (Farquhar

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[11] Obviously, this is only one part of the decision to take medications to study; users had to have some willingness to take drugs at all.

2005), but in the related sense of being a core aspiration of Western personhood. As Charles Taylor shows, the Protestant Reformation valued the "fullness" of human life rather than a narrow segment of activities that had been sacred in Catholic theology. This set a shift in motion in which work, family, and sexual relationships became the central locus of individual fulfillment, a retreat into a private sphere (1989:218). Particularly intimate and kin relationships are "prime loci of self-exploration and self-discovery and among the most important forms of self-fulfillment" (Taylor 1992:45). Ordinary life is imbued with affect (Stewart 2007), and is the central site through which self-fulfillment is realized, the latter of which is a notion at the center of Western ideas of the individual and liberal concepts of personhood. One finds self-fulfillment *through* one's ordinary life, which means living the form of life that fits with each person's unique way of being in the world.

Note how users' wish for productivity entails a relationship to a temporality conceived of as maximize-able. It recalls Benjamin Franklin's claim that time, like capital, has an opportunity cost: just as 'time is (potential) money', time's potentiality—for activity work, desirable experiences, etc.—seems to be irresistible and needs to be realized. The key idea is that this imperative appears to be based on a continued need for a kind of maximization, one always needs to produce "more". This emphasis on maximization in individuals' daily lives and the orientation towards time mirrors capital; individuals have appropriated this logic insofar as they feel a constant compulsion to make more of their lives. Often, this means doing something "new" (e.g having a novel experience), which also parallels the logic of innovation in capital, where by more value is generated by mining familiar sources of value more effectively, or discovering new sources of value.[12]

Overall, users are trying to get the "most" out of one's life, which is a quantitative notion: the idea is to do more of *all* the things one "likes" or cares about, rather than just *one* thing (e.g. work). This appears to assume that a qualitative improvement will follow from adding together a

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[12] Thanks to Duff Morton for suggesting this connection.

larger number of things that are "good" in themselves. The logic users express, in terms of increasing quantity that will lead to quality, has a "formal" structure similar to capitalist (or utilitarian) rationality. The standard is based on a content-less evaluation—it is good to have "more" according to some metric—rather than relying on an overall evaluation of how different parts of one's life contribute to the whole, as one might have done under older conceptions of "living well" (e.g. the Aristotelian idea of a harmonious whole oriented around a "mean", or of an *askesis* of the self that ordered one's desires (Foucault 1997a)).

My point here is to show how individuals' desires were formed by discourses about maximization, and to a lesser extent competition, both of which are prominent in neoliberal rhetoric. Thus, I argue that amplifying affective potentials through drugs becomes meaningful because these political-economic discourses provide the register "qualifying" affective experience, thereby linking enhancement with neoliberalism. Users' desires for maximization are related to their ordinary life, which is to say that "getting the most out of life" seems to be folded into their self-fulfillment.

Self-Fulfillment and the Pharmaceutical "Given"

It's important to see that this self-fulfillment was an ethos of *self*-realization, accompanied by a specific relationship *to* oneself. How users of enhancements imagined their self-fulfillment was reshaped through continual interpellation by neoliberal rhetorics in work and private life (be fitter! achieve more! travel more!). In turn, users' sense of their "given" self was also reconfigured by these logics.[13] Re-articulating the relationship between self-fulfillment and given capacity seemed to be an essential precondition for the "ethic of self-maximization" that users evinced.

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[13] See also the recent work by Emily Martin, who argues that mania, a state of heightened creativity and energy, has become valorized in contemporary American culture partly because of it's association with productivity and creating economic value (2007:39-43; 216-7). Yet she also shows that mania is also associated with a more intense way of being yourself and self-actualization, and for young people may be becoming increasingly important to "self-understanding and perhaps even self-fashioning" who understand themselves as creative and productive.

Users typically said they had experienced states of intense productivity without medications that were very similar to being on drugs in intensity, which is to say their motivation, interest, focus, and energy were essentially the same, though for a shorter duration. “Medications”, Andrew Lakoff reminds us, “are objects whose effects are underdetermined by the biochemical characteristics of the substances themselves” (2008:744), so their effects must be fixed and standardized by social and political regimes of authority or practice. Since users knew they weren’t sick, they generally ignored the medical account of medications as repairing a deficiency. To some extent, their framing took account of the media, where these drugs were hyped as being highly potent, described as making people smarter, more creative, or “machines” for working and studying. However, mostly they drew on their understanding of the natural as a horizon of everyday experience. Because the effects of enhancement drugs were not spectacularly different than their usual experience of themselves, they interpreted the medications as helping them to express capacities they always already had, but not as allowing them to go *beyond* those capacities. As Christoph said, he was “not breaking through any borders I wouldn't reach otherwise.” Their previously experienced activity defined their internal limit of capacity, or what might be called the “natural” limit. I use ‘natural’ because it is the commonly used idiom to describe the material attributes of one’s ‘core’ self. “Natural” for these users meant what had previously been experienced, and if drugs did not change that experience, they were considered to be functioning inside of given limits.[14] Thus, evaluation depended heavily on the perceived efficacy of the drugs: street drugs like cocaine for instance, which some had also tried, were definitely not natural, in part because they were so powerfully different from everyday experience. Their appraisal also took account of the material potential that users felt they

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[14] Here I am discussing what were ‘natural’ experiences of users; this question is distinct from how natural the substances themselves were. For example, one could take a natural substance like Peyote and have a decidedly “unnatural” experience.

possessed: for them, technology only realized already existing potentialities, since drugs could reliably make their *potential* capacity into *actual* ability.[15]

Users' understanding of their given potentialities meant that they interpreted the medications as helping them *realize* themselves. They almost unanimously denied that they were "improving" themselves. From their perspective, they were "good enough" without medications, having capacities that are sufficient for whatever they need to do for school or work. But they could not always express those capacities for a variety of reasons (e.g. they wanted or needed to do other things, or were preoccupied or anxious). Drugs allowed them to access their capacities even under unfavorable circumstances. I was told that the crucial consequence of medications was that they made it *easier* to fulfill the various goals users had, reducing the labor required to realize their multiple and conflicting desires. Drugs were a technology to realize their ordinary life more fully, as they were not held back by the herculean effort otherwise required. Hence, medications were used to reach goals they already had rather than to surpass their capabilities or to achieve higher aims. Thus, rather than seeing themselves as needing improvement, users need help being *themselves*.

In sum, users understood themselves through a dialectic between desire and realization. They had different affective potentials that could be actualized, since they (partially) desired to work, which was in conflict with desiring to be doing something else, both of which were often in relationship to particular forms of life they desired. Medications realized these different desires by ordering users' affects towards productivity, through amplifying the potential for work they knew they had but could not always access. They defined their given capacities by what could be realized, rather than what already existed: they had experienced certain levels of

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[15] Thus the drugs could be experienced as fulfilling rather than alienating. This cyborg sense of one's self as natural while entangled with medications runs counter to a standard objection to enhancements, which views them as unnatural because they change 'normal' human capacity.
It is, however, a complicated move: first, to be able to claim that they were simply accessing their "given" or "natural" capacities, users had to naturalize the drug's effects. Second, users elevated the rare but "better" version of themselves to the "everyday" version, by relying on a technology (drugs) to make this "better" version visible on a regular basis.

productivity before, and desired those levels again, since only by attaining these 'true' capacities could their view of their own subjectivity be achieved, as productive individuals pursuing middle-class life. What seems to characterize this sense of self-fulfillment is how it incorporates an idea of maximization, that you *already* are, in full, what you can *potentially* realize. One might say that for users, the *maximum* that they could realize was transformed into who they "were".

Through this stance, users took a position on a more general question related to self-realization that many younger Germans seemed to face. The journalist Nina Pauer (2011) wrote a very successful fictionalized account of the struggles of being "oneself" in the present moment. Describing the life of those born after 1980 in terms borrowed from the model Heidi Klum's hugely popular "Germany's Next Topmodel", Pauer writes "[w]elcome to our show…Welcome to Germany's Next Self-Realizer". The trouble the characters in the novel face is summed up in the dictum that "everything is possible", which ends up generating an almost suffocating pressure to optimize one's life choices. The stakes of this self-realization were the entirety of ordinary life: current college students were characterized as being a generation whose "resumes are packed full of internships, courses, overseas exercise, and community work….This leads to a mixture of engagement and self-optimization, playfulness and seriousness", who—because they are self-confident and hard working but also demand to be fulfilled outside of work—can have the kinds of jobs in which they have enough time for their families, and good income, working at organizations like BASF or the *Deutsche Bahn*.[16] In short, drugs were one way to enable a subject who was idealized because her self-realization was so "maximal" or "expansive", despite the challenges inherent in achieving this way of living. This embraces rather than resists high levels of achievement; rather than simply doing less in their everyday, users identified with doing more, relying on technology if necessary.

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[16] Kerstin Bund, Uwe Jean Heuser, and Anne Kunze, "Generation Y: Wollen Die Auch Arbeiten?," *DIE ZEIT*, March 7, 2013, 23-4.

Nonetheless, as the notion of "maximum" suggests, users' limits *were* fixed: they insisted on being their 'best' self, rather than a different self. They were unable to use these medications all the time, because to do so would make them perilously dependent on drugs. Avoiding dependence, as they defined it, meant that "most importantly, you can do it without. That's the thing. That's the main thing". In other words, users wanted their achievements and their selves to remain under their own control, and resisted identifying with demands that would have been impossible to manage without drugs, like getting higher grades or taking more prestigious jobs, demands that they felt others had subjected themselves to. That is, users were offered identities to inhabit that would have required too much pharmaceutical supplementation, and made their lack all to visible to themselves. This is another instance of the logic of the supplement (introduced in chapter 2), which purports to redress a deficiency, but in fact itself ends up constituting the lack. Thus, users had an "ethic" of trying to maximize what I have termed their ordinary life. Drugs helped them realize this vision by allowing them to be "more" of themselves. At the same time, the tendency to maximize was curtailed by an insistence on acknowledging that their maximization could only take place within (complexly naturalized) limits.

Productivity Aesthetics

Having argued that users' are voicing an ethic of self-realization that incorporates discourses of maximization, I want to show some of the tensions inherent in this ethic. Most explanations about enhancement use assume that they are taken because they are powerful, fetishizing drugs' material potencies.[17] Yet I was repeatedly surprised at hearing how ordinary, how *un*spectacularly effective these drugs seemed to be. Medications were valuable precisely because

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[17] Some have questioned this scientifically unfounded hype about enhancements, which Boris Quednow sees as a 'phantom debate', raising the important question of why this issue is nonetheless being so prominently debated (see Quednow 2010; Partridge et al. 2011).

of their limited effectiveness; I submit that enhancements are so attractive because they enable the *best* self, rather than a different self, on a regular basis.

Having accounted for the (affective) relationships between productivity in the different realms of —or desires in—users' lives, it becomes clear that users negotiated a basic tension, which they tried to resolve by being the "optimal" version of themselves: on the one hand, they desired to be productive and successful, and have a certain lifestyle. On the other, this would have demanded all of their effort, which they saw as being too high a sacrifice. In short, users desired too many things at once. They felt that they could not adequately complete their academic work, do those things that were important to them, and perhaps earn money working on the side. It was a genuine dilemma in a double sense: first, their affective attachments to being productive weighed on them just as much as their attachments to others and to leisure time. These were attachments that they had chosen, since they felt they could not care less about their private lives, because this was somehow immature, like an incompletely developed person who was fixated only on one thing (i.e. work). Nor did they want to be less productive at university, wanting a certain level of achievement. Second, any "balance" among these competing demands was delicate at best, because all areas demanded as much engagement *as possible*, so it was difficult to do "enough". Thus, instead of picking a less demanding lifestyle, or lowering their standards, users labored to produce and maintain a productive personhood. Productivity is a mark of a kind of person, who is successful, has certain (middle-class) orientation towards activities like leisure time and travel,[18] whose commitments are developed enough to value social relations, and who can work in a disciplined, focused way. They see such a productive self as a desired form of selfhood—as an ethic to live by—which has become possible at the current historical conjuncture, and which could only be realized with the help of medications.

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[18] Travel became important post-War, as a means of pursuing leisure and an index of prosperity (Bornemann 1992), but likely also as a sign of a cosmopolitan Germany (for instance, the French are often regarded as being afraid to travel outside of France, which is seen as a sign that they view their own culture as "superior" to others).

Enhancement drugs, then, set free affective potentials that enter larger circuits of meaning, so that increased "concentration" or "focus" are ultimately integrated—or mediated—into self-realization. Importantly, this is only possible because users' affective potentials bear traces of a context in which desirable subjectivity takes the form of a productive personhood. They understood themselves, or perhaps saw their realization in, a subjectivity distinguished along several axes. On a basic level, they wanted to be individuals who were able to achieve and secure their own well being, in keeping with the rise of discourses about achievement in Germany in recent years, and with the historical valorization of performance in the 'achievement society'. Someone with this identity typically inhabited a middle-class life, with a stable income, status, and relative job security.[19] It was also a self-determined job, which indexes self-realization through work, a topic that became prominent in Germany in the late 1990s. Maximization played an important role in this subjectivity, both in terms of success and productivity, and outside of work, as a balance needed to be struck to enable maximization of the various things one cared about. Finally, maximization was perpetually demanded, because the opportunities of yesterday were irrecoverable.

Productivity and achievement are central to self-realization in this habitus. This relationship has a decidedly political dimension, expressing how subjects' *aesthetic* capacities are formed in certain ways. Terry Eagleton shows how the aesthetic always has two levels: it is emblematic of the idea of the modern, free subject (as that sensuous, material experience that escapes rational control), at the same time as it ensures political order by grounding normative behavior in affects. This dual edge was forged through the shifting meanings of affects in the development of the liberal subject. In the 18th Century, Eagleton argues, a new problem emerged with the idea of the bourgeois individual: how to govern an ostensibly free and autonomous subject. The British moral sense philosophers, among whose ranks Francis Hutcheson and Adam

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[19] Returning to "post-Fordist affect", it seems that the affective forms of the past are recuperated into the present, mobilized for similar ends of worker-formation: despite a middle-class existence being difficult to attain, it remains an essential part of imaginations that justify neoliberal changes; indeed, it is the promise of an even better middle-class existence that grounds the claim that individuals are better off on their own than by relying on the state.

Smith are counted, took sensuous experience as their political basis: the "ultimate binding force of the bourgeois social order will be habits, pieties, sentiments, and affections. And this is equivalent to saying that power in such an order has become *aestheticized*", deeply anchored in the body (1990:20, emphasis original).[20] By making affects the guide to morality and truth, the moral sense philosophers shifted knowing from cognition to feeling, a position further developed by Rousseau and the Romantics as they articulated their concept of authenticity. For the Romantics an "inner voice" guided us not only in morality, but towards our distinctive way of being human. Essentially, instead of pointing to a larger (political or social) order, affects pointed towards what would lead to our self-realization (Taylor 1989:362-76). Freedom was each person following her inner voice, an expression of her inner nature. Yet, and this is where Eagleton's history becomes important, affects did not cease being related to political and social order, even if that aspect of the aesthetic is commonly elided; it is precisely the power of the notion of self-fulfillment that it can "authenticate" an "individual" choice in an affective register, while simultaneously expressing a social norm in a discursive register.

The point of relating the aesthetic to self-fulfillment is to elaborate on the dual sensuous and discursive register of affects, and to show how deeply intertwined this double register is with the notion of self-realization. By voicing their anxieties and desires in terms of maximization, users index the extent to which neoliberal discourses about subjectivity have shaped them. At the same time, these discourses have been transformed into a way of being, a subjectivity that can be taken on. In other words, their desires align with the demands placed upon them. I term this confluence of individual habitus with market logics a "productivity aesthetics", by which I mean that the affective attachment to achievement and productivity is linked to both neoliberal discourses of subject-making, and tied up with individual's freedom and self-fulfillment. It is thus an ethic about desirable forms of personhood, simultaneously functioning as a disciplinary technology. While Andrea Muhlebach suggests "explor[ing] neoliberal morality as a realm that is

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[20] Similarly, Schiller (2004) argued that that the education of man's senses will lead him out of barbarism into a harmony between sense and intellect, which he identified with freedom.

not simply collapsed with or subjected to neoliberal market rationalities but that instead continues to exist in productive tension with it" (2011:24), these boundaries seem to blur here: Productivity aesthetics points to an identity that is indebted to political economic formations, showing how the pervasive discourse about neoliberal subjects has co-produced an inhabitable habitus of performance, providing the affective predisposition to allow the "uptake" (Agha 2007:58) of this discourse, which can then become an ethic for one's self.

Reflexivity I: Core Selves and Bioethics

In the rest of this chapter, I want to draw out some of the implications of this ethic of self-maximizing, first for bioethics, and then in the conclusion for a more reflexive approach to the ethical dimensions of enhancement.

Self-fulfillment is closely tied up with being "authentic"; slogans like 'find your own way', or 'be yourself' express the basic moral imperative that self-fulfillment lies in realizing one's own way of being human (Taylor 1992). Authenticity has been a major issue in debates about enhancements in bioethics, so I want to briefly dwell on this here. One view is that there is some "essential" core that enhancement use would alienate. The President's Council, for instance, wonders whether someone's happiness on Prozac is "truly" their own, and thus "*fully real*" (2003:255, italics original). These claims can be illustrated by the Council's use of the case of "Sally", a patient Peter Kramer wrote about who was paradigmatic for "cosmetic psychopharmacology". Sally had been unhappy and anxious for many years, but after taking Prozac she became much more confident and socially outgoing, negotiated a promotion at work, and even started dating and married. What seemed troubling was that the medication changed her "personality" so dramatically, apparently making her "better than well". The Council writes:

> Surely, for Sally and others who benefit greatly from mood- brightening drugs, the drugs are not the direct cause of their happiness. Sally's happiness has much to do with her new husband and new job, her new attachments and new achievements, though she would likely not have sought or found them without taking Prozac. The drug itself did not make her happy; it merely enabled her to do and experience the many things that make her happy. But now imagine being Sally's husband: Just to whom am I married? Would I love

> Sally if she stopped taking Prozac and relapsed into timidity and hopelessness? Would Sally love me? Would Sally be Sally? (2003:248)

The presumption here seems to be that if individuals are functioning without drugs, their relationships and perspectives on the world are attributable to ‘their own’ desires or volition, a claim based on an idea of “immediation” (Mazzarella 2007). By contrast, “drug-induced” relationships and perspectives are “mediated” through chemistry, so they may not ‘belong’ to an individual; thus they are phantasmagoric, based on the fleeting efficacy of pharmacology. In short, one’s authentic self—unchanged by medications—is posited as the essential ground for individual and relational identity.

Many have disagreed with the Council on this point. David DeGrazia has prominently articulated an opposite viewpoint. He sees the Council’s worry as being that “some of our traits are so basic to who we are that they represent a sort of ‘core’ of our narrative identities;[21] changing parts of the core alters one’s self-story so drastically that in a sense (that of narrative identity) the result is a different person. This charge of violating an inviolable core may be understood…as the elaboration of the charge of inauthenticity—to violate one’s core is to fail to be true to oneself” (2005:233). Though DeGrazia believes that the idea of a core self seems to be a “romantic notion”, he considers various candidates for traits belonging to a “narrative core”, like personality, general intelligence, need for sleep, or gender. He dispatches these one by one, because in each case there are socially acceptable reasons to change these traits, so they are not ‘inviolable’. Thus, even changing important characteristics of one’s self can be “perfectly authentic” (2005:241), because, as DeGrazia claims, “any self-creation project that is autonomous and honest is *ipso facto* authentic” (2005:112), with “honestly” here meaning avoiding outright deception of oneself and others. Thus, rather than one’s “given” attributes one’s authentic choice serves as an authoritative pronouncement about the form of life through which someone can realize self-fulfillment.

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[21] Narrative identity means that humans “self-narrate” their identity. Narrative identity is taken from Paul Ricoeur. In analytic philosophy, it is opposed to ‘numerical’ identity, which is the *persistence* of an entity through time.

What is striking is that DeGrazia, despite attempting to dismantle the "core self" thesis, depends on a similar fiction of an immediated self: instead of a set of traits, he relies on a transparent self that can "autonomously" judge, and forms the core that grounds ethical legitimacy. Simply put, he pushes the coherent core from a quasi-natural-biological level to a psychological level.

I argue that users' perspectives on enhancement trouble DeGrazia's view. He gestures towards some themes I mentioned above: ordinary life as the central site through which self-fulfillment is realized, through living the form of life that fits with each person's unique, "authentic" way of being in the world. Yet, the confluence of individual ethic and market logic would seem to undermine authenticity's "authenticating" function by putting it in the service of an external, socially determined norm, eliminating any substantive variation in individual lives—everyone would be trying to maximize in some form or another. In other words, the "content" of authenticity—that it engages each individual life on its own terms, allowing for multiple forms of "fulfillment"—would seem to be collapsed into a general imperative in which one can choose only in which areas one wants to maximize. The overall point here is not that users are "coerced"[22] to accept these logics, but that the "authenticity" it offers seems severely constrained; as a self-authenticating ideal, authenticity ends up being fatally solipsistic.

Reflexivity II: Authentic Fictions

Nevertheless, there is a deeper problem here. To characterize a fundamental *in*coherence underlying these two opposing views, I want to briefly detour into a history of authenticity. According to a familiar account, fixed social positions were slowly lost after feudalism declined in the middle-ages, and with the rise of modernity they were succeeded by the crystallization of an individual identity distinct from social hierarchy (Handler 1986; Taylor 1989; Keane 2002). With the loss of firm social roles, the first problem that arose was how to identify the

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[22] Another point here is the over reliance on the liberal ideal of an autonomous self. This problem can be addressed by attention to context, see chapter 1.

dissimulator. Later, the concern was reversed as individuals tried to understand when they were being "true" (cf. Trilling 1971; Lindholm 2013).

In everyday usage, authenticity has come to presuppose some kind of preexisting core, as well as a distinction between that which belongs to the core and that which does not. Authenticity is at base a way of ordering the relationship between the 'inner' and 'outer', in which the former is privileged for it's uncorrupted quality. It functions similarly to the "natural", which also marks something as 'given' or 'pure' (Lindholm 2013). One could say that in the "common-sense" view, one's core self includes a set of naturalized capacities marking one's authentic self. Authenticity is typically viewed as a static concept, intended to determine what one's 'true' or 'core' self consists of (or in), something that persists despite its seeming metamorphoses through various identities, or various interventions like biomedical treatment, personality changes, or even ingestion of food and drink. Richard Handler accounts for this apparent paradox by claiming that the individual is seen as a fiction of a preexisting, "independent, self-contained unit", which enables a core self to remain despite acquiring and discarding different identities as it navigates social life. "The self is simultaneously a complete and unique self, although such selves take on a variety of social roles in their lives. The roles may change, but the self that plays them does not" (2005:43).

What Handler calls the Western "cultural ideology of individualism" of a coherent, pre-existing self has been mobilized at different times: most evidently, with the decline of clearly defined social roles at the beginning of "modernity". With the loss of such roles, it first became important to ground one's actions in a "true" self, so that one did what one said and was who one claimed to be, i.e. that one was *sincere*. But this apparently posed the problem of whether it was not more important "authentically" to follow one's own "intuition" rather than sincerely conform to what was required by society (Lindholm 2013; cf. Trilling 1974). In other words, should not the "self" that is acting sincerely (truly re-presenting itself) instead act authentically (act according to its true commitments)? Authenticity, as is well known, eclipsed sincerity as a dominant ethical ideal in the West. It has repeatedly been invoked in times of crisis: At the beginning of the 20th century in Weimar Germany, worries about class divisions that resulted from modern, industrialized society were thought to be counteracted by a return to one's "authentic" self, in the form of nudist physical activity and undistorted social interaction (here again, the presence of a certain 'natural' body that is allowed to be revealed is the basis for "true" social interaction). Or, very pertinent to my argument, is the flight into "authentic" consumption in the middle of the 20th century, as individuals are thereby supposedly fulfilling desires that are independent of mass culture and the alienations of capitalism (cf. Horkheimer and Adorno 1987; Hickel and Khan 2012). The point here is the observation that, when faced with crisis, particularly with a loss of the self induced by "modernity" or "capitalism", authenticity can be invoked as a fantasy about a pre-existing, core self that is a refuge from the fragmentation supposedly imperiling that self.[23]

I want to apply this to users, who were insistent that it was "their" selves who were doing the work while on drugs, and that they retained control. I suggest that on some level, users' were responding to the "common-sense" view of how drugs related to "authenticity". This view was shared by most of my informants who had not tried study drugs, and was the general sense about enhancements in Germany. It emphasized that rather than the effects of the drugs, the mere act of intervention was crucial. It was "inauthentic" (*inauthentisch*) to take medications for enhancement because taking a drug altered one's internal states, which would then, by definition, be separate from one's *given* self (see chapter 3). The only exception was if a lack existed, in which case treatment for deficit or dysfunction restored someone's self. 'Natural', in turn, entailed that which already existed, independent of chemical manipulation. In sum, this "common-sense" view sets up a bulwark against intrusion by economic rationalities and technology, and the disintegration that might accompany such merely "productive" and "instrumental" labor, by retreating into a "natural" safe-haven of the biologically grounded self.

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[23] Thanks to William Mazzarella for pointing out this reading of authenticity.

Users, it would seem, used precisely the *intervention of technology*, and the *re-signification of the labor* they were performing to counter this fragmentation. In short, the medication was able to ground the fiction of a pre-existing self, by allowing users to project an "authenticity" onto their capacities, and simultaneously certified themselves as being in "control".[24]

Thus, I am suggesting that "authenticity" is based on the fantasy of a pre-given self, a fiction that enhancements make visible. Users' accounts of the drug's effect's show the discursive work necessary to ground this fiction, in this case in an account of "given" capacities that belong to the "better" self that one can only rarely realize. Turning back to bioethics, if the preexisting "coherence" that authenticity gives is *produced*, it seems unable to do the work of properly "authenticating" decisions, as DeGrazia would have it, or guarantee an experience that is "fully [one's] own—and in this sense, fully real" (President's Council 2003:255).

Conclusion: Sincerity, Relationality, and Enhancement

At the onset, I posed two general questions: how are large-scale discourses about neoliberalism mediated into everyday significance? And what do these effects "look like"? I have argued that enhancement medications amplify users' affective potential, which allows users to realize a version of themselves in which they can maximize as much of their capacities and time as possible. Thus, neoliberalism can become affectively effective through enhancement medications. These drugs are said to enable only *their* best self, rather than a a different, more capable self. Importantly, however, the very notion of this "best" self is based on an ethic shot through with the logic of maximization. As I showed, this logic is effective in the "productive" sphere of labor, as well as in the "private" and even relational pursuits of ordinary life (which, in creating subjectivities desiring improvement, is also the condition of possibility for the "situated problem" of the ethics of taking enhancements to emerge). By refiguring users' aesthetic

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[24] An alternative explanation would be that users simply wanted to have "control", being autonomous, liberal subjects. However, I am interested in how control is related to the idea of one's 'given' capacities.

orientations towards productivity, users can pursue an ethic of self-fulfillment, while simultaneously meeting disciplinary norms.

In the last remaining paragraphs, I want to reframe questions about the “self” using enhancement technologies, particularly in regard to using “authenticity” as an ethical ideal. John Jackson Jr. argues that authenticity sets up a relationship between subjects and objects, in which the former must judge the latter in an exercise of objectification. By contrast, he writes that sincerity is between *subjects*, implying “social interlocutors who presume one another’s humanity, interiority, and subjectivity” (2005:15). Sincerity is judged based on one’s presentation, trying to make sense of ambiguous and only incompletely knowable selves.

Applying Jackson’s framework to enhancements, one could say that authenticity seems to be based on an idea of a coherent “potential” self that should become a certain “actual” self if there has been no undue intervention (e.g. drugs, coercion, structural abuse). This sets up a relationship of a subject judging an object in the following sense: when individuals reflect on themselves, they ground their claims to being authentic by positing an earlier, less realized self whose potentials are fulfilled in their present self; or, they claim to feel ‘inauthentic’ because the potential self that they posit is not yet fully realized. In either case, the self thought to exist *in potentia* is help up against the presently actual self.

Sincerity might be more productive, because it allows one to acknowledge the self as “created”, and, crucially, puts the self in an intersubjective frame. Jackson claims that “[w]here authenticity lauds content, sincerity privileges intent” (2005:18). This is an important idea, because “intention” leaves space for the self to be produced. It also installs relationality at the heart of evaluation, because intention must be recognized. In sum, one might think of self-transformations in terms of a movement from potential to actual, focusing attention on the means of metamorphosis rather than the correspondence of the initial and final states of some visible “self”.

Authenticity makes sense with regard to objects—is this a "real" coin from the 2nd century B.C.?—because we have agreed on what would make something "real", and accept that there are some kind of "actual" indexical links that can establish a coin I am holding in my hand was crafted by a Roman craftsman. But authenticity seems to be less useful for judging individuals, as one's self is always produced in a dialectic, between shared practices, one's reflexive work, material and biological influences, etc. I would suggest that in many cases of practice we use "sincerity" to adjudicate someone's self—a relational judgment that can point to, but not conclusively establish, an (always inaccessible) authenticity.

Recall that the President's Council writes

> Surely, for Sally and others who benefit greatly from mood- brightening drugs, *the drugs are not the direct cause of their happiness. Sally's happiness has much to do with her new husband and new job, her new attachments and new achievements, though she would likely not have sought or found them without taking Prozac. The drug itself did not make her happy; it merely enabled her to do and experience the many things that make her happy.* But now imagine being Sally's husband: Just to whom am I married? Would I love Sally if she stopped taking Prozac and relapsed into timidity and hopelessness? (2003:248, italics added)

It would seem that the key questions are posed *before* the detour into a "true self". Rather than positing a self that is at stake, what seem to be the important concerns are precisely about how supple and expansive shared notions about subjectivity and action are, and about how medications "activate" (or amplify) individuals' capacities. With regard to enhancements, a fair question would seem to be whether someone's use of drugs can be seen as part of an overall effort to form a subjectivity, as other efforts might be (like eating well, hiring a tutor, etc), without necessarily fixing biology as determinative. The point is that to think about the ethics of enhancements, one should think through these relational elements.[25] To return to my argument

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[25] I am proposing an analytic re-framing, rather than an entirely new idea; it seems that some comments informants made to me could be interpreted along the lines of thinking in more relational terms. One critic of enhancement told me that if you are on medications, there is something that is "part" of your success, which threatens to undermine the expectation of performance you are growing:

"Your foundation keeps getting thinner, because at some point you don't know who you are, or what is enabling your achievement. The problem is the process…you always stay in this performance system. " Moreover, she felt that "The effects change as well. At some point you don't know anything anymore. [It takes on] addiction character because you're willing to try more and more, because your reference point is the success you had. Not the about “situated problems”, this level of practice is precisely where ethical problems emerge, and which provides resources to (attempt to) resolve them as well.

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chemistry alone causes a loss of boundaries, you yourself become an unbounded system that keeps pushing forward.”

While the idea that some extra “part” is added recalls authenticity, I submit that this is more complexly about the relationship established to one’s own subjectivity through action, a “foundation” that is being weakened. Importantly, she is arguing that a “process” is underway in which the medication-user is being formed, who is developing into a subject who is “unbounded”, one might say “overtaken” by the momentum of increases in performance. While this is clearly about one’s relationship to oneself (also thought outside of a framework of “authentication”), it is also about how one might evaluate the “sincerity” of such a person, the reliability and indeed know-ability of such a self.

5

Intersections of Life and the Clinic: Burnout and Dementia

In the preceding chapters, I have argued that enhancements are situated problems of a much different sort than typically assumed by mainstream bioethics. The boundaries of "improvement" are not necessarily obvious, since "enhancement" as a problematization emerges only *out of* and *through* the social worlds in which it is located. Given the centrality of biomedicine—both for enhancements and for contemporary social life—I will, in the next two chapters, turn to how medicine and technological improvement are connected.

While the literature acknowledges that medicine is imbricated with enhancement, the relationship remains unclear. This confusion is mirrored in definitions of "enhancement". One approach, taken by Savulescu and colleagues (2011), calls everything that improves human welfare in some way an "enhancement", and argues that certain interventions are more beneficial than others, which "society" should pursue. While philosophically elegant, this definition erases any questions about enhancement that might be specifically connected to medicine. More commonly, enhancement is defined *against* medicine, claiming that some kinds of intervention (vaccines, preventive health, bone-setting) belong to legitimate medicine, while others (some cosmetic surgery or psychotropics) do not. Here, the trouble is that this demarcation remains within the paradigm of biomedicine, so it must take as given whatever biomedicine defines as "pathology"; questioning the categories themselves would undermine any basis for distinction.

Piecing together the worries I encountered during my fieldwork, which coalesced around questions about "improvement" through biomedicine that were considered to be somehow troubling, I suggest that in Germany enhancements are imagined not as a clearly demarcated technology, but as a flag for a constellation of elements that combine to form a particular kind of problem. These constitutive parts capture the working definition of enhancements that I encountered during my research:

1. Improvement, the necessary condition, since an intervention produces something that is "better" from some perspective. It is closely related to
2. Medical technology, which is often a problematic solution because it may not be appropriate to a given situation, or may indicate that *too much* improvement is called for. This in turn points to
3. Questionable conditions of life, i.e. norms and structures that demand certain levels of performance or kinds of people.
4. Norms have their counterpart in misplaced desires, which is to say that individuals may be implicated in *not* rejecting inordinate demands, or even identifying with them (see burnout in this chapter), and
5. Ethical stakes, often the loss of something (e.g. spaces of *Bildung* for ADHD, or humane working conditions and hours).

Seeing enhancement as a flag for something problematic leaves the technologies more ambiguous and less purified of the real-world entanglements in which they operate. It also makes enhancements a biopolitical question, about how forms of life are generated and sustained: On one level, biomedicine is implicated in authoritatively enacting norms, e.g. whether a diagnosis of ADHD is appropriate, and in identifying the goals of therapy. On another biomedicine co-produces the epistemic and normative conditions that make both unproblematic practices of healing and contentious techno-improvement imaginable (and possible), at the same time as biomedicine is itself shaped by that context. While bioethics typically assumes that bright lines are possible because norms are fixed and can ostensibly be cleanly separated[1], pathology and optimization are often intertwined and share fuzzy borders. This instability is a function of the

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[1] Often, expecting to find clear norms and failing to do so is taken as evidence that no norms exist (cites from that Eichinger book—in ethx intro)

larger discursive space that makes the fundamentally underdetermined properties of technology into a problem in the first place (cf. Gomart 2000; Lakoff 2008), allowing enhancements to paradoxically have both therapeutic and non-therapeutic effects. In sum, then, to understand why enhancements are problematic and ambiguous, one needs to follow how pathology and optimization are related in their concrete situation, a coupling mediated by biomedicine.

Thus, in this chapter I take up a long tradition of work by anthropologists that has shown how systems of medicine and healing are social, not just scientific matters. Medical systems are often attempts to manage disruptions in the social world, like breachs of taboo, or disputes (Comaroff 1980; Evans-Pritchard 1976; Farquhar 1994; Glick 1964; Good 1994; Turner 1967). Biomedicine is unique in its attempt to eliminate the social from its objective, rationalist models; these purifications are incomplete, with regard to both medical practice (Hamdy 2012; Lock 2002; Lock and Nguyen 2010; Berg and Mol 1998), and with notions of disease and expectations for medical care circulating outside the clinic in the west (Dumit 2012; Montgomery 2006; Rabinow 1996). Moreover, norms in biomedicine are inherently social, reflecting valorized subjectivities, forms of life, and kinds of authority, while disputes about those norms are often discussions about the social order (Bowker and Star 2000; Canguilhem 1989; Hacking 1990; Lock 2000). I follow Judith Farquhar, who writes that medical systems can "share forms of habitus and common sense with other, parallel yet overlapping domains of the social" (2002:137). Regarding the case of enhancements, the norms in play are sourced in medical practice and everyday questions around living, which can shift the borders of the "normal" and of the "pathology" or "optimization" to either side. In the next pages I trace some of the lines in this discursive space, not limiting myself to enhancement (nor trying to relate everything to self-improvement) precisely because the double enhancement/biomedicine is too narrow. Rather, I will focus on how lines between the normal, pathological and optimal are drawn. I rely on fieldwork in a clinic diagnosing and treating memory impairments, focusing on two conditions, "burnout" and Alzheimer's Dementia (AD). Patients often came into the clinic because they were unable to meet some of the demands for function I outlined in previous chapters, assuming they had a pathology of some sort, and brought certain expectations of what biomedicine could do for them. In each case, I begin with the clinic and work outwards, to show how biomedicine is trying to come to grips with more than just biological facts, which in turn reveals deep-seated tensions between norms. Describing the work of the clinic and its milieu sets up the following chapter, where I will shift to focus on the link between pathology and optimization within biomedicine itself.

The Memory Clinic

The "memory clinic" (*Gedächtnissprechstunde*) was part of a large psychiatric clinic, and was one of several established in the mid 1980s in Germany. Memory clinics began a decade earlier in the US, as a specialized site to focus on diagnosing and treating memory impairments (thought to be less stigmatizing a term than 'dementia'), and to allow patients to access clinical trials (Moreira 2010; Aguirreche 2003). One major focus of the clinic is diagnosis of adults in middle age and older who have some kind of cognitive impairment as their primary complaint—as opposed to 'secondary' dysfunction which attends something like psychosis. Often, patients have trouble remembering, but frequently this is not their major concern. Many patients receive no diagnosis because no pathology can be discovered. If they are diagnosed, dementia of the Alzheimer's type is the most common impairment. There are only a handful of approved drugs for Alzheimer's dementia, which can only slow the symptoms down for several months, so there are a range of clinical trials testing all manner of new therapeutic molecules available. If the patient has interest in a clinical trial offered at the memory clinic, she can be enrolled and receives care for her condition at the clinic; if she would prefer to not enter a trial but simply have her condition managed, she is referred to a local physician. For this particular clinic, the vast majority of patents were enrolled in trials of some kind, which the whole team at the clinic saw as something "special" that they could "offer to the patient" as a hope of treatment above and beyond standard and largely ineffective approaches. Trials often run one to two years, during which time patients are seen at least monthly. Thus, the second major focus of work in the clinic is running clinical trials: screening patients to enroll them, administering the neuro-psychometric exams testing cognition and memory, and giving trial medications.

To follow the intersections between the clinic and outside, I focus on the work of diagnosis, and particularly on those patients who are *not* diagnosed with dementia. These cases are interesting *because* they are ambiguous, in which the connections to the world outside the clinic have not yet been erased by stabilized diagnostic protocols and the urgency of treatment.

Burnout: Mrs. Holzer

On a cold day in the middle of February, Thomas, a physician in the clinic whom I shadowed the most, was seeing his last patient after a full day in the memory clinic. When you arrive, you enter by a side street, and open a big iron gate to climb several steps. It is a large stone building that looks more like a typical residence built at the turn of the last century than a university clinic. You enter and go down a white-painted wall with stucco wallpaper to enter the waiting area; on a warm day, you can go onto the balcony abutting the waiting room, featuring popular magazines with a white paper sleeve hiding the actual magazine cover, a sign that they were received as part of the same subscription service that delivered most office waiting rooms (and that makes thumbing through them to find one that looks interesting painfully slow). To your right is a large room marked “registration”, in which physicians are reading charts or looking for files, while two nurses are answering phones and scheduling appointments, which they interrupt to take your insurance card. It’s a bustling place, with a team of nurses, psychologists, study coordinators, lab technicians, and physicians spread over three floors. In the first of potentially three visits, a psychologist or physician takes a medical history and usually administers a test to assess cognition. Essentially, the goal is to discern if there are any a complaints that could potentially be objectively measured or treated. If not, the case is closed; if there are, it's left to the physician to figure out a diagnosis during the second appointment. The patient receives her results in the third visit, after which she is either referred to a local physician or enrolled in a clinical trial.

This was Mrs. Holzer's first visit. Before calling her out of the waiting room, Thomas and I looked at her file. She was 45 years old, and had already seen several doctors to get to the bottom of her complaints about her memory. Thomas interpreted this as meaning she had high expectations for the clinic's efforts to diagnose her, so he decided that it would probably make sense to at least ask Mrs. Holzer to do the more extensive testing even if it was not strictly indicated by the initial conversation he was about to have.

She scored high enough on the screening tool used at the clinic to evaluate risk for depression which indicated depression was likely. Armed with this information, Thomas greeted Mrs. Holzer, and led her to a large room that he occasionally used for consultations. We sat down in the spacious room, which had a large table inside, with Thomas and myself sitting kitty-corner to the patient. She was dressed almost entirely in a forest green, and had even painted her nails green, a splash of color in the midst of an otherwise bleak room.

Mrs. Holzer was calm and reserved, answering slowly and precisely. She had a university degree and an above average income compared to other patients at the clinic; many of them were retirees, or former East-Berliners whose income and status had suffered since Reunification. Knowing it was the last patient of the day and that this was an initial visit, Thomas took his time, asking lots of questions and letting the patient respond at length. Mrs. Holzer said she had problems with her memory, which she reported as being mostly about concentrating. She had a hard time focusing at work, or when she was trying to learn something new. She also had problems remembering names. Slowly it emerged that she lost her job about four months ago. She had been in charge of two nursing homes, and had managed to fill every bed there.

"I was fired during the trial period, even though I thought things were going very well. They even said I did a good job, but didn't like my leadership style. They said I wasn't 'authoritative' enough."

This was a common story I heard throughout my fieldwork, that people were let go just before their position would need to become permanent. Often they felt they had fallen victim to pressures to cut costs, but Mrs. Holzer was mainly bothered by not having gotten the job, and wondered if she could have done something differently.

"I was the vice president of another nursing home before I started that job [managing two homes], and a nurse before that. So I had a lot of experience."

Thomas suspected that she was depressed about getting fired, so he went through a depression questionnaire, trying to firm up his hunch. Mrs. Holzer, however, insisted that she was happy. She may have been a little depressed four months ago, but not anymore. And in any case, her problem wasn't that she felt depressed. It was that "I'm just not as fast as I used to be", and took longer to do things than in the past, when she was working 60-80 hours a week. She was happy to have more time now, since she could pick up her son from school and saw him much more: "I think it was hard on him when I was working so much. Our relationship is much better now."

Though she wanted to work again, Mrs. Holzer felt that perhaps "I was just doing too much in the past."

As he listened, Thomas nodded understandingly. Switching to the role his white coat entitled him to, he got up and went to the light box, holding up Mrs. Holzer's MRI. "Your picture is entirely normal, there are no signs of dementia."

Mrs. Holzer seemed relieved, even if not entirely surprised. Thomas explained that it might well have been stress that was causing her symptoms. Though she was too young to have dementia, to be safe, he wanted to do a couple more extensive tests.

When Mrs. Holzer left, I asked if he thought she was depressed, since it was evident that the other candidate for diagnosis, dementia, was inappropriate. “Not very”, Thomas answered. “I think she just has very high expectations for herself. It’s not a depression that you would typically treat clinically, and she probably didn’t even have a depressive episode. But you can deal with it differently, with relaxation or something similar.” This kind of recommendation was frequently made for patients who did not have a ‘treatable’ pathology like dementia or depression.

He explained that this was quite possibly a case of “burnout”, a term referring to people who have pushed themselves so hard that they become unable to work and unhappy. Mrs. Holzer had indicated as much with her comments about having worked too hard and being overly successful. Burnout was not a disorder of memory, but generally these patients underwent the same testing protocols as all other patients. Additional tests ended up being negative, and she was not given a diagnosis, though the doctors presumed it was related to stress so they encouraged her to keep the amount she was working in mind.

The Rise of Burnout and Symptoms of Decline

Ms. Holzer was also not an unusual case. Patients often came to the clinic complaining that they could not concentrate as well as in the past, and often, their stories included both declining performance at work, and high demands. Often the word “burnout” was mentioned, either by patients or physicians, though the latter tended to not mention it during the consultation (for reasons I discuss below).

Burnout has meteorically ascended to fame in the last years. In late November 2011, I was having lunch with Lothar, a journalist who had written about enhancement, when I asked him about something I’d been hearing more often, “burnout”. His reaction was immediate:

> Did you see the new *Focus* [a major weekly]? They have burnout on their cover again this week. It's like the second time this year, it's ridiculous. And it's the only thing the *Spiegel* is writing about. It was even on the *Sportschau* [the fixture weekly soccer show] last Saturday. People were talking about the decisions made by the referees, but instead of criticizing the refs they said 'I can understand, difficult call'—because otherwise it would be part of putting so much pressure on the refs that they might also 'burn-out.'

In the popular understanding, burnout was a "feeling of total exhaustion that everyone knows and immediately understands", as the magazine Lothar referred to put it (Focus 2011). Burnout refers to a sense of emotional exhaustion, lack of interest, and perceived ineffectiveness, often associated with excessive demands in the workplace. A series of high profile cases raised burnout's public visibility: TV chef Tim Mälzer, bestselling author Frank Schätzing, or most recently the coach of the popular *Shalke 04* soccer club, Ralf Rangnick, that same month of the *Focus* report. Perhaps most dramatically, Robert Enke, former member of the national soccer team, committed suicide in 2009, which Lothar's comment also referenced: headlines flashing that the "National Team goalie commits suicide" had rocked the professional sports world and unsettled the public. A common interpretation was that Enke was under so much pressure to win that continuing had become intolerable for him. His case fused the relationship of stress on the job, depression, and suicide, and he became the emblematic example[2] of burnout's worst-case outcome.

Not limited to celebrities, "I'm burnt out" was a phrase I often heard, both tongue in cheek and seriously to index being personally overwhelmed. I spoke with several psychologists during my research that worked at university mental health clinics, and they unanimously noted that they felt the numbers of those with burnout symptoms was increasing. One popular evening talk show captured this general sentiment, saying: "everywhere in Germany you find leaden tiredness. Stressed, overworked, overwhelmed, burned out. What for a long time was something which top managers and athletes suffered from is well on its way to becoming a common disease (*Volkskrankheit*)". This claim is interesting because it collapses the distinctions between the

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[2] For instance, his close personal friend and advisor appeared in the Günther Jauch show I mention below.

ostensibly highest achievers and the rest of society, making everyone vulnerable to increased demands at work and home. It also naturalizes the feeling of being out of one's depth as a general experience, and makes it into a problem in need of some kind of treatment.

Data buttressed claims about a burnout epidemic, apparently thereby also establishing that a solution was required. Media outlets widely reported on increases in burnout diagnosis; according to Germany's largest insurance carrier, sick days because of burnout rose by almost 900% between 2004 and 2010.[3] The "National Stress Report" for 2012, carried out by the Federal Office for Workplace Safety and Occupational Medicine (*Bundesagentur für Arbeit und Arbeitsschutz* (see Lohmann-Haislah 2013)) found an increase in workers' subjective feeling of some kinds of stress on the job. Other reports showed a continuing rise in diagnoses mental illness among workers (paralleling the report on antidepressants among students discussed in chapter 2): the number of sick days due to mental illness had almost doubled in the past few years. Just as critically, the number of workers entering early retirement because of mental illness had increased. For insurance companies and the welfare system, these were huge financial liabilities: companies are required to pay wages during sick leave for six months, then insurers take over; and the retirement system was facing an aging population. The Minister of Work announced a campaign against burnout to improve workers' psychological health.[4] Left unnoticed was the paradox that the fusion of individual achievement and national economic growth (naturalized in political discourse aimed at engendering high-anxiety leistung), was undercutting its own success in the form of incapacitated workers.

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[3] See Wissenschaftliches Institut der AOK, "Burnout auf dem Vormarsch", http://www.wido.de/fileadmin/wido/downloads/pdf_pressemitteilungen/wido_pra_pm_krstd_0411.pdf, accessed Apr 8, 2013.
For another insurer, it reportedly rose 18-fold. See Grabitz and Wisdorff, "1800 Prozent Mehr Krankentage Durch Burn-out", *Die Welt Online*, Jan 27, 2013, at http://www.welt.de/113159916, accessed Feb 12, 2014.
In all cases, the expansion of a pseudo-diagnostic label rather than "actual" cases likely played an important role (underscoring the prominence of burnout as an interpretive category).

[4] See Gersemann, van Borstel, and Wisdorff, *Die Welt Online*, "Von der Leyen sagt Burn-out den Kampf an", December 19, 2013, accessed Jan 22, 2014.

In the face of such a seemingly perilous rise in ostensible cases of burnout, discussions about its treatment and etiology moved to the forefront. The popular diagnosis of burnout's causes was iconically condensed by Germany's most-watched primetime talk show:

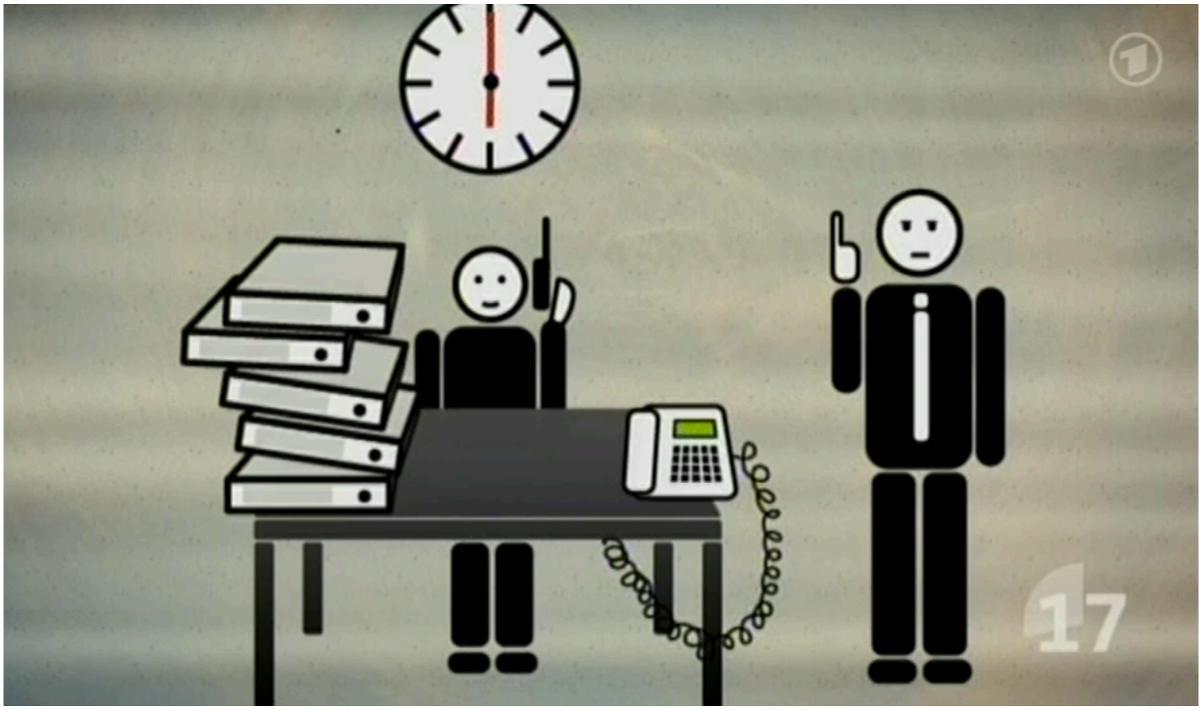

Figure 6: Illustration from *Die Günther Jauch Show*

(Source: screen capture, March 25, 2014)

Burnout is caused by too much time at work, too much work, too much availability at all hours, and the exhortation to achieve (here in the form of a demanding and controlling boss). Often, the solution was a radical change of lifestyle: treatment could consist of weeks or months away from work in psychotherapy, and changing the pace of life, possibly even switching professions. Such a therapy fit with the popular sense that burnout was the result of a kind of systemic abuse; it was emblematic of conditions that raised the '*Systemfrage*' (chapter 2). More and more psychologists, clinics, and "coaches" were specializing themselves on burnout, in addition to the expanding numbers of self-help texts available at the local bookstore, and media shows featuring individuals who had overcome their burnout.

Beyond individual cases, diagnoses of a *society* suffering from burnout abounded, as the individual body was taken to materialize social pathology (Weiss 1996:155-78).[5] Commentators thematized the rise in cases diagnosed and in publications about the topic, such as this newspaper article claiming a common, ironic perspective, that "reports about burnout are the best therapy" for "the "stressed soul".[6] Others saw burnout as a sign of "an uneasiness (*Unbehagen*) at the pressure to achieve in today's jobs, the increase in speed of work and communication, being overwhelmed on an everyday basis…that make the demands of an unbound competition society into the status of a publicly debated pathology" (Neckel and Wagner 2013:7). Or more generally, burnout and widespread psychological pathology like depression were a sign of excessive competition, drive towards self-maximization, and unbound capitalism (Ehrenberg 2010; Bröckling 2013). Yet, at times the individual was perceived as not only victim, but also accomplice, if her own desires for status or income made her accept inordinate standards wholesale. Miriam Meckel, a journalist who was also Germany's youngest full professor after a "turbo" career, wrote a book entitled "letter to my life" after she burned out; rather than drawing insight from her experience, she was accused of using her burnout for self-aggrandizement, as she continued to work and appear in the media at what some saw as a torrid pace to speak about what she had learned about personal limits and priorities.

Different museum exhibits also thematized burnout, one of which I visited in Berlin. In one installation piece, the artist had constructed a wooden box about 6x3x3 feet, termed a "spartan refuge after a description by Henry Thoreau". It was made of blond, unvarnished pine like what was used for a shipping crate; its unspectacular and unfinished quality looked oddly out of place

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[5] In chapter 3 I discuss the health reform movements of the late 18th Century, which aimed at undoing some of the negative effects of modernity. At that time, many attributed personal and professional failure to a "weakness of the nerves", or neurasthenia, which the focus on health was supposed to counteract. Burnout has some similarity to neurasthenia, an inherited weakness which caused weakness and exhaustion, and in the words of a late 19th Century psychiatrist "the inability to carry out a given mental and physical performance repeatedly and with entrance" (cited in Hau 2003:16). I cannot go into this here, but there are interesting parallels between the causes and solutions of neurasthenia and burnout: as Hau writes "in their [the natural therapists'] view, a variety of prescriptions might prevent the defects of neuroasthenia…exercise, rest, air baths, economic security, a shorter workday, better wages, and regular vacations" (Hau 2003:17).

[6] Steinkopf, Leander. "Erschöpfend Behandelt." *Frankfurter Allgemeine Zeitung*, February 12, 2012, 31.

in a museum. Visitors could open the top of the box and get in, closing the cover over themselves. Once I got past the moment of claustrophobia, and the fact that I could not move in the tiny, cramped space, its elegance as a commentary became obvious: *get out*—of your job, whatever is causing your burnout, and go live with a portion of self-reliance. At the same time, the limits of what you would get into—metaphorically speaking, a small box—were apparent. This piece by artist Gesa Glück puts its finger on what's at stake: how is burnout related to systemic violence and individual failing, and what kinds of solutions are appropriate? Medical treatment, psychological counseling, switching jobs, or abandoning the rat race altogether?

Troubled Therapies

These questions often coalesced around biomedicine. Like Ms. Holzer, many people did seek medical treatment for the symptoms of ostensible burnout. Despite its popular appeal, burnout was a contested category among health professionals, a dispute that squarely engaged these questions. An oft-cited article in the main German medical journal, *Deutsches Ärtzeblatt*, called burnout a "fashionable" diagnosis, pointing to how unclear and contradictory some of the diagnostic criteria were (Kaschka et al. 2011).

In fact, burnout has been an extant category of psychological distress since the 1970s, and has been heavily researched. The key aspects are that burnout takes place in situations demanding lots of interpersonal interaction, and can be intensified by work-related pressures (Maslach et al. 2001). It is recognized as an official diagnosis by several Scandinavian countries (cf. Shirom 2009), but does not have a discrete diagnosis category in major manuals (i.e. DSM, ICD-10).

Burnout was hotly disputed in Germany, so much so that the professional association of psychiatrists released a position paper that saw burnout as a risk factor for chronified stress, which can take the form of depression, addiction, etc. (DGPPN 2012). Psychologists and psychiatrists were troubled by diagnosing burnout in part because they felt it was being used as a euphemism for depression. While the latter was stigmatized as personal weakness, burnout was a badge of honor, due to being *too* effective; too potent a (neoliberal) subject, as it were (Hillert 2012). If burnout was really depression, it must be treated differently than in the popular imagination: surveillance and engagement rather than withdrawal. Another reason was that treating burnout would risk establishing it as a "socially accepted excuse for the poor management of one's own resources", as one psychiatrist argued (Albrecht 2011). Such an interpretation fits with Funahashi's (2013) study of burnout in Finland, where she argues that burnout is "not an effect of the neoliberal regime but an enabling factor. It is a risk that emerges together with the demand to think in terms of market exchange and of oneself as a resource to be managed economically".[7] In other words, burnout results when individuals do not recognize their limits, do not relax enough, or similarly care for themselves; who have not "optimized their stress-management capacities", as a prominent psychologist on the topic has declared the goal of prevention (Hillert 2012).

It was not altogether unsurprising that someone who might have burnout would end up in a dementia clinic (at least if it was not serious enough to immediately be recognized). Several doctors pointed out to me that there were very few options for adults with cognitive impairments that were not clearly a consequence of some somatic disorder; children could go to ADHD clinics, and older adults to memory clinics, but for everyone who was too old to have ADHD and too young to have dementia, memory clinics were the only real option.[8] In other words, if someone has decided that cognition—as opposed to their overall life situation, or affective engagement with something—is the main problem, they will probably end up at a memory clinic. It is not incidental that the kinds of problems Ms. Holzer described, though entailing multiple disruptions of affect and behavior, are understood in cognitive terms. Allan Young points out that

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[7] Funahashi emphasizes the public and mental health discourse on burnout, where is unsurprising that public health sees burnout as an opportunity to accommodate oneself to market regimes more effectively; both mental- and public health paradigms have focused on risk prevention, optimizing function, and expanding life chances since the 1950s.

[8] This may change, as adult ADHD is slowly making inroads in Germany.

> [a] sickness episode begins when the principal and/or his relatives decide the range of symptoms into which his signs could be translated. Next, they must obtain the services of someone whose medical powers are appropriate to this range of symptoms…Their choice of a diagnostician is in a way equivalent to choosing a specific kind of contest out of a repertoire of possible contests, since the diagnostician decides what set of rules will be played, what individuals (including therapists and pathogenic agents) and audiences can be mobilized" (1976:16)

Foregrounding cognition is reasonable because of its significance in narratives of achievement and productivity: workers need to be cognitively "flexible", continue to educate themselves, are in a "knowledge-society", deal with a barrage of information every day, and master continually changing communication technologies (See chapter 2). In light of this, I suggest, failures at work are likely to be interpreted as failures of cognition, mobilizing a "set" of therapies that tend towards restoring productivity.

As I showed in chapter 2, many individuals felt they were being exhorted to achieve at unsustainable, not to mention unreachable levels, which was also adduced as an explanation for enhancement. At first glance, the two seem to be unrelated: burnout is about debilitating pathology, while enhancement is about going beyond good health. But I had noticed that the two were often mentioned together, even as the connection remained muddled; the lone clear link occasionally made was that too much pressure to achieve could lead to burnout, or to pharmacological improvement—the latter itself an unsustainable solution, perhaps also eventually ending in burnout.[9]

During an interview with Isabella Heuser, a psychiatrist and one of the authors of the German 'Memorandum' on enhancement, I asked her views on how enhancement and burnout were connected.

"It belongs together", she answered, "I am constantly talking about burnout, yesterday I gave a lecture again. Slowly I'm getting burnt-out!" she laughed, then continued. "Burnout is a civilization sickness (*Zivilisationskrankheit*). It's expected that you answer emails within hours.

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[9] It was also dangerously close to addiction, if you lost control over your enhancing. Ironically, the term burnout comes from drug abuse, naming the effects of chronic drug use.

Communication—theoretically at least—connects you to the entire world. After lectures on enhancement I'm asked about burnout, and vice versa. Every time. Burnout is the fraternal twin of the enhancement debate. It's not by accident that both rose to prominence at the same time."

I want to expand on this comment by suggesting that burnout illustrates how optimization and pathology are two sides of the same coin, separated by only a thin line. One could fully maximize one's individual "resources"—or push too far and self destruct. One could be reflectively aware of one's limits—or obliviously transgress them. As norms circulate into and out of the clinic, they may reverse valence: working 60 hours a week, as Ms. Holzer did, was a sign of dedication to her job, which could become an excess in the clinic. Optimization or pathology are *open questions of signification* in particular settings, shifting fluidly rather than being pre-existing attributes. Seen in this light, disputes in biomedicine about the validity of burnout as a diagnostic construct are about the legitimate borders of medical intervention.

To begin, it is not clear what this illness is—its very existence and putative causes are in question, which is to say that the intersection of the social order and biomedicine is squarely on the table: is burnout a sign of disease due to a mix of genetics, environment, and brain function, like any other case of depression, or a kind of social pathology that manifests as illness? Even the very idea of burnout as a pathological condition medicalizes, by rendering inadequate performance and low enthusiasm as a technical problem in need of medical remediation. But, as many wondered, is biomedicine responsible for treating every incarnation of inadequacy? Should biomedicine enable self-maximization at the expense of well-being (naturalizing it as a pathology and providing a treatment)? A fear lurking here seems to be that while reducing stress is one therapy for "burnout", another might be to help individuals work *despite* burnout. Indeed, in the clinic patients who attributed their trouble concentrating to having too many demands placed upon them sometimes asked if there was some therapy *aside from* reducing their everyday stress. Patients felt that they should be able to meet certain standards of performance, and if not, expected that medicine help them do so.

In sum, burnout indexes the larger social field, in which achievement, individual inadequacy, and expectations of biomedicine are at issue. The dispute about the legitimacy of therapeutic intervention points towards the social dimensions of a nosological question, revealing a fluid boundary between optimization and pathology and the conflicted role of biomedicine.

In the next section, I will turn to a disease whose existence and need for treatment is not disputed, Alzheimer's Dementia (AD). I will speak to signification, but more importantly to the juxtapositions of optimization and pathology that happen when an aging memory can be an exhortation to ferret out impending decline, or an opportunity to sharpen one's cognition.

Mr. Jahn

On a late fall morning, I met Mr. Jahn and his wife together with Lisa, a psychologist who had been working at the clinic for a few years. Mr Jahn, in his mid 70s, was tall and slender. We went to Lisa's office for the interview. He had come to the clinic because he saw an article in one of the free monthly magazines that are in every pharmacy in Germany, the *Apotheken Rundschau* (roughly the 'Pharmacy Gazette'). The magazine had stated that a new drug was being studied that could stop memory problems, and Mr. Jahn was hoping to try this drug, if not another one._

Lisa took an extensive history, asking about what problems Mr. Jahn reported, and when he first noticed them. He had trouble getting oriented in unfamiliar areas while he was driving. And he would forget things during his everyday routines. As he put it, "I often say 'I'm going to do my crossword now', and my wife says 'you did that two hours ago'. But I can't remember doing it." Despite problems that were mild on the whole, he had a vague, persistent sense that "something" was off, which he tried to convey to Lisa.

Mr. Jahn's doctor, however, had also noted some changes in his cognition, and had recommended he go to the memory clinic. Lisa inquired further about Mr Jahn's past. He had had a good job before 1989, living in East Germany, which he had been happy with. After reunification, he only found work through the unemployment agency, at a job which he had mixed feelings about. Such tales of post-Unification woes were common among former East-Berliners; often, 1989 represented a decline in their professional fortunes, and for some it was the turning point, when they began having problems with their memory or health (ultimately bringing them to the memory clinic). On some level, I take these stories as a sign of individual's perceived inadequacy, and their inability to fully "adapt" to the new system of Western Germany. For them, "ostalgie" was not just longing for a familiar and ostensibly better past (Behrdahl 2009, Boyer 2006), but also for the restoration of a rupture that had left marks in their bodies, again raising questions about what "treatment" would even aim at. [10]

After taking a history, Lisa asked Mr. Jahn's wife to go back to the waiting room, and gave him an hour-long test, known as the CERAD. It was developed in the 1980s to detect Alzheimer's dementia, since at the time there were few sensitive biological markers, and as an attempt to standardize diagnosis by the 'Consortium to Create a Registry for Alzheimer's Disease' (CERAD). The CERAD is a key tool in determining 'normal' cognition. Most memory clinics in Germany and Switzerland use some version of this test, which is more precise than the ubiquitous 'Mini-Mental Status Exam' (MMSE), used throughout biomedicine as a general test of awareness and mental functioning (though some doctors will use the MMSE if dementia is suspected to justify a referral).

The CERAD began with Lisa reading a story, asking Mr. Jahn to remember as many details as he could about a man driving a truck and a woman who had lost her purse. Next, Lisa asked that he name as many animals as he could think of in one minute; even the best patients run out of animals about two-thirds of the way through. After another set of tests asking Mr. Jahn to name objects, draw shapes, remember words, and similar tasks, Lisa and I took him back to the waiting room. We went to plug in the test results into a computer, which spit out a bar graph of his performance, adjusted for age and education. The main purpose of the exam is to identify

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[10] It also raises a question about the identity of the former Easterner, who Boyer points out is stereotypically viewed as "existing precisely to blame the West for capitalism for all of his or her miseries" (2005:182)

"objectifiable" (*objektivierbare*) complaints,[11] represented in standard deviations from the norm. Generally, objectified with regard to tests meant that at least one standard deviation (the "*z-Werte*") below "normal" was tested. These ranges are based on the German-language adaptation of the American CERAD Test, which the test results note took place in "1100 healthy recruits between 49-92 years of age". Its primarily utility is in serving as a proxy for impairments in cognitive domains; for instance, if someone has a mild AD, one would expect #3, a global assessment of function to be low, as well as 9-11, where figures are drawn. Often, #8 was make or break for a suspected diagnosis; "ability to discriminate" refers to recognizing pictures that were previously shown, and was used as a measure of ability to encode new information (which patients with dementia cannot do).

(See the example of fictional results similar to those a memory complainer might have below.)

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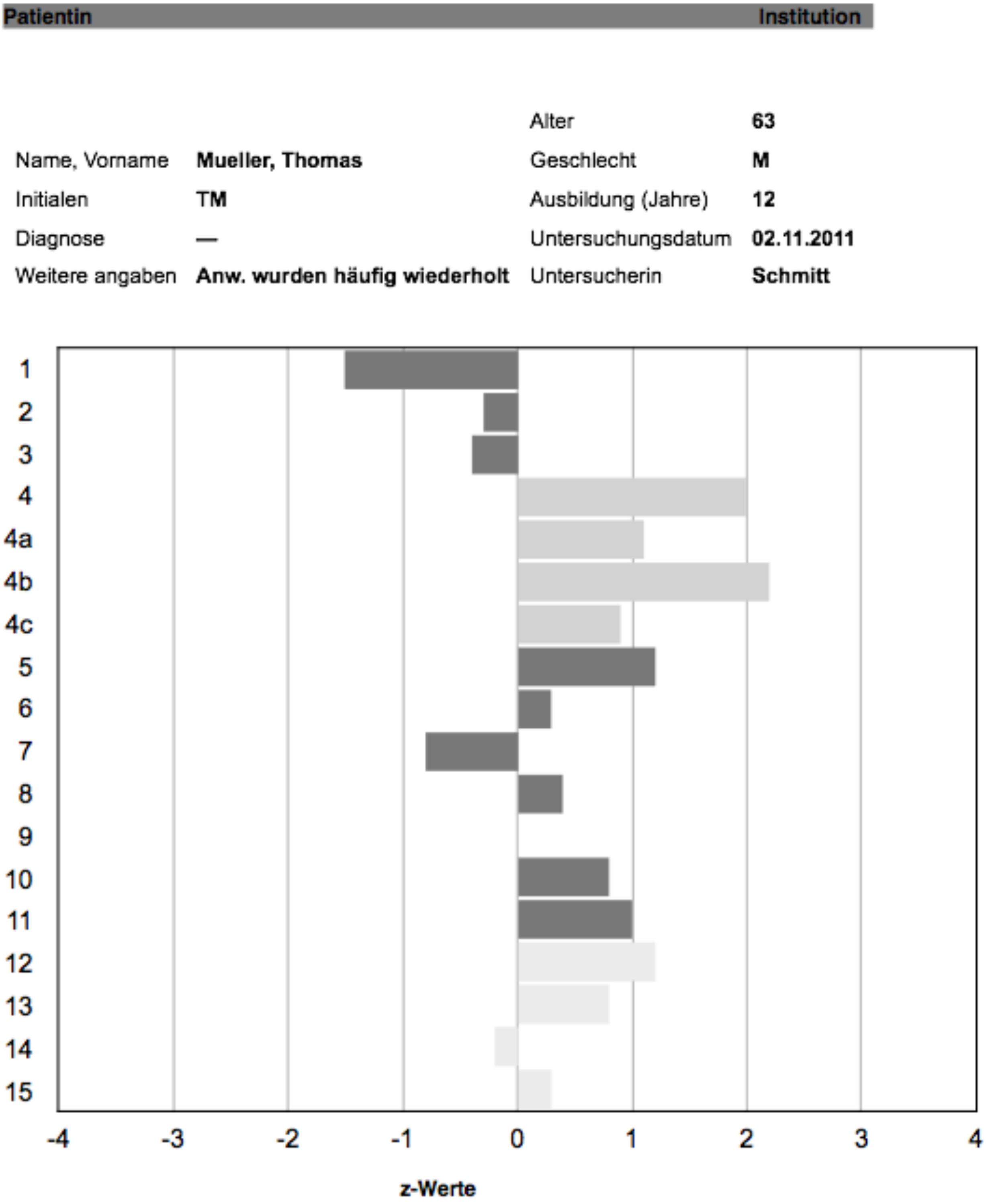
[11] I discuss "objectivation" more in the next chapter.

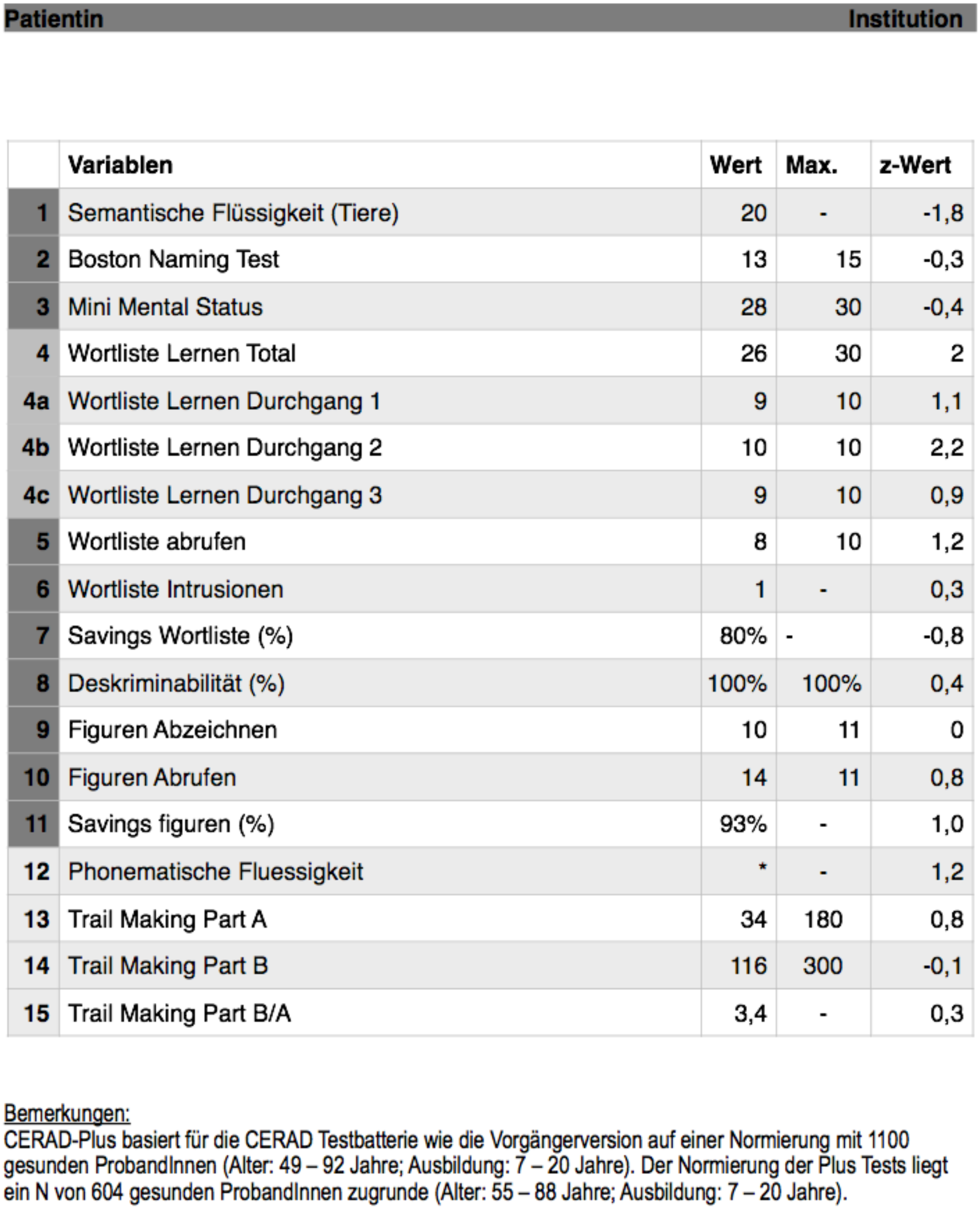


Patientin **Institution**

		Alter	**63**
Name, Vorname	**Mueller, Thomas**	Geschlecht	**M**
Initialen	**TM**	Ausbildung (Jahre)	**12**
Diagnose	**—**	Untersuchungsdatum	**02.11.2011**
Weitere angaben	**Anw. wurden häufig wiederholt**	Untersucherin	**Schmitt**

Figure 7: CERAD results bar graph

(Source: author’s files (anonymized reproduction of actual CERAD test))



Patientin **Institution**

	Variablen	Wert	Max.	z-Wert
1	Semantische Flüssigkeit (Tiere)	20	-	-1,8
2	Boston Naming Test	13	15	-0,3
3	Mini Mental Status	28	30	-0,4
4	Wortliste Lernen Total	26	30	2
4a	Wortliste Lernen Durchgang 1	9	10	1,1
4b	Wortliste Lernen Durchgang 2	10	10	2,2
4c	Wortliste Lernen Durchgang 3	9	10	0,9
5	Wortliste abrufen	8	10	1,2
6	Wortliste Intrusionen	1	-	0,3
7	Savings Wortliste (%)	80%	-	-0,8
8	Deskriminabilität (%)	100%	100%	0,4
9	Figuren Abzeichnen	10	11	0
10	Figuren Abrufen	14	11	0,8
11	Savings figuren (%)	93%	-	1,0
12	Phonematische Fluessigkeit	*	-	1,2
13	Trail Making Part A	34	180	0,8
14	Trail Making Part B	116	300	-0,1
15	Trail Making Part B/A	3,4	-	0,3

Bemerkungen:

CERAD-Plus basiert für die CERAD Testbatterie wie die Vorgängerversion auf einer Normierung mit 1100 gesunden ProbandInnen (Alter: 49 – 92 Jahre; Ausbildung: 7 – 20 Jahre). Der Normierung der Plus Tests liegt ein N von 604 gesunden ProbandInnen zugrunde (Alter: 55 – 88 Jahre; Ausbildung: 7 – 20 Jahre).

Figure 8: CERAD results list

(Source: author's files (anonymized reproduction of actual CERAD test))

We then went to get Mr. Jahn again, but this time went into a room off the main corridor, where Lisa explained to him that he had “great results”, in many cases being above the age-adjusted norms, and didn’t need any more testing. Mr. Jahn was surprised at the news, since he thought he had done poorly on the test, but was happy he didn’t have dementia. Lisa encouraged him to come back in a year, or sooner if he felt his memory was worsening.

If patients did worse on the CERAD exam, as many did, they ended up attending the second appointment. There a physician performed a physical exam, and a lumbar puncture was also done to measure the levels of two proteins that could help differentiate different types of dementia, beta-amyloid (Aß) and tau. Many patients were like Mr. Jahn, sent home after the first appointment because it was unlikely that he would be diagnosed with a memory impairment. The clinical criteria for dementia include impaired cognition, so patients must be functionally limited in their everyday activities, and their complaints must be validated by below normal results on the neuro-psychometric CERAD exam.

Specters and Visions in Alzheimer’s Dementia

Mr. Jahn, like many patients, found himself in the clinic by his own initiative. He had read about new drugs or tests for dementia, information that was available everywhere one looked. It was usually in the genre of ‘health information’ in pharmacies or the health section of local newspapers. He had mentioned a specific article that prompted him to come, in the *Apotheken Rundschau*. Yet, there was no article in either that, or in the other major magazine distributed to pharmacies. Both editorial offices told me they had not published the kind of large articles that Mr. Jahn had referenced in the last couple of years. In some other cases where I tried to track down the source a patient mentioned, I also came up empty-handed. I think the best explanation is not that these articles did not exist (even if they were mis-remembered), but that there was a *surfeit* of information about dementia circulating through the public. But why was dementia so prominent?

Late in my fieldwork in 2012, several advertisements started popping up at bus stations or on billboards. They pictured middle-class, white, middle-aged citizens holding a newspaper headline with phrases like “older people in the work force are unemployable”, with a word struck through and replaced, in this case reading “older people in the work force are irreplaceable”, or, the tagline, “**SHAPE** THE CHANGE”. The ads were run as part of a campaign by the Ministry of Research and Education, referencing Germany’s impending demographic changes.

Figure 9: Every Age counts: the Demographic Strategy of the Federal Government

Logo of the federal ‘Demographic Strategy’, showing a demographic pyramid inside the contours of Germany (website visitors could see the pyramid develop over time, and it was made into a 3-D sculpture as part of a traveling exhibit)

(Source: available at http://www.bundesregierung.de/Webs/Breg/DE/Themen/Demografiestrategie/Basis-Artikel/2012-04-18-artikel-top-basis.html, accesed April 18, 2014)

As in most other Western European countries, birthrates have been steadily declining over the last decades, but since so much of the welfare state is financed by taxes, the combination of a lack of workers and increased demand for services for elderly patients poses a very real political challenge for maintaining competitiveness and a high standard of material wealth. Nonetheless, as the posters advocated and the accompanying website explained, these changes did not threaten Germany’s innovation and competitiveness in the global market—rather, “Demographic change is not a threat, it's an incentive and an opportunity to be used to our advantage."[12] In one of the main sections dealing with aging, the website noted that a major area of medical research was about how to have a high quality of life even in advanced age, and that "our brain is capable of learning into advanced age. But to do so, it must be regularly exercised (*trainiert*). That's why educational policy (*Bildungspolitik*) emphasizes life-long learning."[13]

Politically, the aging society has been a key issue, as the state tries to intervene in a changing population: a law was recently passed, the "nursing care reform act" (*Pflegereform*), which among other goals, was intended to make it easier for families to receive financial support if they were caring for a demented family member at home. In 2009, the same Ministry of Education and Research launched the half-billion Euro "German Center for Neurodegenerative Diseases" research network to address the projected rise in dementia diagnoses in the coming years. Alongside such state efforts, organizations like the "Alzheimer's Society" (*Alzheimer's Gesellschaft*, modeled on and founded about 15 years after its US counterpart) have worked to decrease the stigmatization of Alzheimer's, and improve care, which typically means improving nursing care or support for those caring for demented family members (Matter 2010).

The campaign thematized aging and function, mixing public education with invitations to give one's own views on the impending changes. Importantly, its central thrust is worth noting, because it instantiates a common message about the aging body: it is possible to direct the future by intervening now, an important task occupying the state, individuals, the medical profession, researchers, and many others. In what is termed the "fight against forgetting" (*Kampf gegen das Vergessen*), these different actors are driven because cognitive impairments of age are thought to be grave threats to individual and social welfare, "risks" that preoccupy politics and political reflection (Beck 1992).

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[12] "Science Year 2013 "The Demographic Opportunity", available at http://www.demografische-chance.de/index.php?id=252, Accessed Jan 12, 2014

[13] "Wir leben länger. Was machen wir aus den gewonnenen Jahren?", http://www.demografische-chance.de/die-themen/wir-leben-laenger/wir-leben-laenger.html, accessed Jan 12, 2014.

German media commonly report on dementia (typically the most common form of AD), making it a highly visible issue, in stories that range from accounts of personal affliction, to the problem of nursing home care, or the burdens on families. One of the country's most famous actresses, the 'Grand Dame' Christiane Hörbiger, herself 75, starred in a 2013 public TV production called "Quiet Farewell" that dramatized a decline into dementia. It was critically acclaimed for Hörbiger's performance, in which her character was the CEO of a family business. In the beginning, she forgot appointments, misplaced her keys, and left words on the tip of her tongue. In the film, others mostly interpreted these lapses in ways echoing the burnout debate: she's working too much, and should do less, rather than due to the fact that she was older and less energetic. As the film develops, she makes more mistakes, which become impossible to hide: she forgets names, and her home is filled with post-its to remind her what the toaster is for. The point, the viewer is made to understand, is that she is far beyond the usual forgetting, and one feels awful watching a very private disintegration (though one that the film makes public and emotionally accessible to bring attention to what is figured as an intensely painful drama that is usually hidden). The film climaxes after she has admitted her dementia to her friends, in a soliloquy she delivers at her birthday, saying that "unfortunately, I must die twice: one as the person that I once was, and once as the person the sickness made me into".

According to Lawrence Cohen, dementia was not always a terror: what used to be termed simply "senility" was widely prevalent, a condition in which the subject could not speak. The silence of the senile was recuperated by the founder of gerontology, Ignatz Leo Nascher, who recognized that senility could not "speak" because physicians could not "listen", which is to say, they were unable to distinguish what was aging from what was pathology. As Cohen argues, this purifies "normal" aging from dementia, so that the normal aging individual can remain the liberal, self-determining subject, while the demented subject can only hope to be therapeutically restored. In other words, when biomedicine tries to prevent cognitive decline altogether, it is also trying to prevent the loss of the liberal subject. The gravest threat was Alzheimer's, which became a specter of old age primarily in the post-War period, beginning in the USA and also taking place in Germany in the 1980s (Liebing and Cohen 2006:1-19; Ballenger 2009; Jürgs 1999). There, it was also figured as threatening the self; particularly the decline of the Hollywood-star Rita Haywood was widely reported. German media reported the newest research, usually from the US, and presented calculations about the perils to national welfare based on the—seemingly already impending 25 years ago—demographic crisis (cf. Spiegel 1989).

Declining brain function wrought by AD puts not just the liberal subject at stake, but also the productive, rational, working subject. In the media, trouble at work was among the early warning signs of AD, and stories frequently featured someone who had to take early retirement or quit their job because they were diagnosed with early-onset Alzheimer's. What I described as belonging to "labor subjectivity" in chapter 2, the significance of immaterial skills in the market, makes high levels of cognitive function a crucial capacity of workers. Patients frequently came to the memory clinic because they had problems concentrating and remembering at work.[14] I vividly remember one patient who was in his early 50s, a large, ebullient man, who first came because he had noticed that he had mixed up a few details at work, and could no longer concentrate for eight hours without taking breaks. Because he was an advertising executive with a huge workload, he noticed these subtle dips in function. He came to the clinic explicitly worried that he was becoming demented. The point is not that his concern was illegitimate; it wasn't. Rather, many[15] imagine normal function to be the opposite of dementia, so one is either functioning well, or one is beginning to slip into Alzheimer's. As Steven Post writes, social norms are "dominated by heightened expectations of rationalism and economic productivity [and] clarity of mind", which he argues contributes to the stigmatization of Alzheimer's (Post

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[14] This makes sense insofar as that people may encounter the most difficult cognitive tasks at work; but the narrow conceptualization of AD as being a disease of memory and cognition (largely coming out of the development of psychological testing, see chapter 6) underscores the links between cognition—decline—work.

[15] Of course, there is a selection bias here: a fair number of people thought this way, which is why they presented at a memory clinic; but if someone felt their problems were due to psychological issues, they would go somewhere other than the memory clinic.

2000:5). In other words, not just the self as relational and independent, but also as productive is at stake.

Discourse about dementia almost universally takes this form, of a devastating illness which "first robs individuals of their memory, then their independence, and lastly their self" (ZEIT 2014) as well as families of their loved ones. What is termed the "fight against forgetting" (*Kampf gegen das Vergessen*) impairs function on the job, in the form of a slow accumulation of uncharacteristic errors, beginning slowly with small mistakes in familiar household routines before progressing to more serious problems. Outside the dramaturgy of feature films, dementia is always primarily a medical matter. Despite the range of symptoms of Alzheimer's and complexity of the disease (cf. Leibing, Lock 2013), in the popular imagination dementia is a "brain" issue: often, problems begin at work, with trouble concentrating, forgetting conversations, or making uncharacteristic mistakes, prompting a visit to the physician. These kinds of small complaints were, often, what also brought patients to the memory clinic, fearing they were already demented. Especially patients in their late 40s to mid 50s who came because they had trouble at work would nervously admit to "wanting to get checked out, to make sure it wasn't Alzheimer's." The point is that cognitive problems in adulthood were generally understood in the register of AD, as a biological problem of decline, indexing how failures of productivity are interpreted with relation to Alzheimer's, so that the specter of the disease comes to cover both the loss of a self, and the loss of productive function. It is not aging *per se* that reduces function, but it is a pathology of the biological brain. In Cohen's terms, biomedically purifying dementia from aging tries to preserve the aging self's productive function as well as her self-determination, simultaneously providing both an explanation of one's curse and the expectation of one's cure.

Tebonin Tightrope

Given this emphasis on treatment, media reports always include some discussion of the underlying biological causes of dementia. The first drugs against dementia were discovered in the 1980s, and remain the only approved therapy, but are only effective in slowing the disease for several months at most. The combination of dementia as an illness that engenders fear by destroying the self on the one hand, and the lack of a biomedical solution on the other, means that potential therapies are a central topic. New therapeutic approaches are explained and hyped in a news cycle moving so quickly that often the only "news" is that a molecule has proven successful in mice and that clinical trials are "pending"—a perpetual deferral indexing how high the expectations for a therapeutic breakthrough to intervene in dementia's progress are.

In the absence of effective therapy, individuals are left with two strategies to combat disease: early diagnosis and prevention. In contrast to familiar modes of risk management for chronic disease, in which more and more pharmaceuticals must be consumed, according to the popular press the best prevention can be done at home several times a day with minimal effort: The September 2011 edition of the *Neue Apotheker Illustrierte*, the other of the major health magazines available at pharmacies, had a themed issue about dementia. The article's first page offered "Brain-Training (literally "Brain-Jogging", or *Gehirnjogging*) for Everyone: Puzzles, riddles, pictorial problems, here you can test your memory and concentration, and train it at the same time." Several puzzles in the Sudoku or crossword puzzle stye followed, along with encouragement to train one's brain regularly. Brain-training is trumpeted as a way to sharpen one's cognitive faculties and prevent decline, and is almost invariably found alongside any mention of dementia in the popular press: information about the disease, information about "what you can do", or research reports. Many local and national newspapers offer brain-training in their printed page or website for free, expressing the expectation that the brain can be improved. Brain-jogging claims to keep the brain in shape (*fit*), increase its ability to perform (*leistungs-fähig*), and prevent cognitive decline. Together with exercise, an active lifestyle, and taking ginkgo biloba extracts, brain-jogging is advertised as an antidote to an aging memory and the specter of dementia. A common metaphor about brain-jogging is that the "brain is a muscle" that can be trained like any other.[16] Though it is perhaps an index of consumer demand more than scientifically verified fact (occasionally articles will be run debunking[17] the benefits of brain-training elsewhere on the same website), brain-training is hugely popular, particularly among middle-aged and older adults. Patients in the clinic who had received a diagnosis of dementia, or their relatives, typically asked if brain-jogging might turn the decline around; on the opposite end of the spectrum, those who were not diagnosed sometimes attributed it to their own brain-jogging exercises, or vowed to continue doing them.

Another popular remedy along similar lines is Gingko biloba. Gingko extract was available over the counter at pharmacies, marketed to help a declining memory, improve brain performance (*leistungsfähigkeit*), and make one more "balanced". Gingl=ko extracts are extremely popular among older adults, in part undoubtedly because it is marketed as a "natural" product extracted from a plant. In the clinic, patients often reported that they were taking them, or asked what the doctors thought about their efficacy. The extracts are quite expensive (around 35-50€ a month; copays for insured prescriptions are 5-10€0), though evidence for their effectiveness is shaky[18]; nonetheless, the medication has few side effects—so if one can afford it—taking it "can't hurt", as I heard several doctors put it.

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[16] This claim rests on discoveries that the brain is not fixed after childhood but can form new synapses as individuals age, i.e. is plastic. Of course, synapses in a network are several orders of magnitude more complex than a muscle, and cannot be trained in anything approaching a linear fashion, making this metaphor the target of critiques (see articles by Langlitz (2010) and Behl (2008) in the *Frankfurter Allgemeine Zeitung).*

[17] Scientific evidence for commercial brain-training's benefits is slim, though benefits of focused cognitive training exists (Willis et al. 2006; Papp et a.l 2009; Buschert et al. 2010), while exercise is highly beneficial (Larson et al. 2006; Suvi et al. 2005).

[18] Research has generally shown that the drug was ineffective (Snitz et. al 2010; Birks and Evans 2009), though the federally funded Institute for Quality and Cost-Effectiveness did find some benefits (https://www.iqwig.de/download/A05-19B_Abschlussbericht_Ginkgohaltige_Praeparate_bei_Alzheimer_Demenz.pdf, Accessed Jan 20, 2014).


ANZEIGE

Vergesslichkeit?*

„Gib dir einen Ruck und tu was für dein Gedächtnis, hab ich mir gesagt.“

Ein gestärktes Gedächtnis macht vieles leichter.
Tebonin® aktiviert den Energiestoffwechsel der Gehirnzellen und macht sie leistungsfähiger.
Wann machen Sie den ersten Schritt?

Tebonin®
stärkt Gedächtnisleistung und Konzentration.*

- Pflanzlicher Spezialextrakt mit dem patentgeschützten Extraschritt
- Gut verträglich

* Bei nachlassender mentaler Leistungsfähigkeit infolge zunehmender Funktionseinbußen der Nervenzellen im Gehirn.

Figure 10: Print ad for Tebonin, the most popular Ginko extract, manufactured by Dr. Willmar Schwabe GmbH & Co. KG

“Give yourself a push and do something for your memory, I told myself”.

A stronger memory makes many things easier. Tebonin activates the metabolism of brain cells and makes you able to perform more. When will you take the first step?

(Source: Stern Magazin, December 5, 2012; Issue 50, 2012, p. 144)

It has compellingly been shown that aging, like other purportedly exclusively “biological” facets of human existence, has varied over time and by location, experienced in an interplay of the material and symbolic (Lock and Kaufert 2001; Lock 1993). Recently, various authors have pointed out how the phenomenon of growing older itself has increasingly been subjected to biomedical control. On the one hand, this has led to a more intensively managed passage into death, intending to stave it off as long as technologically possible (Kaufmann 2005). On the other, many have argued that efforts are underway to optimize aging at all stages, as decline is no longer (entirely) inevitable (Kaufman et al. 2004; Estes and Binney 1989). Brain jogging, being active, and taking Gingko points to a particular stance towards growing older during what has been termed the “third age”, or roughly that period of time between around the end of one’s career and the debilitating effects of “old old” age. Peter Laslett, who was instrumental in popularizing the notion of the third age, writes that it is when "the apogee of personal life is achieved" (cited in Leibing 2005). Suffused with ideals of vitality and activity, the third age is partly a defense against the stereotype of age as feeble debilitation.[19] At the same time, it is also an idealization of values of vitality, activity, consumption, independence, and individual agency (Fetherstone and Wernick 1995; Leibing 2005; Katz 2000).

But if successful aging depends on an idea of activity, it also entails risk-minimizing. What from one perspective is trying to stay fit, is, from another, a program of risk-reduction and prevention. An axiomatic claim is that the goal is to recognize dementia as early as possible, so it can be treated as early as possible. I will discuss this in the next chapter, but the rationale is to subject the disease to medical management as soon as the disease can be detected. Risk plays a crucial part here, because individuals and their family members should remain vigilant about changes in memory: dementia is a “creeping” disease, so even small signs like misplacing items or forgetting words deserve notice. Thus, the same means for training one’s brain—the brain-jogging games—become a surveillance technology, an early warning beacon for slipping cognition. If individuals score poorly on games or self-tests, or notice they are having trouble remembering, it may be time to see a doctor about memory problems. While not intended to be diagnostic, these games suggest that everyone is potentially at risk for dementia, and offer an opportunity to (start to) take preventive action. In distinction to genetic risk for AD, which is poorly understood by doctors and patients alike (Lock 2013b), this kind of risk can be embodied in one’s everyday and ostensibly controlled.

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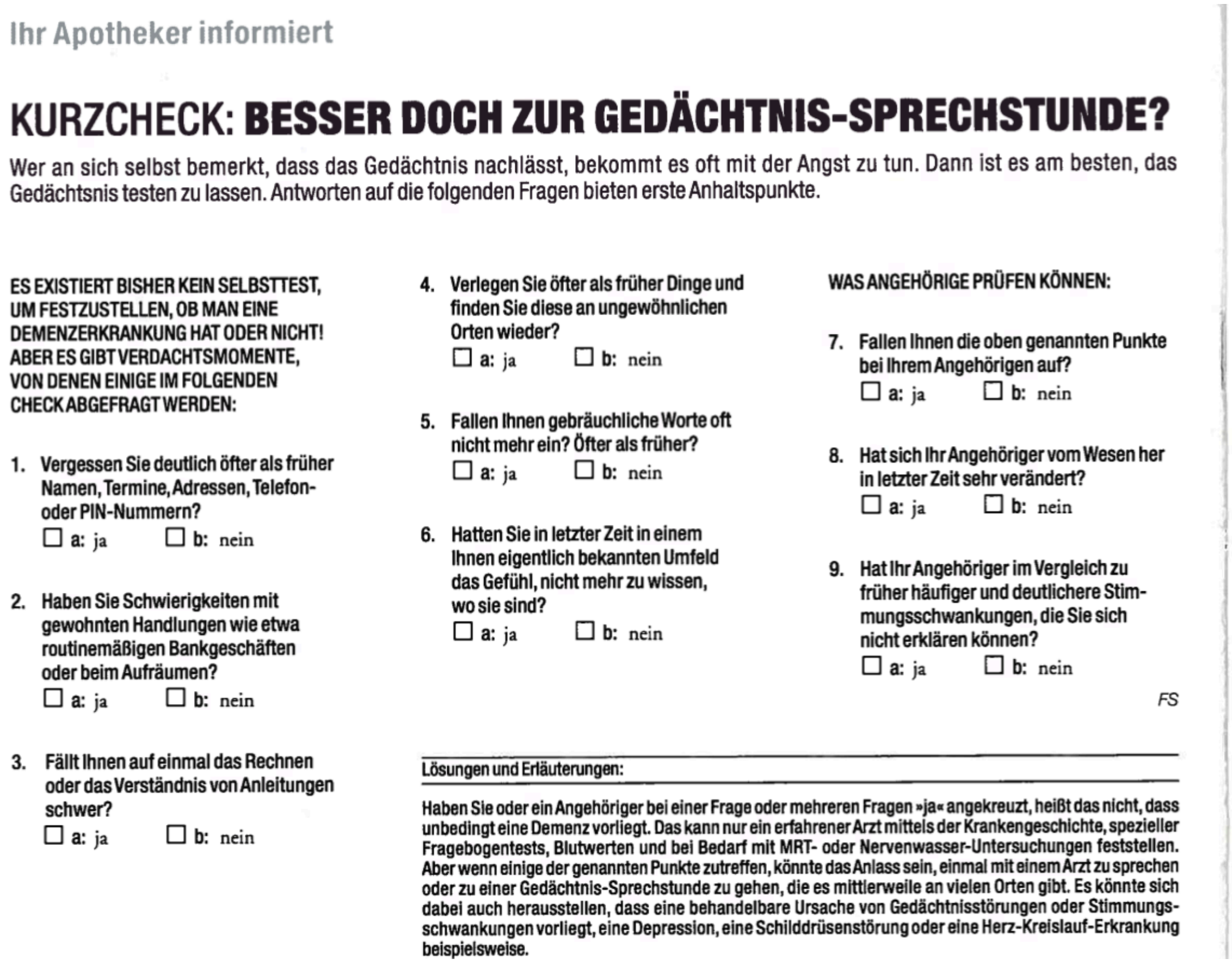
[19] The nationwide “6th Aging Report of the Federal Government”, an ongoing research project intended to provide guidance for policies relating to an aging population, found a change in respondent’s attitudes from 1996 to 2008: “old age” (post retirement) was viewed more positively, i.e. more respondents saw potential for older persons to develop themselves and fewer associated old age with debility (Berner et al. 2012).



Ihr Apotheker informiert

KURZCHECK: BESSER DOCH ZUR GEDÄCHTNIS-SPRECHSTUNDE?

Wer an sich selbst bemerkt, dass das Gedächtnis nachlässt, bekommt es oft mit der Angst zu tun. Dann ist es am besten, das Gedächtsnis testen zu lassen. Antworten auf die folgenden Fragen bieten erste Anhaltspunkte.

ES EXISTIERT BISHER KEIN SELBSTTEST, UM FESTZUSTELLEN, OB MAN EINE DEMENZERKRANKUNG HAT ODER NICHT! ABER ES GIBT VERDACHTSMOMENTE, VON DENEN EINIGE IM FOLGENDEN CHECK ABGEFRAGT WERDEN:

1. **Vergessen Sie deutlich öfter als früher Namen, Termine, Adressen, Telefon- oder PIN-Nummern?**
   ☐ **a:** ja ☐ **b:** nein
2. **Haben Sie Schwierigkeiten mit gewohnten Handlungen wie etwa routinemäßigen Bankgeschäften oder beim Aufräumen?**
   ☐ **a:** ja ☐ **b:** nein
3. **Fällt Ihnen auf einmal das Rechnen oder das Verständnis von Anleitungen schwer?**
   ☐ **a:** ja ☐ **b:** nein
4. **Verlegen Sie öfter als früher Dinge und finden Sie diese an ungewöhnlichen Orten wieder?**
   ☐ **a:** ja ☐ **b:** nein
5. **Fallen Ihnen gebräuchliche Worte oft nicht mehr ein? Öfter als früher?**
   ☐ **a:** ja ☐ **b:** nein
6. **Hatten Sie in letzter Zeit in einem Ihnen eigentlich bekannten Umfeld das Gefühl, nicht mehr zu wissen, wo sie sind?**
   ☐ **a:** ja ☐ **b:** nein

WAS ANGEHÖRIGE PRÜFEN KÖNNEN:

7. **Fallen Ihnen die oben genannten Punkte bei Ihrem Angehörigen auf?**
   ☐ **a:** ja ☐ **b:** nein
8. **Hat sich Ihr Angehöriger vom Wesen her in letzter Zeit sehr verändert?**
   ☐ **a:** ja ☐ **b:** nein
9. **Hat Ihr Angehöriger im Vergleich zu früher häufiger und deutlichere Stimmungsschwankungen, die Sie sich nicht erklären können?**
   ☐ **a:** ja ☐ **b:** nein

FS

Lösungen und Erläuterungen:

Haben Sie oder ein Angehöriger bei einer Frage oder mehreren Fragen »ja« angekreuzt, heißt das nicht, dass unbedingt eine Demenz vorliegt. Das kann nur ein erfahrener Arzt mittels der Krankengeschichte, spezieller Fragebogentests, Blutwerten und bei Bedarf mit MRT- oder Nervenwasser-Untersuchungen feststellen. Aber wenn einige der genannten Punkte zutreffen, könnte das Anlass sein, einmal mit einem Arzt zu sprechen oder zu einer Gedächtnis-Sprechstunde zu gehen, die es mittlerweile an vielen Orten gibt. Es könnte sich dabei auch herausstellen, dass eine behandelbare Ursache von Gedächtnisstörungen oder Stimmungsschwankungen vorliegt, eine Depression, eine Schilddrüsenstörung oder eine Herz-Kreislauf-Erkrankung beispielsweise.

Figure 11: *"Quick Check" on the back page of a pharmacy gazette: "Maybe its time to go to the memory clinic?" The test is not diagnostic, but you should consider going if "you or a relative marked 'yes' for one or more questions", and lists common diagnostic procedures or other reasons for memory impairments.*

(Source: Neue Apotheken Illustrierte, Sep. 1, 2011, back cover)

Health professionals promoted a similar message. In the clinic, if you received a negative diagnosis, like Mr. Jahn did, patients were always encouraged to return in a year, or sooner if they noticed any decline; vigilance was promoted as the best prevention. Physicians also regularly appeared on TV shows that covered the basics of disease, and advised individuals to see their doctor if they noticed memory problems (at the same time as it was mentioned that no cure for AD currently exists). Because the memory clinic was fairly large, its physicians were frequently interviewed, and the clinic was mentioned by name in the reports. I want to be clear that I am not claiming that this information about prevention is misguided or excessive. Rather, I want to point out what kinds of information about dementia were widely available to patients like Mr. Jahn, and what kinds of subjectivities were engendered in turn.

Together with exercise, an active lifestyle, and taking ginkgo biloba extracts, brain-training is advertised as an antidote to an aging memory and the specter of dementia. Promises of practices for actively preventing dementia illustrate how fluid boundaries between pathology and optimization are: its practitioners can boost their mental capacities and memory despite growing older, and can remain *fit* for longer. In short, it is a vision of optimization—at the same time as? despite?—decline. As Christiane Hörbiger's character who was running the family business idealized, and the state's advocacy of the value of older individuals to the nation maintains, older, retirement-age individuals can remain active, energetic, and self-determining citizens. During my fieldwork, boulevard headlines announced one could be "Fit like Lilo Pulver", relating how an eighty year old movie star of the post-War Era had moved *out* of the nursing home rather than into it because she had gotten bored there.

Conclusion

Burnout and dementia are both categories that make intervention by a variety of actors possible. On the one hand, burnout is situated in contests about the changes in market demands, global competition, and expectations for performance in the contemporary labor sector, as well as about what forms a "balanced" and "good" life should take in one of the wealthiest countries in the world. This unstable nosological category offers a way to arbitrate where the boundaries of achievement are, and what role health professions should play in questions of performance. A recognized medical category could be both a means for workers to push back (as they do now when they are 'close' to 'burnout'), or to get a boost (as patients asked for help through their ‘burnout’). On the other hand, dementia, in addition to being viewed as a devastating disease needing treatment, also haunts discourses about what “successful” aging means, as well as what “enough” cognitive performance looks like, and how much it can be expected to decline. Preventing slumping cognition is believed to enable a “fulfilled” post retirement life, or a sharp memory as one approaches that point. My point here is that both categories are sites in which expectations of capacities, ideals of performance, regimes of labor, and visions of desired or fulfilled lives are *negotiated*, and through which standards about the shape medical interventions should take are being *formed*.

As I have tried to show, these different norms are both expressed and fixed in everyday interactions, for instance in encouraging patients to come again after a year for their dementia screening, or in a diagnosis of burnout refused; in an advertisement for brain-training in the newspaper, or a subway ad for a weekend vacation to “get away from the stress” at a lake resort an hour outside of Berlin; in a comment that one’s memory seems to be slipping, or that one is not working quite as hard as one could (see chapters 2 and 4 for more on sources of these norms). Many of the norms at play in burnout or dementia are not problematized to a great extent: If you can work harder without losing your (work/life/family/personal) balance, that’s generally a good thing; if you can boost your memory with brain-training, you should by all means continue to do so. Tensions only appear at the edges, where work is subject to excessive demands or too much competition, or when memory must be *top-fit* at every age. At these fringes, questions of optimization or pathology come to the fore, and are hotly debated.

But these disputes *merely* and *necessarily* reflect the setting out of which they arise, like the rich and often conflicting notions of work, free-time, family, achievement and performance throughout one’s life, and similar in people’s everyday lives. Thus, when I have claimed that pathology and optimization are close together, this does not primarily mean that the distance from one to the other may be short, like a boost to what feels like a failing memory may actually make it better than ever. I also mean that judgments of pathology and optimization are rooted in a complex field of practice and meanings in which determinations are provisional, and can be inverted by slight shifts. Bearing the traces of the world they index (Bakhtin 1982), norms carry its frictions, at the same time as their abstraction renders them ill-suited to shed light on precisely how points above and below the norm differ. This is, then, an analytic as well as methodological point: referring to familiar, fixed boundaries to arbitrate self-improvement will not do. Rather, some account of norms in their practice is necessary if something like the "ethics" of enhancement are to be productively explored.

In the next chapter, I will continue thinking through norms, specifically those of medical practice.

6

“Early Treatment is the Best Treatment”: Risk, Enhancement, and Early Optimization in Medicine

Late on a weekday afternoon, when first appointments were typically scheduled, Mr. Janowitz was one of the last patients to be seen. Thomas, a staff physician, read the slim patient file, which contained only the questionnaire the patient had filled out at home. Satisfied, he went to get the patient and his wife as I trailed along. Together, we went to his office down the hall. The room was sparingly decorated with watercolors of coastlines, always a bit dark because the light from its sole window was blocked by a tree on the lawn. As is typical in clinics housed in older buildings in Germany, a conversation in the physicians’ office precedes an exam in a different room. Mr. Janowitz had come with his wife. He was around 70, wearing a red shirt and glasses. He said that they had seen a report about a new clinical trial being offered in a local newspaper, and he was hoping to join the trial, because he wanted to “boost his memory”.

“So what kind of problems do you have?” Thomas queried.

“Well, actually things are pretty good, I don’t have dementia or anything like that”, Mr. Janowitz answered.

“But you have some complaints!” the physician asserted—after all, this was a clinic.

“Yes”, Mr. Janowitz replied “I forget names while I’m telephoning. You know what I mean, you’re calling to speak with someone, but then you can’t remember his name when you are on the phone”, a situation he found very annoying.

“Do you remember later?”

“Yes, after a while.”

“Do you search for words?”

Mr. Janowitz paused. “Yes….maybe.”

"How about losing objects?"

Again, Mr. Janowitz paused to search his memory. "…No."

Thomas then asked the key question about etiology: "Do you think it has gotten worse?"

"Kind of."

Thomas wanted to know about Alzheimer's in the family.

"My father had Parkinson's Dementia, and at the end he didn't recognize anyone. He smiled friendly, but we don't think he knew anyone", Mr. Janowitz explained, conveying that it had been a difficult time for his family, leaving the expectation that Thomas empathize hanging in the air.

However, he did not detour into genealogy, but picked up the diagnostic thread again. "It doesn't sound like you have significant limitations in your everyday."

"I can cover it up", Mr. Janowitz said, asserting that he had some problems but leaving their extent unspecified.

Satisfied that more diagnostic work needed to be done, Thomas moved on. "Ok, we'll do some tests to see if we can objectify your complaints. But I suspect there are normal difficulties in your everyday. It sounds as if you can't always recall information in some situations, but it comes back later. And what you are describing, like forgetting on the phone, that happens in higher age, we know people aren't as good under time pressure."

Thomas then administered the MMSE, which Mr. Janowitz passed with only a single error, several points better than the usual scores of someone who is cognitively impaired.

"Ok", Thomas explained, "it's like this: We can't enroll healthy patients in the clinical trial. You must have an objectifiable mild cognitive impairment, and we have to see it in this test. You just saw, you didn't have any problems in this test you just took. But it's a quick and dirty test, we could do more extensive testing [to be sure]."

Thomas was referring to tests that relied on several key indices to identify dementia, referred to as "biomarkers". A biomarker can be almost anything indicating pathology: abnormal lab values, blood anomalies, a lesion on an MRI, behavioral tests, etc. In the clinic, biomarker had a more narrow meaning, referring to a specific set of measurable physiological parameters that were thought to correlate with the progression of dementia. Dementia is a clinical diagnosis, made on the basis of patient history and clinical symptoms (e.g. difficulty with everyday tasks, memory impairment), though many clinics also use biomarkers to make the diagnosis, particularly since clinical symptoms can be difficult to discern in the early stages of the disease. The biomarkers the clinic used were widely accepted as the main biomarkers, though again several clinics did not rely on them for diagnosis.

Biomarker	**What it Means**
Amyloid-$\beta_{40/42}$ protein	Tested for in cerebrospinal fluid (CSF) using a lumbar puncture. Amyloid plaques clump together outside of neurons and disrupt their function. If the amyloid in CSF is *low*, this is taken as a sign that amyloid plaques have aggregated in the brain.
Tau protein	Found in CSF. Tau is a protein in the axons of neurons. It forms intra-cellular 'tangles' in dementia. A high level of tau in the CSF indicates neuronal damage.
Structural MRI	Dementia is known to affect certain anatomical areas, like the hippocampus. Decreases in the amount of grey matter in these areas indicate the loss of neurons and stage of the disease. Some atrophy is expected with age, but more severe atrophy indicates a more advanced stage of disease.
Cognitive tests	The most common tests were the MMSE (Mini-mental status exam) and CERAD (see chapter 5). Other exams were specific to clinical trials, like the ADAS-Cog (Alzheimer's Disease Assessment Scale-cognitive subscale). Test scores were associated with various stages of dementia or MCI, serving as a proxy for clinical symptoms (e.g. for problems with everyday tasks like paying bills, going shopping, etc).
ApoE gene	Associated with a risk for Alzheimer's dementia. It is not strongly predictive. (Mutations in other genes, like APP and Presenilin are very highly predictive, and are often implicated in Alzheimer's disease that begins in someone's 40s.)
* f-fluoro-deoxy-glucose PET scan (FDG-PET)	PET scan tracking the amount of glucose metabolism in different areas of the brain. Low metabolism in certain areas is associated with impaired neuronal function.
** Amyloid PET scan	A radio-labeled compound binds to amyloid plaques, providing an indication of the extent to which plaques have aggregated

Table 1: Biomarkers (based on Hampel et al. 2010; Querfurth and LaFerla 2010)

Table 1, continued
* FDG-PET: occasionally used in the clinic for difficult cases
** Amyloid PET is mentioned in a clinical trial later in the chapter that was not taking place at the clinic (Both of these latter biomarkers are less widely accepted than the foregoing ones.)

After Mr. Janowitz had left his office, Thomas commented “that was a classic memory complainer.” Had Mr. Janowitz been diagnosed with dementia, he would have been eligible for a clinical trial of anti-dementia medications. Even without dementia, had his impairments been serious enough to put him in what is thought to be a “pre” stage of Alzheimer’s Disease, mild cognitive impairment (MCI), he might have been able to enroll in a different clinical trial. Without a diagnosis, Mr Janowitz was a “memory complainer”, or patient who reported cognitive deficits that limited him somehow, but which medical and psychological tests could not confirm. If patients do not have symptoms that can be objectively measured by standardized psychological tests or physiological measurements, this did not mean their complaints were only ‘subjective’ and thus ‘imaginary’. As the physicians liked to say, it could still mean these patients “do not have nothing”, i.e. that some kind of pathology could be present *even* if it could not be “objectified”. Objectified was a key concept, however, because it legitimated intervention. It was the “line” one needed to cross in order to receive treatment. So a memory complainer might end up developing Alzheimer’s Disease (AD). Or she might end up reaching an advanced age without developing any serious cognitive deficits. Finally, she might just want to boost her brain, what Thomas colloquially referred to as “pimping” her brain. Though there were no treatments to enable the latter (i.e. to enhance), physicians were clear that if they could give treatment to memory complainers based on their subjective complaints, they felt there would be no objection to doing so.

Memory complainers occupy a liminal position, between those who had diagnosable impairments, and those who had ‘normal’ cognition. This is, as Victor Turner puts it, a state of “ambiguity and paradox” (1967:97), in which one’s identity is in flux. The memory complainer escapes classification, perhaps being sick, not sick but at risk, or worried well. Mr Janowitz’s case picks up themes from the previous chapter, where I tracked how norms circulated among the clinic and wider social field, interpellating individuals and destabilizing firm distinctions between optimization and therapy. This case also points towards biomedical rationalities of intervention; the subject of this chapter. Here, I am interested in what biomedicine's efforts to classify this liminal figure can tell us about contemporary treatment rationalities, a pressing concern in much social science literature on biomedicine.

In terms of the argument I am making in the dissertation as a whole, understanding enhancement as a 'situated problem' depends on being attentive to the broader social field in which particular forms of self-improvement take place and the aims of medicine itself. In short, it is not possible to understand problems with "enhancement" without understanding the tensions inherent in the boundaries of "therapy".

From Dementia to Brain Drugs: Why Study Enhancement in the Clinic?

While I am primarily interested in the relationship between risk and optimization, I will argue that this speaks to the link between therapy and enhancement, which has long vexed bioethics. But what, one might wonder, does the former double have to do with the latter, and, particularly in terms of the site—what does an Alzheimer's clinic and all its ostensible debility have to do with visions of autonomous individuals increasing their vitality even more? There are three reasons why a site diagnosing memory impairments cuts to the heart of questions about both risk/optimization and treatment/enhancement.

Firstly, there are both general and specific historical links between the concern with a waning memory and the idea of enhancement. Regarding the former, David Healy shows how with psychotropics of the 19th Century, lay and medical periodicals were running advertisements for substances to treat what was termed "senility", the weaknesses of old age. By the early 20th Century, there were many drugs promising to boost energy, a reasoning Healy says seems to have been straightforwardly justified with the assertion that "every effort should be made to 'stimulate' any remaining cognitive function to its maximum" (2009:28). In the 1970s, a flurry of research began into therapeutic compounds against cognitive decline in the elderly (which was becoming a major social and medical issue around that time, see below). Some of this research was stimulated by the development of Piracetam in 1964. This was a drug which Corneliu Giurgea, a scientist involved in its discovery, first described by coining the term "nootropic", or drug to enhance cognition. Research later showed Piracetam (the drug Christopher had taken, see chapter 4) to be ineffective. Advertisements for Tebonin, the most popular ginkgo extract in Germany which I discuss in the previous chapter, recall this history by claiming to "increase energy metabolism" to increase the brain's performance. Healy argues that his history shows how 'enhancement' was always a part of the concept of a psychocotropic drug, as "[t]he initial conceptual basis for psychotropic drug use in fact included the possibility that these agents might have an effect on nondiseased states" (2009). At the time this view was reasonable because mental illness was conceptualized through a "dimensional view" of personality, which varies along axes like intro/extro-version, such that individuals could be differently affected by the same drug. This view was eclipsed by the more categorical view (one has a particular mental illness or one does not) in the 3rd edition of the DSM in 1980; likewise, the concept of a nootropic has fallen into disrepute in medicine for lack of available exemplars. Nonetheless, Healy argues that this duality of use—effective in both the 'sick' and 'healthy'—survives in the notion of a "smart drug". Indeed, when research breakthroughs characterizing the molecular basis of memory were made in the 1990s, many of these pioneers promised that there would be treatments for Alzheimer's within the decade.[1] The poster-child was Nobel-Prize winner Eric Kandel, who founded a firm named "Memory Pharmaceuticals". Others, like Gary Lynch, explicitly suggested that these treatments would also be useable by healthy people. Though these efforts have not born fruit to date, Kandel's Memory Pharmaceuticals, Lynch's Cortex Pharmaceuticals, and Tim Tully's Helicon Therapeutics have become synonymous with efforts to improve cognition through pharmaceuticals, coming directly out a history of treatments for

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[1] Robert Langreth, "Viagra for the Brain", Forbes Magazine, Febuary 4, 2002, accessed January 23, 2014, http://www.forbes.com/global/2002/0204/060.html

age-associated or pathological memory decline (Lynch 2002; Hall 2003; Marshall 2004; Tully et al. 2003; Kandel 2007).[2]

The specific historical link follows on the heels of this more general one. As I argue chapter 2, one can trace the roots of the current enhancement debate in Germany to these recent proposals for memory drugs. In brief, many of the first mentions of "enhancement" type medications from the 1990s onward also made pronouncements about the effects these new drugs would have on healthy individuals. While genetic engineering had of course provided a different paradigm for enhancement in the 70s and 80s (one that was viewed with deep skepticism for its eugenic and Frankensteinian associations, see chapter 3), memory drugs were the paradigmatic drugs of the new enhancement debate in its early stages,[3] and they are still mentioned as key examples of enhancement. Only later did drugs like Ritalin and the anti-narcoleptic modafinil assume the mantle of memory drugs.

Secondly, conceptually, treatment and enhancement are logically similar. Recall that a general definition of enhancements is that they are biomedical interventions "to improve human form or functioning beyond what is necessary to sustain or restore good health" (Juengst 1998). Accepting such a framing entails that looking to the clinic to determine the relationship between enhancement and medicine creates a dead end for the analyst: the former is by definition always that which the latter is not. In other words, if an intervention is pronounced to be "medically legitimate" (medicalized) it cannot be enhancement. Nonetheless, both dementia and enhancement circle around a similar question: should a particular state be accepted as "natural", and if not, what kinds of interventions are appropriate? Regarding dementia of old age and being un-enhanced, many argue that both are "natural" or "normal" states that may not require intervention (on memory see Lock 2013b; Ballenger et al. 2009). In both cases, whether and to what extent (cognitive) functioning should be medically improved is at issue. Medical diagnosis

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[2] Eric Kandel (2007:376) credits his involvement with Memory Pharmaceuticals with raising the question of cognitive enhancement for him, which in turn prompted his co-authorship of a seminal early statement about the bioethics of brain enhancement (Farah et al. 2004).

[3] Prozac was the key substance in the US, but did not seem to be quite as visible in Germany.

and deciding to use enhancements oneself both aim at identifying a deficiency that requires an intervention; the *standards* used may differ, but the *logic of intervention* does not. I will argue that the practice of medicine is itself moving towards improvement, a momentum that would become problematic if it lost the legitimization structure of "disease" that must be treated; "enhancement" and "treatment" differ in the norms they draw on, not in the logic they are animated by. Hence, it becomes critical to grasp how those norms are operating even, or especially, in clinical settings.

Steven Hyman, a psychiatrist and the sitting president of the *International Society for Neuroethic*s, makes this point clearly by explicitly connecting risk to enhancement. Recalling that the thresholds for statins have been lowered to include more and more formerly "healthy" people at risk, Hyman claims

> Here is the definitional slipperiness [in enhancement]: instead of saying that statins are used as enhancements that make people who have always been considered healthy 'better than well' (extending longevity beyond what can be achieved without biotechnology), medicine altered the criteria for desirable LDL cholesterol levels so that statins can be used as bona fide treatments for a risk state. (2011)

Hyman locates this negotiation between enhancement and therapy in the practice of clinical biomedicine, which suggests that what is at stake is the logic by which such shifts take place, as well as the practices of evidence they depend upon. In short, from an analytic perspective, it would seem that an *ideal* place to follow the criss-crossing of enhancement and therapy is in a clinical site redefining norms of risk.

Thirdly, and practically speaking, the link between memory and improvement often came up in the everyday work of the clinic, as in the case of Mr. Janowitz.[4] I once asked Thomas if he assumed that everyone coming into the clinic had a problem just by virtue of their being there, but he explained that

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[4] Interestingly, because of demographic changes this particular clinic had been doing research on age associated memory changes and on ways to improve individuals' health and life as they aged for some decades, including research into nootropics.

> Some people do come suffering because of their memory and it's a problem that they forget things…Others come for lifestyle, they think 'how can I pimp my brain' and want to see what can be done for them as their memory ages. I think this has a lot to do with how memory clinics are displayed in the public, it's about lifestyle and they're disappointed when they find out we're trying to exclude dementia. And there is nothing we can do for them because we just don't have any medications.

Thomas points out that at least some patients expect parallels between treatment and enhancement. But he also admits that doctors cannot help patients whose symptoms cannot be objectified and who want to "pimp their brain" because no treatments to do so exist—not for some other reason. The limitation that simply no drugs were available was the most frequent one I heard, and indeed I did not hear anyone claim to see a bright boundary that prevented helping these kinds of patients. Despite, or perhaps because of, questions about the boundary, there are disputes within medicine about whether doctors should improve the function of cognitive healthy patients. Physicians are not unanimously for or against enhancements, rather they are working through an unresolved question that points to tensions in medicine, making enhancements in the clinic interesting.[5]

Chapter Argument

After reviewing the research on risk in contemporary biomedicine, I begin with a case from the clinic showing the kinds of risk at issue in the everyday work of the clinic. To make sense of this, I track how what was once a more or less inevitable decline of old age has, through recent transformations, made AD into a chronic disease conceptualized in terms of risk. The notion of risk makes it necessary to think of progression into dementia along a temporal axis several decades long, in which the dictum "earliest is best" encapsulates the ideal treatment strategy, which is materialized in clinical trials that continually shift to intervene sooner in the assumed disease progression. Locating the specific trials at the memory clinic in the wider topology of dementia research, I show how the trend to move pathology earlier (something shared across

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[5] Thanks to Christoph Kehl for this point.

medicine) ends up marking a particular state of cognition, that of late middle-age, the desirable one. A confluence of the risk-paradigm and capital/epistemic conditions of contemporary biomedical research drive this norm of cognition and function, at the same time as it escapes the ever-present specter of dementia. Arguing that this norm in fact represents an optimum, I trace its connections to a fundamental logic of medicine, one that Canguilhem termed “normativity”. The chapter closes by drawing out the implications of this conceptualization of risk for theories of biomedicalization, and the relationship between therapy and enhancement.

Biomedicalization, Optimization, and Risk

Much of the recent scholarship in medical anthropology and the sociology of medicine has theorized changes in the biomedical- and life-sciences in the last several decades, including the growing importance of speculative capital, the worldwide expansion of clinical trials, increased public visibility and hype of new therapies, regimes of exclusion, and the role of advocacy groups (Petryna 2009; Lakoff 2005; Sunder Rajan 2006; Rose 2007; Clarke et al. 2003; Conrad 2007; Biehl 2005; Epstein 2007). In much of this work, changes to what count as “health” and “disease” have been central, which have typically been explored in the register of “risk”.

Joe Dumit shows how, from the middle of the last century onward, clinical trials became the key technology through which knowledge about treatment was produced. As a consequence, such knowledge—foundational to biomedical intervention—came under the purview of pharmaceutical companies, who were the only entities with the financial resources to run costly trials. Yet, this created a double-bind, in which companies need to be financially successful, but also need to serve “health”. In a compelling reading of the logic of clinical trials, Dumit points out that “[h]ealth has come to be defined as reduction in risk. Treatment is prevention, and we have an increasingly in-secure notion of our well-being because we have outsourced its evidence to clinical trials. Together these definitions are reinforced and amplified by the pharmaceutical industry, which sees clinical trials as investments, and measures the value of those investments by the size of the market in treatments it will define" (2012:12). Significantly, this change was produced alongside a different subjectivity: "underlying the continual growth in drugs, diseases, costs, and insecurity is a relatively new understanding of ourselves as being inherently ill" (ibid.). Working with a similar problematic, Kaushik Sunder Rajan outlines how biotechnology companies are creating tests to establish someones' risk for a specific disease. He argues that companies thereby fashion "patients in waiting", who are simultaneously consumers in a virtual market that will become reality only if patients actually manifest the disease and the company also develops a treatment. Whereas for Dumit the need for a return on investment was effective, for Sunder Rajan genetic tests create value through speculative capital; however in both cases the meaning of "health" shifts to a well-being that is never complete, always being dependent on new information and tests.

Other theorists assert that the most salient feature of contemporary biomedicine is not that disease is expanded, but that new territory of "improvement" is being charted, a transformation that also involves risk. Adele Clarke and colleagues[6] write that while medicine in the past asserted "control over particular conditions", contemporary techno-scientific medicine has broadened its agenda to "enabl[e] the 'transformation of' bodies to include desired new properties and identities" (2003:180). Current "high-tech interventions [are] not only for treatment but increasingly also for health maintenance, enhancement and 'optimization'" (2011:180; 2003). Nikolas Rose observes a similar shift, opining that "[t]he old lines between treatment, correction, and enhancement can no longer be sustained" (2007:17), as norms of intervention have multiplied and become blurry, unable to fix boundaries as clearly as they (ostensibly) once were. Observing developments like the new reproductive and organ transplant technologies, 'systems biology', or pharmaceuticals like Viagra, Rose arrives at the diagnosis that "contemporary medical technologies do not seek merely to cure diseases once they have

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[6] I use "Clark et al." to refer to the originators of biomedicalization theory, though the contributors vary slightly. The major statement is Clarke et al. 2003. In 2010 an elaboration was provided by the same authors in the volume entitled *Biomedicalization*, which is largely identical with a piece authored by Clarke and Shim (2011).

manifested themselves, but to control the vital processes of the body and mind. They are, I suggest, technologies of optimization" (Rose 2007:16). Indeed, the heart of the claim by these authors seems to be that biomedical practice has been fundamentally reoriented towards "optimization".

Rose and Clarke et al. both suggest concepts that account for these changes: Clarke et al. argue that what they term "biomedicalization" is produced and unfolds its effects through five interacting axes (2003): 1) large-scale political economic shifts like corporatization and privatization; 2) an emphasis on risk and surveillance medicine; 3) the "technoscientization" of biomedicine, which refers to to growing importance of technologies like computerization, molecularization and geneticization; 4) changes in how biomedical knowledge is produced, distributed, and consumed, largely driven by new communication media like the internet; and 5) "transformations" of bodies and identities. Rose (2007) attributes changes in biomedicine to five similar shifts, of which the first seems to be most important: "molecularization", i.e. that contemporary medicine views life at the molecular, as opposed to molar level, which opens up new powers of intervention. Other shifts he describes are 2) "optimization", as technologies try to bring about "the best possible future" for patients, which involves managing their risk 3) "subjectification", referring to how ethics is thought about in terms of caring for one's *biological* self; 4) "somatic expertise", or new forms of governing through counselors, researchers and the like; and 5) "economies of vitality", pointing to the link between money economies, and economies of hope.

Note how these metrics both assign central importance to the novelty of technology as driving much of the change, and make "optimization" linked with "risk" a key defining feature. Thus, Rose asserts that contemporary biopolitics itself "is a space of problems concerning the optimization of life itself…in relation to two linked issues— 'susceptibility' and 'enhancement'" (2007:82). Clarke et al. claim that in biomedicalization "'optimization'—efforts to enhance and secure 'the best possible futures' for oneself—are becoming increasingly central…involv[ing] new forms of engagement with regimes of risk and surveillance" (2009:40).. This injunction to promote health is found in public and private spaces, because "both individually and collectively, we inhabit tenuous and liminal spaces between illness and health" (2003). Risk appears to be a way for individuals to manage their health and thus pursue the kind of "optimization" that Rose and Clarke et al. claim is taking place. In sum, then, the overall argument emphasizes that technoscientific developments now enable a maximization of vitality through efforts at optimization and managing risk.

In the arguments I outlined above, risk is central to how biomedical rationalities of intervention have changed: Rose and Clarke et al. suggest that optimization seems to have become the goal of biomedical intervention, (partially) realized through rationalities of risk. Arguments about biocapital show how risk is shaped by economic arrangements, which then re-orients biomedicine towards goals congruent with with increased "health" and expanded market share.

In light of these powerful accounts of how biomedical interventions are changing, I want to propose that the specific rationality of *biomedicine* deserves further consideration. I suggest that biomedical practices are co-produced by factors like economic arrangements, scientific advance, or discourses about subjectivation, which intersect with the logic of biomedicine as a form of practice. Thus, I argue that it is important to understand both how biomedical rationality intersects with (and at times potentiates) biocapital's logics; and ask whether there might be a deeper link between risk and optimization beyond a seemingly unavoidable progression once new technology makes optimization possible. Moreover, if medicine is one social field enmeshed with others, what is the specific role of "culture"—i.e. is biomedical intervention driven only by capital and technological innovation?

These are questions about how to theorize a contemporary medicine that seems to reach beyond itself to improvement, acknowledging biomedicine's metamorphosis in the face of far-reaching epistemic and market-based changes while at the same time pointing to deeper continuities in how the goals of intervention are determined. To begin sketching an answer, I turn to a closer consideration of “risk” in biomedicine.

Risk in Medicine

Much of my argument is based on charting how dementia has been transformed into a disease of risk, a form of rationality that has increasingly dominated medical treatment. However, it is important to distinguish the kinds of “risk” at issue. I am not using risk in the sense of a general analytic category that describes a register through which societies assign blame or identify dangers (Douglas 1990); or a “risk society” in which thinking in terms of risk represents a response to the felt omnipresent perils of late modernity (Beck 1982). Keeping in mind Mitchell Deans point that risk does not exist, but is “a way…of ordering reality, of rendering it into calculable form” (Dean 1999), I am using risk in the narrower sense of a technique used to represent underdetermined reality in a model of stochastic patterns. Risk is believed to be “objective” because it is based on what Hacking (2006) calls “signs” in nature. Risk in this form is often “studied” as a a phenomenon, identifying risks, locating factors influencing the level of risk, or predicting how to limit risk (Lupton 1999).

While stochastic risk can give information about the probability that an event will occur, it cannot definitively determine whether any *single* event will occur. Rather than in its “pure” stochastic form, risk is often deployed in various “naturalized” guises, by which I mean stochastic risk that has come to be viewed as more or less determinative, thereby providing a presumptive basis for action. For instance, threats in the form of “(bio)security” operate in this way, as epidemiological data that has been read through economic and policy concerns becomes the “objective” basis of (international) political action (cf. Lakoff and Collier 2008).

Transformations in concepts of health and disease are typically linked to changes in naturalized (calculations of) risk. Jeremy Greene gives an illuminating example condensing recent mutations of health. It is taken from the history of treatment for high blood cholesterol, today ubiquitously treated with statins, drugs so effective and safe that doctors have joked they should be "put in the water supply" (Dumit 2012:131). The pathological manifestations of high blood cholesterol in the form of xanthomatosis have long been recognized. This is process in which small nodules—xanthomas, or hardened cholesterol that has precipitated out of the bloodstream—form under eyelids or on tendons. While xanthomatosis was considered to require treatment, as recently as the middle of the last century high cholesterol itself was not viewed as pathological, because it was not symptomatic (in the form of xanthomas). A first step towards defining and problematizing asymptomatic pathology was taken in the 60s and 70s, when researchers took medical data (from insurance companies, laboratories, doctors) and fit it to an idealized bell-curve of blood cholesterol distribution in the US population. Within one standard deviation of the middle or "population average" was considered to be "normal", and the 5% tails that were two standard deviations on either end of the chart (particularly the high end) were declared to be pathological. Between one and two standard deviations was termed "abnormal", a space between health and disease. Greene writes that it was understood both that these thresholds were arbitrary, but also that there was some connection between the cholesterol levels the bell curve was depicting and later pathology. Because molecular profiles could establish disease, symptoms of xanthomas, which previously made the diagnosis, could become "incidental" to diagnosis if the *numerical* threshold of pathology was reached.

The bell curve fell into disrepute around 1985, as the NIH Consensus Conference on Cholesterol and Atherosclerosis released a report that redefined the boundaries of pathology. The report argued that it would be "unreasonable" to use the 'normal' statistical distribution of the bell curve, since "*in part at least, a large fraction of our population probably has too high a blood cholesterol level*", which would end in heart disease (cited in Greene 2008:197, emphasis original). This instance of grounding the "normal" in theories about disease etiology instead of a pre-determined statistical distribution rendered the "normal" state of the population pathological per definition. It exploded the assumption that an apparently healthy population was by default “normal”, instead assuring that one needed medical evidence to know for sure. The guidelines fixed a cholesterol level above 300 mg/dL as frank pathology, and above 240mg/dL as “abnormally high”, reproducing the third space between normal and pathological. This space that could later become associated with “risk” was re-defined through updated guidelines and, critically, through clinical trials. By showing that statin drugs could reduce rates of heart attacks and deaths, the trials created drug markets and expanded treatment indications by offering conclusive proof that “ostensibly healthy” individuals who had high cholesterol and were thus “at risk” could benefit from statins; the group of people that could benefit grew continually larger as expert commissions, relying on data from trials explicitly intended to show the efficacy of their drug in a ‘healthy’ but ‘at risk’ population, pushed the thresholds for recommended treatment lower and lower (2008:209-11). Greene’s case is powerful because it locates the norms of pathology in an ideal rather than any existing reality found in the population. It recalls Ian Hacking’s point, that “normal” always already hides two meanings, that of ‘average’ and ‘ideal’ (1990), which makes the normal a powerful tool for intervention: the ‘average’ can be pulled along as the ‘ideal’ moves, typically through clinical trials establishing “health” at the population level.

Joe Dumit calls this way of ordering reality through clinical trials an instance of “mass health”, which he shows emerged after World War II. In the 1940s, public health researchers began using statistical correlations to show that smoking caused cancer, instituting a new type of authority in the form of a consensus report assembled by experts. The correlation between disease and biological indices was viewed at a population level: statistics “fused facts about correlations with obligatory action, *as if* the cause was direct” rather than probabilistic (2012:105). Around the same time, clinical trials in their contemporary form were first initiated to meet new FDA requirements, and were also used by pharmaceutical firms to create markets and gain approval for a veritable explosion of newly discovered drugs, institutionalizing the production of authoritative knowledge through large-scale, randomized clinical trials (2012:107-

9). Public health researchers also launched large-scale population health experiments, like the seminal Framingham Heart Study, to identify factors that predicted disease—which in turn entailed that controlling these factors could *prevent* disease. If lab research could connect the physiological parameters (biomarkers) identified in clinical trials to disease processes, the discovery of a molecular "pathway" of disease immediately suggested an opportunity for intervention in the form of therapies to disrupt the steps of pathology(Greene 2008:2-3).

Taken together, statistical studies of population health began to undo the familiar and common-sense model of health as the absence of symptoms, and of treatment as addressing experienced disease. Instead, the relationship of the normal and pathological shifted. Health began to be expressed as risk factors that are determined through clinical trials capable of making the benefits of modifying physiology at the population level visible. Symptoms are arguably no longer the sole or even primary justification for intervention, as one could be only "apparently" healthy. As Dumit (2012) puts it, "illness is a line you cross": diagnosis is based on numbers, and serves primarily to fix the moment of intervention (which is also, in Dumit's view, the point at which the maximal market share can be reached). But the line of risk also, literally, graphs the body *into* illness. It "equated the linear gradient of physiological parameters with the temporal progression of disease", a different way of *temporally* conceptualizing disease (Greene 2008:112). This shift from disease as being a discrete entity to disease as a continuum was crucial, because in terms of treatment, it increasingly equates disease with *pre*-disease, or risk. In other words, buttressed by laboratory and clinical trials data, stochastic risk could become naturalized risk by shifting the meaning of some physiological state from being an index of the *possibility* of disease, to being a marker of the *progress* of disease. When risk is equivalent to disease, the former loses its uncertain probability, creating a treatment imperative: diagnosis becomes risk assessment, and medicine must treat to prevent disease, even though a clinical trial can say nothing about whether any particular individual will actually progress to disease, or whether the treatment will help them if they do.

When risk has been naturalized, it can legitimate medical intervention, codified in guidelines and insurance reimbursements. A good example would be the biomarkers for dementia listed above. But if this is a relatively "stable" form of risk, how can one characterize the existence of "risks" intimated by lab research, but which are not yet established? I will return to this below, but here I want to briefly introduce another sense of risk, which I will call "virtual" risk. Virtual risks are *potential* risks; they are risks that might become real, suggested by disease models but not yet "validated". Essentially, once a potential risk in the form of a specific, quantified biomarker can be correlated with some kind of clinical outcome, that biomarker can be naturalized, becoming a "true" basis for intervention. My argument does not hinge on the existence of virtual risk, but because I am trying to capture a trajectory of development in biomedicine, I offer virtual risk as a heuristic clarification to distinguish (naturalized) risk that already justifies medical action, from the presumed existence of other risks that widespread research efforts are attempting to naturalize. Thus virtual risk also points to the practices that try make what are only potential risks into actual risks, which typically happens through clinical trials that produce the statistical evidence to link markers of disease progression with population-level physiological measurements.

In what follows, I will begin with a case from the clinic that shows how risk is at stake in practice. I will then move through the history of and present research on AD to show how it is being transformed into a disease of risk.

Saving Your Past through a Randomized Future

Much of the work done by the clinic centered on clinical trials, access to which had been a main rationale for creating memory clinics in the late 1980s. Routines were oriented around diagnosing, screening, and enrolling patients, with every member of the clinic staff playing some part, from nurses reminding doctors to discuss a trial with a patient, to psychologists mentioning trials as an option at the first testing session. Indeed, the staff felt that the main benefit they could give to patients was enrolling them in trials, which made naturalized risk productive by casting trials as an opportunity. As physicians often put it when speaking to patients: “Do I want the standard treatment, or do I want to try a newer treatment that promises to do more? The clinical trial is a chance to do that.”

Near the beginning of my fieldwork, patients began to be enrolled for a new vaccine clinical trial, about which there was a palpable excitement. It was sponsored by a large pharmaceutical multinational, hailed as the vanguard of currently available vaccine trials by the clinic staff and in scientific reports because it was the first antibody vaccine directed at patients with “mild cognitive impairment” (MCI). It was specifically for what was believed to be a subset of MCI, the “amnestic” type. This was also termed “prodromal” Alzheimer’s dementia, because of the belief that the latter developed out of what began as mild memory losses in certain cognitive domains. Thus, the trial intervened at a purportedly early stage of memory decline, explicitly buttressed by the argument that amyloid protein needed to be removed from the brain before it destroyed neurons.

The general way that vaccines worked could have been familiar to patients from one of the many media reports about dementia. Frequently, they explained vaccines in terms of the “vacuum cleaner” metaphor, which Thomas liked to use when speaking with patients:

Figure 12: 1st—Yellow amyloid plaques clogging up neurons and interfering with their activity

Figure 13: 2nd—Antibodies (not shown) activate immune cells (blue) that attack the plaques

Figure 14: 3rd—Immune cells eating the plaques by sucking up amyloid particles

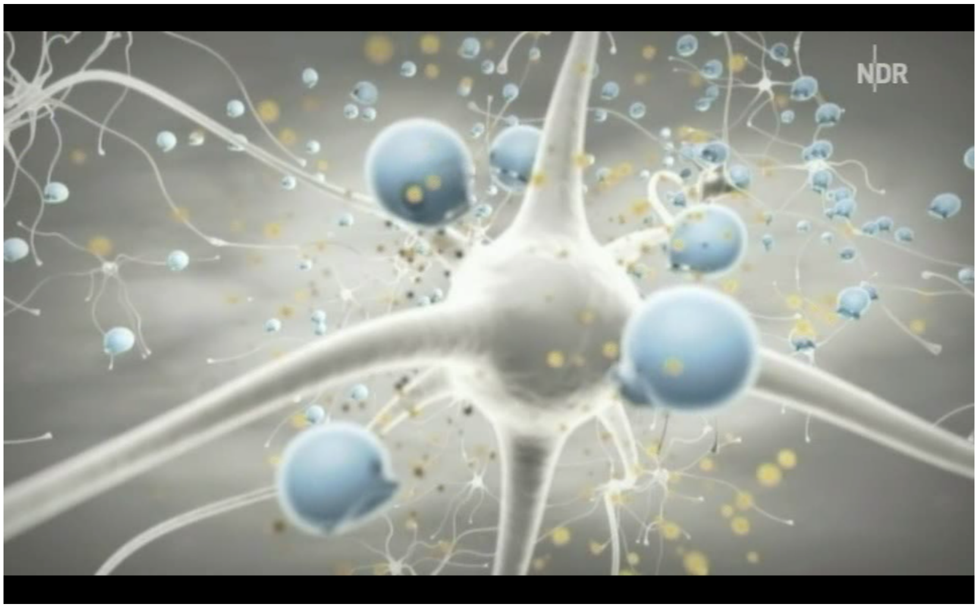

Figure 15: 4th—Immune cells have removed the plaques and are standing sentry. The neurons can now potentially function 'normally' again

(Source for all images: screen capture from Visite *("Visit by the Doctor"), Feb 28, 2012)*[7]

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[7] The images depict an "active" immunization, which enrolled immune cells in combating amyloid (similar to a flu vaccine). The other kind of vaccine was a "passive" immunization, which can perhaps best be visualized by replacing the blue macrophages with an antibody grabbing and removing the plaques.

One of the first patients to be screened for the new vaccine was Mrs. Leitmann. A tall and slender 68 year-old woman, she was at her final appointment with her husband, where patients receive a diagnosis and discuss treatment options. She started to look worried as the doctor explained the results:

“You have objectifiable problems with your memory. That’s an MCI. Together with the abnormal protein level, you have a higher risk of getting dementia when compared with the normal population.”

Mrs. Leitmann seemed unsure of how to react to being ‘at risk’. “Do I need to do something? Or should I wait?”, she wondered.

From the physicians’ perspective, naturalized risk demanded action. “So you’re at risk. We have a clinical trial. We don’t know if it will work, but we hope it will, since it’s the only chance to prevent [dementia]….It’s good that you came, it’s promising because it’s still early [in the disease course].”

The trial embodied the principle that “earlier is better”, or that the chance a treatment would be effective was inversely related to how much protein accumulation had progressed. Yet, at the same time that this trial was praised, even treating MCI did yet go far enough: Because patients needed to have at least a measurable cognitive impairment (at least one standard deviation from the norm on neuropsychometric tests) the trials that were currently available excluded memory complainers like Mr. Janowitz. For these patients, despite “not having nothing”, no experimental treatment was available.

This gap opens up the space in which the future of dementia care is taking shape. To show this, I want to relate the case of Mrs. Kleinerts, a 77 year old woman. She came to the memory clinic with her husband because both wanted to have their memory checked after reading about the clinical trials offered there. Her test results were slightly below the norm, but on the whole not poor enough to be included in the new trial; she reported that she did not need a grocery list in the past, but now forgot things if she went without one. Her impairments were in the grey zone, between what could be measured and termed “pathological”, and what was “normal” aging. It was an example of something Ronald Peterson points out about MCI, that “usually these individuals have very slight degrees of functional impairment and most clinicians would have difficulty distinguishing these functional problems from those encountered by normal individuals as they age” (2004:185). But for the clinical trial, losses of function needed to be measurable, to detect and quantify any effects the treatment might have. The probable exclusion of Mrs. Kleinerts led to a discussion between Thomas and Jan, a psychologist, in the registration room.

“I just saw Mr. and Mrs. Kleinerts”, Thomas began. “She is too good for the new trial, but I have a bad feeling about her.”

“Yes”, Jan responded, “they are too good. But they wanted to be in a trial, so I decided to test them. But for both of them the Free and Cued memory test was too good.”

I was confused. “What do you mean, ‘too good’? You suspect she has an MCI, and the trial is for MCI.”

Thomas cleared things up. “Well, there are few good ways to test MCI. We think the Free and Cued is pretty sensitive, but the memory deviations don’t always show up on the exam. This trial has a high standard for Free and Cued…I think what you should do is have biomarkers [i.e. amyloid and tau protein levels] be enough, but we’re not that far yet” he said, shrugging resignedly.

In other words, even though attempts to treat and prevent dementia had moved earlier, they still left a space for memory complainers, for those who felt they couldn’t remember as easily, misplaced things more often, had too many words on the tip of their tongue that they couldn’t recall while speaking, or noticed at age 75 that they needed a shopping list for the first time. Physicians wanted to treat these memory complainers, and were willing to rely on biomarkers to make a diagnosis, even if that meant that no memory loss could be objectified; patients wanted to be treated, fearing for their memory. In the terms used above, doctors seemed to think that there was a “virtual” risk that they would have liked to mitigate against, but that needed to be made actual before any intervention would be possible. Why was memory decline conceptualized in such a way that a decline so subtle that only the affected or at most close relatives could detect it was necessarily a bad thing? In other words, why was even a seemingly minor potential for risk so important?

To understand why even a trial at the vanguard of what was available was not enough, I want to move into the broader field of dementia research. My interest is not as broad as Margaret Lock's (2013b), who has recently untangled several of the many complex threads of AD research, noting the limits of current hypotheses about its pathogenesis and the attendant contestations in the field, arguing that a move away from the emphasis on molecular cures is needed; nor is it about the more fundamental question of the utility of the notion of "AD" itself (Whitehouse and George 2008). Instead, I want to think with one particular but dominant strand of research that shaped the work of the memory clinic. I am interested in penetrating the logic of this way of imagining the future of AD treatment, which I will argue speaks to risk-therapeutics in medicine as a whole. I will begin by following the transformation of dementia into risk in biomedicine, in three movements that recall the metamorphosis of cholesterol: First, pathology is established; second, modifiable risk factors are identified; and third, clinical trials operationalize knowledge.

First Movement: Recognizing Pathology

In 1906, Alois Alzheimer famously reported on a patient named Augusta Deter at the Conference of South-West German 'Alienists' (as psychiatrists were known) in Tübingen. She had been 51 years old when she presented with profound cognitive impairment, which Alzheimer attributed to the hallmark protein plaques and neurofibrillary tangles he found after dissecting her brain after she died.[8] These symptoms and pathological findings were typically associated with "senile

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[8] These are still necessary for a definitive diagnosis. Thus, someone diagnosed with "Alzheimer's disease" is, more accurately, diagnosed with "Dementia, likely Alzheimer type". Margaret Lock (2013b) argues that the move towards biomarker diagnosis is ambiguous on whether biomarkers or autopsy set the 'gold standard' of diagnosis.

dementia", or a condition of cognitive impairment that usually affected individuals who were at least a decade older than Deter; this juxtaposition sparked Alzheimer's interest, though he was uncertain whether this was an early onset of senile dementia, or if it was a distinct disease. Nonetheless, his employer, the eminent psychiatric nosologist Emil Kraepelin, distinguished between "senile" and "pre-senile" dementia in his authoritative "Handbook of Psychiatry", the latter afflicting younger patients (Lock 2011; Ballenger 2009).

After the middle of the 20th Century, scientific and political developments collapsed this tenuous distinction, establishing every manifestation of dementia as pathological, thereby eliminating the possibility that senile dementia was "normal" and that the pre-senile form was pathological because of its early onset.

In the 1960s a large British study showed that the brains of patients diagnosed with dementia showed high levels of plaques and tangles compared with those who did not have dementia. Concurrent with a better pathological understanding of dementia, clinicians developed neuro-psychometric tests to detect and measure the behavioral and cognitive aspects of the disease, including the Mini Mental Status Exam (MMSE) that is used as a ubiquitous first-line screening for dementia today (Lock 2011; Moreira et al. 2009). Around the same time, psychiatrists and gerontologists had lobbied for a research program on aging, which in part led to the creation of the National Institute on Aging (NIA) in 1974. A key argument was put forward by the famed neurologist Robert Katzman, who claimed that dementia was *not* a normal and inevitable part of aging, and that all cases of senility were abnormal and needed to be treated. This was a remarkable claim, as Katzmann himself said that between *40-60%* of those over 65 have AD (Katzmann 1976), in a single strike attributing a cognitive pathology to a large segment of the older population. In what became known as the "politics of anguish", the NIA and newly created Alzheimer's Disease Society worked to increase public awareness that senility was not benign, but was a disease in need of treatment. Senility was rejected as a medical concept as well, since it seemed to group disparate diseases together. These efforts helped transform dementia into a potentially treatable set of conditions rather than an inescapable decline. The NIA and Alzheimer's lobby launched extensive publicity and lobbying efforts, congress increased research spending, and in the popular press Alzheimer's was figured as a terrible illness that ravaged the self and destroyed families (Lock 2011; Whitehouse et al. 2009; Ballenger 2008).

In medical research, new diagnostic criteria conclusively recognized Alzheimer's as a discernible disease rather than a natural part of aging by new diagnostic criteria. These were released in 1984 by the National Institute of Neurological and Communicative Disorders and Stroke and the Alzheimer's Disease and Related Disorders Association (NINCDS-ADRDA), a joint platform of the NIH and dementia lobby groups. Because of the continued development of neuro-psychometric tests, and the then dominant theory that problems with learning and memory were caused by a lack of the neurotransmitter acetylcholine (thought to be important for forming memories), the new guidelines reinforced Alzheimer's as a disease of cognition. They mostly ignored the accompanying range of affective and behavioral changes first exhibited by Auguste Deter and acknowledged by families as being the most difficult to manage, though medicine has recently begun to focus on some of these (Moreira 2009; Liebing 2006). Moreover, linking diagnosis with cognitive tests made clinically observable cognition objectively testable and quantifiable, creating objective indeces of AD which would later become crucial biomarkers for the disease.

Much of this research entered the German biomedical community, where AD became a more prominent issue in the late 1970s and early 1980s, pathologizing the theretofore benign "*senile Demenz*" or "*Altersschwachsinn*" (senility of old age). In 1989, the German "Alzheimer Gesellschaft" was founded, which focuses on increasing awareness of AD and the experience of patients rather than lobbying for biomedical research. However, since that same year, when a conference was held in honor of Alzheimer's 125th birthday at his birthplace, much of the research in Germany has been firmly oriented towards international biomedicine, and physicians have worked, as elsewhere, to solidify dementia as a pathology. As Thomas often said when patients attributed their memory loss to *Altersdemenz*, "Let me say this right now, but that doesn't exist. It's not normal to lose your memory as you age."

Second Movement: Detecting Risk

Instituting a firm definition and widespread diagnosis of AD simultaneously created an unstable boundary (Bowker and Star 1999). On the one hand, behavioral tests, in which diagnosis was made using a more or less arbitrary cutoff point, make visible a continuum in decreased cognitive performance between those with and without Alzheimer's. On the other, the diagnosis of AD excluded everyone who had mild memory problems, leaving a group of patients without a diagnosis, for which doctors suggested terms like "cognitive impairment, no dementia", or "age-related cognitive decline", "dementia prodrome", or "incipient dementia" (Moreira et al. 2009; Schröder and Pantel 2011:12-16). This became important because the first attempts at treating dementia proved to be less than promising, and were replaced by the hypothesis that a malfunctioning pathway caused the accumulation of toxic amyloid protein, which forms the characteristic plaques and impairs neurons. Known as the "Amyloid Cascade Hypothesis" (Hardy 1992), it illustrates the key feature of proposed etiologies of Alzheimer's, namely that pathology occurs at a molecular level (and thus can be tracked in the body), and, critically are part of a *progressive* model of disease. Yet to make research into the molecular basis of neuro-degeneration clinically useful, these micro-scale changes needed to be related to patients with mild memory complaints. What was necessary, then, was a conceptual link between basic science research and the clinic (Moreira 2009; Lock 2013a).

The most successful conceptual coupling was through the notion of "mild cognitive impairment", whose criteria were developed by the neurologist Ronald Peterson (Flicker 1991; Peterson et al. 1999). MCI defined a transitional stage between normal cognitive aging and dementia, in which people had some cognitive problems, but not enough to be diagnosed with dementia. Often, individuals came to the doctor because they felt some decline in their cognitive function—like more frequently forgetting where they put things, or being less able to remember words. Thus the key aspect of MCI is the patient's subjective memory complaint, which "is meant to represent a change in function for the person" (Peterson 2004), and is taken as a very early sign that a pathological process is possibly underway.

MCI is not a diagnosis recognized by international disease classification systems, described as a "research construct" by physicians. It is intended to refine the identification of risk factors for dementia. Since only about 10-15% of individuals who come to a memory clinic will progress to dementia (compared to 3-6% in the community (see Peterson 2011; Farias et al. 2009)), the central task of research has been predicting who will "convert". MCI has spawned a proliferation of attempts to identify potentially significant changes in form of biomarkers, including making changes to the brain visible with imaging techniques, neuro-psychometric tests, or testing for genetic mutations or levels of protein in the cerebrospinal fluid (cf. Hampel et al. 2010). However, MCI is perhaps most useful for clinical trials, because it identifies individuals who could establish whether a drug is effective at reducing the risk of "conversion" to AD, like the new trial at the memory clinic.

Based on research into biomarkers, a model of cognitive decline has been proposed, to which I was introduced during the clinic's "Journal Club". Once a week in the mornings, before the work of seeing patients began in earnest, the entire academic staff convened and physicians presented articles in their research field. The conversation was carried out entirely in English—a shift of register from the rest of the meeting, which was carried out in German. Part of the reason was pedagogical, to induct people into performing in the *lingua franca* of Western biomedicine in academic settings; when I asked the Clinic director about this, I was told that it was "to teach people English. If you can't give a talk in English, you can't compete in this world." But it was also an issue of situating the clinic, and the work done there, in the broader landscape of academic biomedicine. At one of the very first meetings I attended, the article was from *Nature Communications*. The presenter noted that the this journal did not have an impact factor yet because it was new, but it would probably be high once it was calculated (presumably because it was part of the *Nature* group, whose journals all have among the highest "impact factors"). This comment indexes how the journal club is an exercise in being part of the scientific community that reads what counts, and can communicate in that community's language.

So on a wintry Tuesday, the chief of the memory clinic presented a model derived from research showing that pathological changes in the brain begin 10 or 20 years before the diagnosis (cf. Rowe et al. 2010). This highly-cited image integrated the common biomarkers into an idealized model of how the various biomarkers are temporally related to dementia:

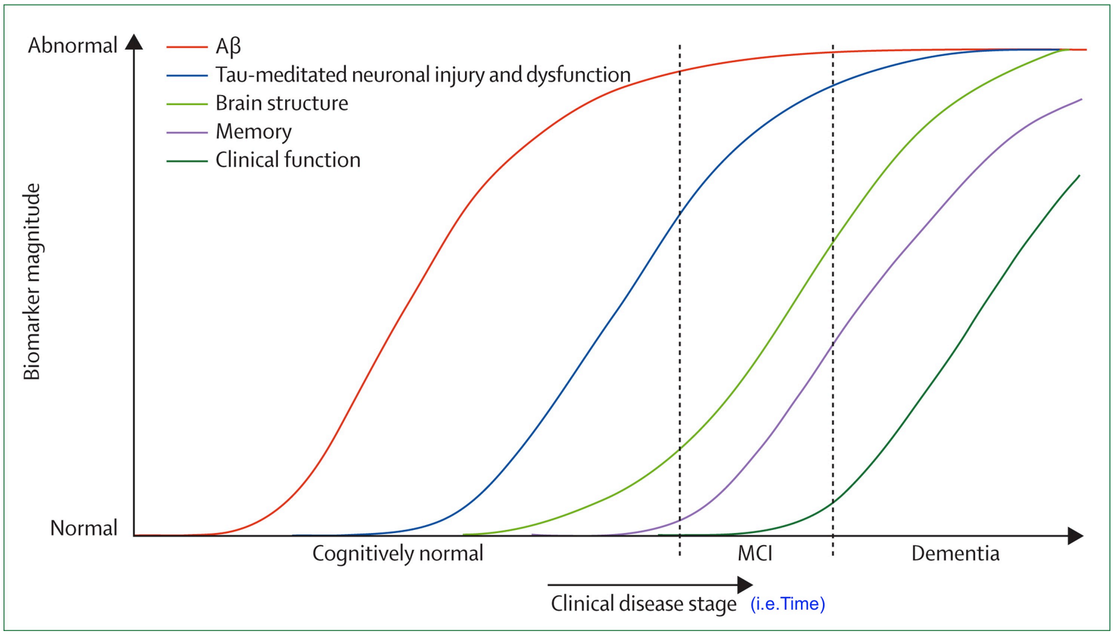

Figure 16: Biomarker Progression

(Source: modified from Jack Jr. et al. 2010)

The key idea is that all of the colored lines indicating biomarker parameters (amyloid protein, neuronal damage) rise to indicate deviations from normal *decades* before dementia or MCI are diagnosed. Memory (purple), and ‘clinical function’ (dark green) lag behind these early markers, since they do not become impaired until someone is at the threshold to dementia.[9]

Scientifically, this model is useful because it maps a trajectory of protein accumulation and subsequent neuronal damage, transforming AD into a disease of risk. A continual decline over many years finally manifests symptomatically, at which point the disease can be managed but the damage can no longer be undone. Biomarkers are only signs of changes in the brain, they do not determine that one will get dementia. Despite there being unresolved questions about some basic points, perhaps most prominently the correlation between amyloid plaques and clinical symptoms, this model orders the research data into a sequence of physiological decline. It thereby creates a scale of naturalized risk, so that the more abnormal one’s biomarkers are the more neurodegeneration has progressed, making it more likely one will manifest symptoms of AD. My point with this graph is to show how in dementia, as in other diseases in which risk has been naturalized by biomedicine, the process of becoming sick is severed from the manifestation of sickness, leaving one apparently healthy but possibly on a downward path.

Memory complainers like Mrs. Kleinerts would be somewhere around the first dotted line, before MCI, but as the purple line indicates, no longer “cognitively normal”—thus they would have subjective symptoms of memory loss. But because neuro-psychometric tests were generally not sensitive enough to detect these deviations from the norm, and biomarkers not yet scientifically validated enough to make a diagnosis, their symptoms could not be rendered objective. Memory complainers were in a liminal state, at the boundaries of what could be diagnosed. They were at *virtual* risk, a potential for risk that physicians and researchers believed existed. Thus their complaints were like an early warning sign medicine was struggling to make sense of, a risk that was still unquantifiable. A senior doctor, who had done extensive research on dementia, explained to me that “memory complainers are interesting. Some say that they have a

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[9] This image is obviously an idealization: actual function is not this neat; the temporality is unlikely to be so clearly distinct; and because it’s hard to conclusively test for MCI, it’s difficult to know where in the progression someone actually is.

problem, because this might indicate that they will have memory complaints in the future. Others say that they are complainers who used to be high-performing (*leistungsstark*) but don't really have a problem.” Memory complainers were in a liminal state in terms of treatment, as they were not yet able to enter a clinical trial. They had to leave the clinic empty-handed, encouraged to return if things got worse—at which point physicians feared it would already be far too late.

Third Movement: Run the Trials

Medicine was hard at work trying to eliminate the liminal figure of the only subjectively symptomatic memory complainer. From the perspective of dementia research, memory complainers signified that dementia was not yet *risked* enough; it was not yet thought in the register of risk, being still based on symptoms, when disease was already manifest rather than suspended in the future as risk. Thus, current research aims at identifying risk factors, intervening pre-symptomatically, and ultimately preventing dementia altogether. As the biomarker model makes clear, the *earlier* one can intervene the better, a point in time that is also as close to “normal” as possible. As in other instances, this entails redefining the relationship of the normal and the pathological. International diagnostic manuals (ICD-10 and DSM-IV) distinguished the subtypes and age of onset of AD, which specialized clinics like the memory clinic went beyond insofar as distinctions were made between mild/moderate/severe AD, and "normal" cognition. MCI carved out a largely undifferentiated category between these binaries, a population of those at risk for developing AD.

This liminal space, in which memory complainers roam, has been successively parsed into finer units of quantified risk, at the same time as it has expanded to include more previously “normal” individuals. Using the concept of MCI, several years ago some researchers went on to argue that MCI may be preceded by “pre-MCI”, which comes closest to defining the memory complainer: individuals reporting symptoms of cognitive decline that cannot be validated through neuropsychometric testing (Storandt et al. 2006). This trajectory continued in 2010, with the publication of a "Lexicon" proposing a new definition of AD based on biomarkers, convened by a European Working group (Dubois et al. 2010).[10] Many points were shared by a report a year later when the "National Institute on Aging and the Alzheimer's Association workgroup" released its recommendations for new diagnostic criteria, intended to replace the 1984 criteria that are still the most widely used.

There were three expert groups in total, one which updated the diagnostic criteria for AD, one for MCI, and one which defined "preclinical" AD. All of the reports incorporated extensive research on biomarkers, trying to establish them as diagnostic tools in the clinical setting. The last report on preclinical AD was intended for research settings; thus, I focus on this working group because it tries to chart a direction for research, in hopes of definitively classifying figures like the memory complainer. Recall that the still widely-used 1984 diagnostic criteria required clinical symptoms to diagnose AD. The working group delimited a "preclinical" stage of AD, redefining AD to make biomarker evidence of *pathological processes,* rather than clinical symptoms, sufficient for a diagnosable—one might say "objectifiable"—pathology. All three reports were based on this fundamental differentiation into process and clinical symptom, the reasons for which the working group articulates as follows: "To facilitate the possibility of future presymptomatic/pre-clinical treatment of AD, our working group…felt it was important to define AD as encompassing the underlying pathophysiological disease process, as opposed to having "AD" connote only the clinical stages of the disease" (Sperling et al. 2011). This broad re-definition was justified because it would identify those who would benefit from treatment (i.e. who would "convert"), making the *potentially* sick into *presumptively* sick. Despite acknowledging that some individuals with these processes would never become demented, in effect three shifts were made: abnormal biomarkers were accepted as evidence of "pathological processes". These processes themselves were rendered determinative of disease, erasing their

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[10] According to the head physician, the memory clinic tried to follow the Dubois criteria while making diagnoses, relying on Amyloid-β and tau levels, and structural MRI.

probabilistic nature (hence in a “preclinical” disease stage). And finally everyone with these processes (i.e. those biomarkers) was pronounced sick.

In so doing, the working group saw itself as continuing the trajectory of the risk paradigm of disease, stating the obvious: “It is widely acknowledged that symptoms are not necessary to diagnose human disease.” Explicitly invoking chronic diseases, they continued

> Type II diabetes, hypertension, renal insufficiency, and osteoporosis are frequently detected through laboratory tests (i.e., biomarkers), and effective treatment can prevent the emergence of symptoms. Thus, we should be open to the idea that AD could one day be diagnosed pre-clinically by the presence of biomarker evidence of AD [pathological process], which may eventually guide therapy before the onset of symptoms. (Sperling at al. 2011)

In short, by adding a category in which one was ‘at risk’ to the already existing categories of manifest symptoms (ranging from pre-MCI to frank dementia), the working group identified a ‘virtual’ risk. While memory complainers like Ms. Kleinerts also were at virtual risk because their risk could not be quantified, they had actual complaints about their memory. But the virtual risk the working group named was even further from being an “actual” naturalized risk than the risk associated with memory complainers: it was entirely based on the hypothesis that in the future, statistical links would correlate biomarker levels with the early stages of disease progression. Once actual numbers were determined, this a presumed population of individuals would be put at virtual risk, and intervention in this group justified based on their abnormal physiological parameters.

Identifying a virtual risk was productive on multiple levels. Firstly, it was not intended to be used as a clinical diagnosis, but was limited to research settings where it could identify a new at-risk population, thereby creating a group of potential research subjects in whom the effectiveness of vaccines could be tested. Indeed, the “Anti-Aβ Treatment in Asymptomatic AD”, also known as the “A4 Trial” (headed by the Chair of the working group), identifies a population based on the preclinical criteria (those who have abnormal levels of amyloid) and is getting underway in early 2014. The cost for what the NIH hails as a “major prevention effort” is an estimated $100 million, one third of which the NIH will cover. The trial will enroll individuals with abnormal biomarkers (based on Amyloid PET imaging) who lack clinical symptoms to test the effectiveness of a vaccine antibody in preventing the conversion to dementia, as well as track the relationship between accumulating protein and converting.[11]

Margaret Lock shows that basic questions about AD etiology are still incompletely resolved, like the causal role of amyloid plaques. But the fact that a question was still unanswered (whether intervening pre-symptomatically would delay AD) meant that there were still potential risks to make real: the working group explicitly intended (virtual) risk to be productive in terms of being an argument for *more* research, to actualize those potential risks. To date, not a single vaccine trial has proven effective. The justification given for treatment failures is generally that too many neurons had already been irreversibly damaged. Thus, "[b]oth laboratory work and recent disappointing clinical trial results raise the possibility that therapeutic interventions applied earlier in the course of AD would be more likely to achieve disease modification [i.e. stop progression to dementia]" (Sperling et al. 2011). This claim traces the overall trajectory of trials: beginning with moderate dementia, trials have marched backwards in the disease progression through mild AD, MCI, and with the A4 trial (provisionally) ending in asymptomatic populations. Experts view the A4 trial with a mix of hopefulness that it will succeed, coupled with an acknowledgment that at some point, the "earlier is better" paradigm will need to produce measurable results, i.e. to make the "virtual" risk that an imagined population of individuals has into a naturalized risk that can legitimate medical intervention.

Kaushik Sunder Rajan writes about the generativity of risk on yet another level, that of capital. Most commonly, through developing something like genetic tests for cancer risk factors, risk is naturalized by pharmaceutical or biotech companies so it can be invoked to generate populations of patients who are 'in-waiting' for an as-yet-to-be discovered therapy. In the case of dementia, the stakes are slightly different, as more frequently "clinical trials [are used] to co-

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[11] See "NIH-supported Alzheimer's studies to focus on innovative treatments", http://www.nih.gov/news/health/jan2013/nia-14.htm, accessed Jan 21, 2014. See also Corbyn (2013).

produce disease definition, diagnostic test, and treatment as a bundle" (2006:17). This co-production was enabled by the redefinition of disease to being asymptomatically at risk, and mirrors the overall form that therapeutic developments have taken, as biocapital has driven the expansion of populations, indications, and populations hoping for treatment. Though a tempting interpretation, this relationship is not straightforwardly an instance of expanding the pool of available patients, what we might term the pursuit of surplus health (Dumit 2012).[12] Rather, physicians pointed to what Sunder Rajan (2006) calls the "co-production" of epistemic, practical, and material conditions of dementia research through biocapital. I was struck by a reason that almost every physician I spoke to offered (some of whom were themselves on the pharmaceutical companies' payroll). They said that pharmaceutical firms had invested *so* many resources into vaccines that they needed to find some efficacy, and this entailed pushing the point of intervention earlier (cf. Lock 2013b:102,105). One physician who headed a memory clinic believed that this also explained an observation several people had made to me that neuro-psychological tests had become longer and more detailed for patients in trials (demanding serious effort from already strained patients): companies were desperately hoping that more elaborate tests would be able to distill treatment "signal" from "noise" (cf. Petryna 2009:17).

Vaccine Histories: Styles of Thought

In three movements since the middle of the 20th Century, AD has been recognized to be a disease affecting wide swaths of the population, risk factors have been discovered, and this knowledge has been put to work in research and, especially, clinical trials.

In a co-productive (or perhaps dialectical) fashion, knowledge, research, politics, and hope fed back into each other, increasingly establishing AD as a disease of risk. MCI was a turning point, by enabling (and *demanding*) research to discover the borders of pathology that existing

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[12] In surplus health, everyone has to take a treatment but it will reduce the risk of only some patients—who are unknowable in advance—for getting the disease, which generates profits from a "surplus" of health. Put another way, profit is generated by using the "surplus" of health that individuals have—their general "healthiness"—for taking drugs that they may not need.

diagnostic categories could, necessarily, only imperfectly mark. Arguably, the evolution of categories of AD that the working group articulated had been prefigured by tensions in the concept of MCI itself: before MCI could be used for evaluating treatments, it needed to be recognized by regulatory agencies like the FDA as being treat-able, i.e. as being a disease. But MCI by most definitions only *pre-figure*s a disease, so it became desirable to establish some relationship between disease and risk. Thus, in 2001 the FDA hosted a meeting to evaluate if and how regulators could recognize MCI. Though treatments for MCI would not be demonstrably effective by improving symptoms of a disease, they could, borrowing a model from cardiovascular disease, prevent an at risk population from developing disease. In short, finding a way to test whether risk was reduced in a specific population would make the effects of the drug visible. In the absence of symptoms, surrogate indices—biomarkers—needed to be used to make inferences about whether the underlying disease process was being “modified” (Moreira 2009; Moreira et al. 2009). MCI’s endorsement as a research construct by the FDA spawned a great deal of research, initially with the first generation of anti-dementia drugs, which were ineffective. Vaccines were among the next major group of drugs to be tested, thought to be more promising because they targeted what was believed to be a key step in the pathogenesis. While the failures of these therapies have prompted several to altogether question the “amyloid hypothesis”, the most common interpretation is that clinical trials are *still* intervening too late, which is why a high-level consensus document like the working group recommendations has been necessary to push research forward. My point is that the kinds of research that MCI made possible, and in turn the material effects of those clinical trials, ended up driving the expansion of the idea that one’s brain could be pathological without symptoms, pushing the boundary of what was “normal” past being asymptomatic to controlling physiological processes that are *tending* towards symptoms (an update on the old notion of the ‘predisposition’). In short, research was trying to ferret out every last shred of “risk”, operating according to what Fleck (1979) has called a “thought-style”, a logic of discourse that governs what is believed to be real, the boundaries of what can be thought, and how new knowledge is interpreted. When the risk paradigm meets overwhelming evidence of progressive neurodegeneration, the only possible interpretation is that intervention must be even earlier.

It was precisely this thought-style, I submit, that explains why doctors at the clinic wanted to include patients like Mrs. Kleinerts in trials even though she could not be diagnosed with MCI, and why they were frustrated when treatment protocols prevented them from doing so. Perhaps more importantly, it explained the dictum that “the earliest treatments were the best treatments”, because this appeared to be the only realistic hope of halting dementia’s progression. In many ways, “earliest is best” presumed that what was still a potential risk was already actual: doctors could currently intervene according to the naturalized risk that was indicated by “confirmed” biomarkers. But they—and many other dementia researchers—wanted to make the virtual risk indexed by merely “abnormal” biomarkers be a sufficient basis for earlier treatment, and were deeply invested in doing so.

Indeed, much of what the institution did was organized around this idea. For instance, physicians regularly made appearances on TV shows explaining dementia and pointing to advances in biomarker research that could catch developing AD, and encouraging people to come in if they or their relatives had noticed a slip in memory over the past several months. This latter was a wholly standard claim, but it was made in as many venues as possible to “educate” the public about dementia and medicine’s ability to treat it. The work of diagnosis itself was conducted according to advanced biomarker standards as well. By relying on neuropsychological tests and extensively testing biomarkers—part of every diagnostic discussion with patients—the clinic tried to implement the biomarker criteria that researchers had promulgated (a full-blown implementation was limited by insurance guidelines and the like). If patients did not get biomarker testing because the lumbar puncture could not be done, this was considered to be an “unconfirmed” diagnosis, which is to say that it did not meet the biomarker standard the clinic was striving towards. Present diagnostics were the template for how future work of the clinic was imagined: it specifically defined its mission as being to offer "something more" than other clinics could. Access to the newest trials was part of that quest, of which the next logical step seemed to be enrolling asymptomatic patients with suspicious biomarkers (as the A4 trial does). The endgame, as they often said, was that in the future one would have to "vaccinate everyone" who had abnormal biomarkers, a seemingly inescapable conclusion based on current research (and an apparently strong hope that the effectiveness of vaccines would eventually be demonstrated).[13]

Vaccine Futures: "Sharpen that Needle"

The proposal that (nearly) everyone should be vaccinated paralleled the positions of important voices in research. The working group, for instance, articulated the goal: "if we can [] definitively determine the risk of developing AD dementia and the temporal course of clinical progression associated with AD [pathological process] in individuals without dementia or MCI, we will open a crucial window of opportunity to intervene with disease-modifying therapy" (Sperling et al. 2011). Intervening at the first sign of pathology has the ambitions of a broad, population level preventive approach, towards which the A4 trial takes important first steps.[14] An editorial in the *Archives of Neurology*, aptly entitled "Sharpen that Needle", claimed, "Gazing into the future…we can envision a recommendation that CSF [cerebro-spinal fluid] analyses be implemented as a screening test to identify clinically healthy individuals at risk for MCI and AD" (Herskovits and Growdon 2010).[15]

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[13] This claim was not in question; rather, doctors were thinking about logistics, since research ethics forbade enrolling ostensibly healthy individuals in a trial, so one needed to justify wide-scale lumbar punctures to detect those who were at risk. Using expensive PET scanners (which the clinic did not have), as in the A4 trial, could avoid this problem. In fact, it was precisely the effort to visually detect AD progression that led to the development of compounds to radio-label brains, which in turn are enabling the expansion of diagnostic tests into new populations.

[14] It is considered "secondary" prevention, since some evidence of pathology is present; the goal is "primary prevention", or prevention to keep people in the pre-preclincial (i.e. completely "normal") phase.

[15] Margaret Lock points out that a more sensationalist version of this claim appeared in the *New York Times* in an article about the new diagnostic guidelines, quoting a leading researcher to say that "Dr. [Paul] Aisen says he foresees a day when people in their 50s routinely have biomarker tests for Alzheimer's and, if the tests indicate the disease is brewing, take drugs to halt it" (Kolata 2010; cf. Lock 2013b:96). German media did not report on the new guidelines as prominently as American ones.

To draw out the vision of cognitive health the working group and other researchers are advocating, I want to return to the model that was presented in the memory clinic's journal club, a slightly altered version of which the working group cited in their review of the evidence for relying on biomarkers.

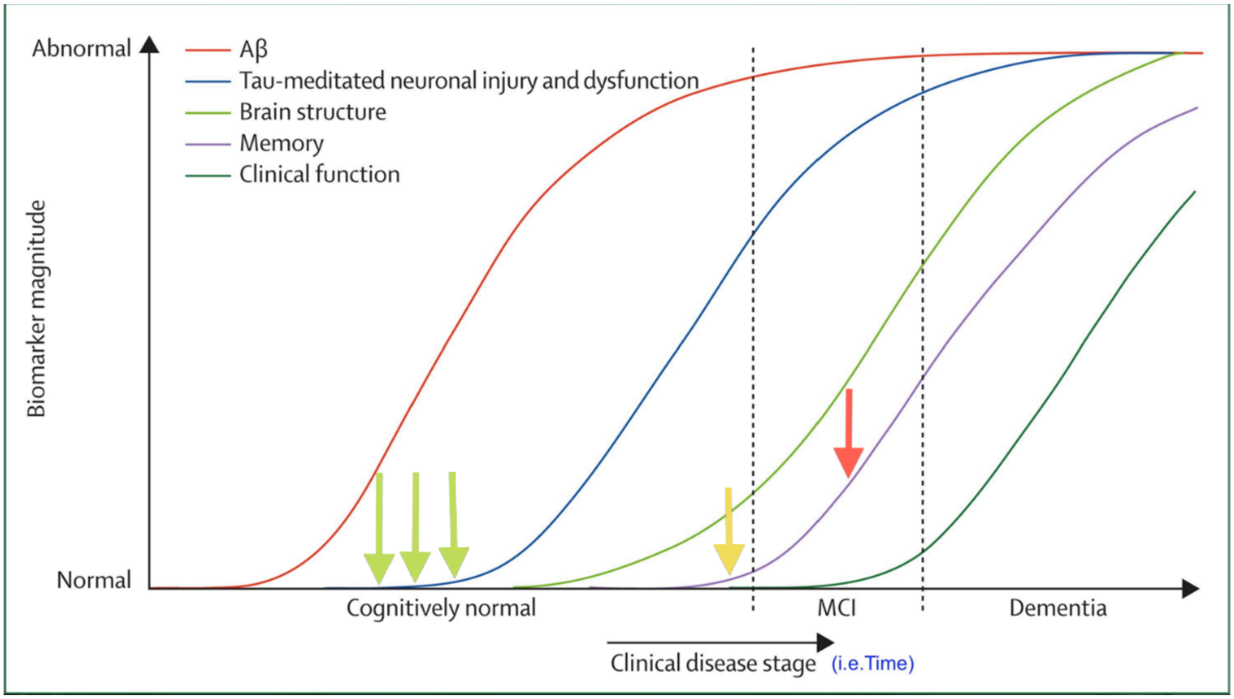

Figure 17: Biomarker Progression with arrows

(Source: modified from Jack Jr. et al. 2010)

Preventing cognitive decline (purple line) is the goal of treatment. The MCI trial that Mrs. Kleinerts could not participate in was based on the reasoning that if memory loss could be stopped before it reached the dementia stage, it would hopefully stabilizing somewhere in the MCI stage (red arrow). At this point, slight symptoms of memory problems would have started to appear. By arguing that Mrs. Kleinerts should be included, physicians were pushing the norm for her memory down the purple line towards "cognitively normal" even further, though it stays in the zone between "cognitively normal" and "MCI" (yellow arrow). The introduction of the category “preclinical” makes it possible to push patients out of this liminal zone, to “cognitively normal”. By intervening when the amyloid biomarker (red line) begins to rise, with a treatment intended to arrest that presumptively critical step in the disease pathogenesis, the goal is to get as close as possible to a standard of cognition that is “normal” (green arrows). In so doing, the intervention tries to eliminate all forms of risk—the naturalized risk that attends memory impairments and indicates an increased rate of conversion to dementia, and the currently still potential risk that researchers suspect exists, which clinical trials like the A4 are trying to make real.

“Cognitively normal” coincides with the cognition that someone has decades before they develop signs of dementia, for many in their 50s or early 60s. Interpreting “disease” in terms of abnormal biomarkers, illness is a line you might step over more than a decade before you cross the Rubicon of symptoms. Rather than being sick only when your memory slips noticeably, you are already sick when invisible processes are attacking the function that you have in middle-age. The goal is never to reach the level of function you would have had at 75 had the disease developed unchecked. Instead, treatment would aim to keep your cognition around the level you had in your 60s, remaining as free of decline (i.e. actual pathological processes, not the inevitable slight losses of age) as possible, and as free of tendencies towards decline (i.e. of risk towards pathology) as is attainable.

Risk as Normativity

But why must not only actual decline, but ideally as much risk as possible be eliminated? In other words, why is it reasonable to make what is currently only potential pathology into actual pathology termed ‘risk’, thereby opening up a new field of intervention? I propose that treatment based on risk is based on a fundamental rationality of biomedical intervention, one identified by Georges Canguilhem in his writings from around the middle of the 20th century.

From the perspective of biomedicine, treating risk is necessary to ensure that patients remain “healthy” absent any pathology, which in this case means “cognitively normal”. However, as Canguilhem reminds us,: “strictly speaking, a norm does not not exist” in any objective sense (1989:77). Norms are determined by a collectivity choosing some state of the organism that will function for them as “the norm”, reflecting social judgments about the relative value of different forms of life, which are categorized into “normal” and “pathological” kinds.

Canguilhem defines the norm of health as follows: “Being healthy means being not only normal in a given situation, but also *normative* in this and other eventual situations” (1989:196, emphasis added). For Canguilhem, the ability to be normative means being able to generate new norms of life in the future: “What characterizes health is the possibility of transcending the norm, which defines the momentary normal, the possibility of tolerating infractions of the habitual norm and instituting new norms in new situations…Health is a set of securities and assurances (what the Germans call *Sicherungen*), securities in the present, assurances for the future” (1989:198). In sum, what distinguishes health from merely conforming to norms is that health is capacity *in potentia*, a potential to continue shaping one's form of life. Disease, by contrast, limits normativity by reducing one’s ability to live different forms of life in a double temporal register: It makes it difficult to fully act in the present, and since one is already operating at one’s limit it becomes impossible to absorb any additional stresses in the future. Thus, Canguilhem sees the goal of biomedical treatment in aiming at restoring the patient to normativity, to enable her to maintain the norms of her life and remain open to a future that might involve new norms (cf. 1989:196-201).

The imaginations about treating individuals at risk for dementia sketched above seem to me to also aim at normativity. In the functional state that vaccine treatments would try to achieve, individuals are still largely able to be normative: They generally are cognitively highly capable, able to rely on well-developed judgment and lengthy experience.[16] In this age range, individuals typically remain able to function in their chosen occupations and relationships; as I described in the previous chapter, people often came to the memory clinic to get screened for dementia when they noticed they were slipping at work. They also retain their accumulated relationships and memories, and are often at or near the apex of their social and professional status. Finally, they are nearing, but still avoiding, some of the mental debility that is "normal" for older age. Against this "normal" state stands the pathological figure of dementia as a terrible disease threatening the aging populations of nations with high life-expectancy. The most devastating consequence of cognitive debility is generally seen as the loss of individual memory and thus identity. From a biopolitical perspective, the costs are projected to be staggering: By 2050, two million Germans are expected to have dementia, at a cost a major insurer pegged at 450 billion Euros a year.[17]

Taking dementia treatments as an instance of the general case of treating risk (for chronic disease like high cholesterol), I argue that, in terms of its logic, treating "risk" is also an attempt at achieving normativity. Treating risk is a strategy that tries to remain open to the future. Even without an entirely clear understanding of the processes of disease, treating based on naturalized risk (i.e. as if a disease process were already underway) means that in theory, the individual treated will be more biologically fit in the future than she would have been otherwise.[18] Seen in this light, the dictum "illness is a line you cross" (Dumit 2012), means that risk calculations

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[16] For the importance of "executive judgment" to the history of the psy-sciences, see Lakoff (2000).

[17] See Weyerer (2005).
See also "Demenz, Herausforderung für alternde Gesellschaften", Die Welt, 29 December 2011. Available at http://www.welt.de/13789310.
Mielke, Jahel. "Der teure Fluch des Alters", Der Tagesspiegel, December 13, 2011. Available at http://www.tagesspiegel.de/wirtschaft/demenzerkrankungen-der-teure-fluch-des-alters/5956350.html

[18] Treating risk is based on population-level judgments, so it is epistemologically different from the notion of a "classic" treatment situation in which the physician treats to help a patient get "healthy", orienting himself to the needs of the patient rather than biomedical norms. Nonetheless, the goal of helping patients achieve normativity is the same. This leads to paradoxical situations, like that in which those who were not going to get sick anyway (something which is impossible to predict) would not benefit from treatment; but since its impossible to know whom treatment will help, everyone is encouraged to take the gamble with the better odds of staying "healthy".
Many have criticized this form of (evidence-based) clinical practice, which seems to privilege the disease entity over the patient. Some call for a change to biomedical practice so that doctors would be less beholden to statistics than to the "needs" of their patients; to try to ensure the normativity of individual patients, rather than normativity thought on a kind of population scale.

identify the point at which biomedicine should intervene to maximize the body's potentiality to adapt to insults from physical environment, lifestyle, aging, etc in the future.

However, Canguilhem's point is not simply that norms are judgements about what count as normative forms of life. It is also about how norms become effective. He says that the norm "plays its role which is to devalue existence by allowing its correction…the concept of health is not one of an existence, but a norm whose function and value is to be brought into contact with existence in order to stimulate modification" (1989:77). In other words, Canguilhem is advocating that a norm is less like a fixed standard that should be realized, and more like an vision that incites change, triggering intervention. 'Stimulating modification' suggests that shifting norms will continue to be effective through eliciting attempts (by patients and physicians) to make individuals conform to the new norms. Significantly, it seems to me that there are not necessarily any internal limits on health if it is defined as 'normativity'. In fact, this seems to be what is happening with risk. Dumit points out that since health is based on a treatment threshold determined by trials, "in many cases, the line just keeps moving" (2012:116). Thinking in terms of preventive medicine, it is reasonable to expand treatments so that the *largest possible reserve* of normal function against disease exists. Thus, by making even virtual risk "real", one can presumably assure as much health—in the sense of normativity—as possible.

Early Optimization

I have argued that underneath imaginations about the future of dementia treatments, one can see an attempt to assure that patients can continue living their present form of life and remain able to "adapt" to new demands in the future. As I showed above, the "norm" that these treatments orient themselves to is that of cognition in late-middle age. By trying to maintain this level of cognitive function among patients as long as possible, I suggest that these treatments are in effect instituting a new norm, which represents an optimum. It is an optimum in the sense outlined above, that individuals have fully developed selves, relatively high status, an extensive network of relationships, and are still able to be very productive in their profession.[19] It is also an optimum when compared with the decline that is assumed to inevitably follow on the heels of naturalized risk: by producing a functional or physiological state that is higher than it would be if degeneration were left unchecked, individuals' capacity is optimized, which is to say that individuals are enabled to use their capacities as effectively as possible rather than losing them to disease.

In terms of temporality, the reasoning behind approaches to reducing dementia risk assumes that the earlier medicine can intervene, the more function can be preserved over the long run. Interventions do not seek to turn *back* the clock, but to *stop* the presumed march of (pathological) time. These interventions in the beginning stages of physiological processes that are imagined to tend towards pathology are well in advance of the existence of disease, arriving at the scene of the crime peremptorily. Interventions explicitly try to shape the future, by an inverse relationship between the moment of intervention and the magnitude of the result: the earlier one manages health, the more impact one can have.[20]

I argue that imaginations about the future of interventions into dementia treatment are being driven by a logic of "early optimization": through intervening as soon as risk can be detected, an optimum of function is secured. Because dementia vaccines are, as the authors of the working group suggest, themselves an instance of the general conceptualization of risk in biomedicine, I suggest that early optimization is also a way to describe general biomedical logics of treating risk.

Two points are important about early optimization: first, logic of early optimization follows from the efforts of biomedical practice to help patients be normative. Another way to put this is that medicine aims at the highest level of functioning just outside the borders of objective pathology. But when pathology is redefined as risk, this ultimately means that medicine is

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[19] This "optimum" is not the "absolute" optimum from a neurobiological perspective. Many have suggested this would be in someone's 20s, though others have placed it later (Finch 2009; Hedden and Gabrieli 2004).

[20] Since this is a risk paradigm, note the convergence of health benefits and biocapital: the earlier you invest in your health, the bigger the payoff, presumably in terms of actual health, but certainly in terms of surplus health.

pushing towards a state of zero risk, where disease processes have not begun to creep into the body, and molecules are moving through the “normal” pathways drawn in textbooks of physiology.[21] This means both that risk which has been naturalized is treated; and that research tries to make risk that is virtual into “real” risk. To return to biocapital and Dumit’s comment that “the line just keeps moving”, according to my argument there is *necessarily* always a justification to identify more risks that can be treated, because biomedical intervention tries to eliminate threats to patients’ normativity.[22] Thus there is a kind of convergence between the logic of treating risk and the logic of biocapital, the latter of which expands indications for intervention to generate profits: the earlier you invest in your health, the bigger the payoff, presumably in terms of actual health, but certainly in terms of surplus health.

Second, the contours of what is ‘optimal’ in biomedical practice depend on the interaction among norms that emerge out of a situated context, with its own set of problematizations, meanings, strategies, and aims. Biomedicine is one site among several others—albeit a powerful and privileged one—that co-produces norms for contemporary forms of life. In this terrain, dementia treatment aims at a norm that is discerned in response to concerns about the loss of the

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[21] When I say that medicine aims at optimization through risk, I am not claiming that this is a variety of “classic” medicalization. Peter Conrad defines medicalization as "a problem […] defined in medical terms, described using medical language, understood through the adoption of a medical framework, or “treated” with a medical intervention" (2007:5). Certainly, as Conrad says, "the line between what is deemed a necessary treatment and what is an enhancement can be blurred and shift as definitions of a disease change" (2007:72). Both of these claims would be adequate descriptions of the present case, where "normal" cognition becomes "(pre-)pathological" because of risky biomarkers. That is to say, an area that was not previously under medical jurisdiction now is, enabled by a shift in norms. But for my argument, it would not be enough to simply describe the process of expansion. Nor is it enough to point to the "shifting engines of medicalization”, like the changing role of consumers, managed care, or the fact that the market for medical treatments has expanded in terms of sheer volume through more marketing and advertising (Conrad 2005). I am trying to argue a different, more sociocultural point: to ground expansion on the one hand in the *logic* of medicine, and on the other in the confluence of that logic with shifts that have oriented medicine towards *value generation* and rationalities of risk. Moreover, my claim entails an epistemological point: risk and optimization are bound together by a logic that is in fact the *opposite* of what would be expected according to classic theories of medicalization. It is not the case that an optimum is determined, and anything that threatens it is called “risk”, justifying the expansion of treatments. Rather, in biomedical rationality risk is logically *prior* to the optimum—one might say that the optimum is the remainder of risk reduction (cf. Canguilhem 1989:209).

[22] Though I cannot develop this here, it seems to me that an imperative to treat exists whenever normativity is not present—which can, of course, include subjective complaints. The necessary—and single—requirement for biomedical treatment seems to be that some kind of pathology can be established. In other words, because medicine is a practice aiming at normativity rather than objectively fixed norms, it might be said to have a theory of “inappropriate pathology” (whatever imperils normativity), rather than of “appropriate normality” (those norms that should be instantiated). Thus also physicians generally struggled to find sound reasons why they shouldn’t pimp someone’s brain.

self, relationships, productivity, social demographics, and living “well” into high age. In short, the optimum that biomedicine tries to achieve is shaped by those social fields in which biomedicine is situated.[23] Therapeutic advances and research identifying new “risk factors” for disease are themselves products of worlds in which some forms of life (and not others) are valorized, at the same time as they reaffirm the worlds out of which they came.

Conclusion

I have argued that over the past three decades, dementia has coalesced into a disease of risk, produced in part by research about neurodegeneration, the institutional form of the clinics in which dementia is treated and clinical trials are offered, the role of those same trials in shaping the disease, and the pressures of biocapital in reconfiguring practice and epistemics. The concept of early optimization builds on accounts of how biocapital affects the workings of biomedicine (cf. Sunder Rajan 2006, Dumit 2012), and of the observation that contemporary biomedicine seems to aim at optimization (cf. Rose 2007). To these accounts, early optimization adds firstly a specific attention to the rationality according to which biomedicine intervenes; and secondly a focus on to the contingent situatedness of biomedical practices, which are responding to the specter of Alzheimer’s Disease that robs individuals of their self-reliance, productivity, and identity.

At the same time, early optimization relativizes claims that contemporary biomedicine is somehow discontinuous with earlier forms of biomedical practice. Historically speaking, treating risk is based on a different set of practices and technologies than “traditional” biomedicine that ostensibly treated symptoms. However, I would argue that it is very much conceptually

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[23] Dementia treatments are a useful site to work out some of this logic. Though the logic is in essential points similar to other interventions like treating risks of high cholesterol, cognition has a different valence than other conditions. The figure of dementia as a terrible disease threatening the populations of nations with high life-expectancy might be important here. Though it’s good to retain as much function as you can, its even better to stay as far away from the specter of Alzheimer’s as possible. If the risk factors for heart disease are treated, heart attacks leading to disability, death, or treatment costs are prevented. When risk factors for dementia are treated, the loss of selves and of unsustainable numbers of dependent elderly people are prevented and individuals can remain productive. The point is that preventing dementia shifts the perspective on the stakes of treating risk.

continuous with earlier forms of biomedical practice. Risk appears to further a form of knowing that Canguilhem points out began with the first tool of modern biomedicine: “The invention of the stethoscope and its use in auscultation as codified in…1819 led to the eclipse of the symptom by the sign. A symptom is something presented or offered by the patient; a sign, on the other hand, is something sought and obtained with the aid of medical instruments” (2000:141). Once diagnosis departed from the symptom that was perceptible to both the patient and to the doctor in the here and now, diagnosis began to rely on techniques and technology to access hidden disease, which shifted the definition of pathology into a different epistemic register. The sign, or the technologically mediated observation of the patient, widened the gap between the disease that was visible and the disease that was present despite being invisible. It was Foucault who most showed that this gap is mediated by the clinical gaze, a fusion of epistemology and practice in "opening up a few corpses" in the reorganized spaces of the hospital, part and parcel of biopolitical efforts of population management (Foucault 1994, 2007). But in addition to the new epistemic register, the clinical gaze added the temporal dimension, because it tracked disease as it moved through the body, to gather up the traces it left in the organs. The clinical gaze made disease into a progression, which can be arrested or abated with therapy, but its signs cannot be thought without temporality.

Temporality is the key aspect of risk, often depicted as a form of *incipient* pathology; precisely the *impending* quality of disease makes it seem like there is something fundamentally different about risk. Nonetheless, I want to suggest that risk is an elaboration of the “sign”, a different form of the clinical gaze. Its epistemology emerges out of clinical research that correlates physiologic changes to anatomic changes and disease outcomes, so that the temporal progression of the disease is installed at the very heart of the sign (the physiological parameter or biomarker) itself. In other words, the sign can *become* disease because disease is a *process*,[24] and

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[24] Medical students are exposed to these processes at great length in courses on pathophysiology, in which, at least in my own training, the key thing to know is always “what is the mechanism?”, i.e. how does pathology develop, and at which stage which symptoms appear.

a sign is a moment in the developing pathology. Risk names physiological states that are along this trajectory towards pathology (regardless of whether the endpoint is ever reached). A potential pathology—a risk—is in some sense *already* real, since the process of disease is underway. There thus seems to be a compelling warrant to naturalize all risks that have been scientifically established, so that one can act on their basis as facts; and to identify all "virtual" risks, which are moments in a developing disease process that biomedicine does not yet have the evidence to firmly categorize.

Thinking about disease as a process was made possible by the development, in the first half of the 19th century, of what Charles Rosenberg calls "specific disease entities", categories of specific ailments that are thought to work according to a particular mechanism and are accompanied by characteristic symptoms. He writes that a "legitimate disease had both a characteristic clinical course and a mechanism, in other words, a natural history that—from both the physician's and the patient's perspective—formed a narrative. The act of diagnosis inevitably placed the patient at a point on the trajectory of that predetermined narrative" (2007:19). In effect this gave primacy to the ontological status of the disease over the symptoms (put differently, the symptoms became the "dependent variable" to the "independent variable" of disease). The development of diagnostic instruments like the thermometer or blood chemistry from the second half of the 19th century onward solidified this change, because it reinforced the notion that one was identifying a specific, independent disease entity through technical diagnosis. In other words, one can see the development of diagnostic instruments as furthering the objectivity of disease, and of the primacy of its course as an independently existing thing rather than an epiphenomenon. The corollary, however, is that the symptom can also come to be seen as incidental to the disease.

Thus, claims that recent shifts in medicine have ushered in a *new* stage of optimization are overstated.[25] The changes that have take place in medicine, many of which are oriented around risks, are not a departure from a medicine that was in the past about treating objectively pathological diseases to a medicine that is interested in optimization of good health. Rather, the shift to treating risk in the present may well continue biomedicine's long-standing commitment to establishing normativity. Through knowledge produced by large-scale statistical analyses, driven by the imperatives of biocapital, it may be more accurate to claim that the rationality of risk is not novel, but does give a different vantage point on a basic aim of biomedicine: the tendency to optimize is deep within biomedicine itself, enabled and potentiated by the structural conditions of 21st century biomedicine.

My argument has been about what I see as the *logic* animating contemporary biomedical practices of treating risk. It does not matter that many physicians and scientists question the amyloid cascade model, and many of those who accept the model believe that there are other important aspects about the development of AD that remain poorly understood. Nor is it important that if anti-amyloid vaccines were effective, perhaps the best that medical science could reasonably achieve would only postpone AD until most people have already died of other causes, with their memory declining only moderately. In other words, I am less interested in the material results of therapies than in how the best use of these technologies is imagined.

These imaginations of treating risk, I suggest, also speak to enhancement. To repeat familiar terrain: medicine's fundamental commitment is to treating pathology. Enhancements, by definition, intervene when pathology is absent. It would seem to follow that biomedicine and

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[25] Similarly, the social world of biomedicine is also, perhaps, not fetishizing control for the first time: the notion of an individual in possession of her powers—cognitive or otherwise—fits with neo-liberal discourses about individuals as necessarily flexible and always adaptable to their situation, in order to take full responsibility for themselves (Martin 1992; Rose 1996). This vision of the potent self also converges with the breathless undertone of "emergence" that is sometimes lurking in writings claiming that a new era of self-control and design has been enabled (Clarke et al. 2003). However, the importance of the present moment should not be overstated. More important than these congruences with recent history are older notions a "self" as an individualized, bounded, self-contained unit in control of her physical, cognitive, and affective processes. The normativity medicine has aimed at is in a relationship with the wider social field in the West, in which control over one's capacities and the continuing ability to use them at the highest level possible has been valued for much longer than recent neoliberal history.

enhancement have two different goals, a deep distinction most definitions of enhancement point towards. The shape of research and treatments for dementia stay true to biomedicine's loyalties, at least when viewed within a framework of biomedical rationality. Nonetheless, I have tried to briefly suspend this register's hegemony over defining the norm, to make clear that because treating pathology takes the form of eliminating risk to the point of instituting a norm of optimum functioning, biomedicine seems to narrow the gap separating it from enhancement. Biomedicine does not thereby *become* enhancement: at the very least, there is a temporal difference: using enhancement technologies improves you beyond your present norm; treating risk improves you beyond a future norm (assuming you actually would have gotten sick). Treating risk makes what is a probability into a naturalized certainty, calling pathology out of the future, to stand in need of redress in the present. This is not "enhancement"; but it is not treatment of evident pathology, either. It is in a third space, between the ideal-type of a biomedicine that cures suffering, and of a technology that improves what is good enough. A definition of enhancement based on ideal types is bound to implode when it tries to make sense of practice, which is exactly why definitions of enhancement grounded in medicine are slippery and unsteady. Norms separating pathology from optimization are typically distilled out and reified as if they indexed separate kinds of reality. Of course, there is a very real difference between someone who has dementia, and that same person in their 20s. But the fact that two clear-cut instances of a distinction exist, and perhaps even frequently obtain, should not mislead us into thinking that the fuzzy cases are the aberration. Rather, it is the other way around: fuzzy cases are the norm, out of which neat cases have been abstracted (clean cases that, in a recursive fashion, help one to crystalize the "essence" of confusing cases).

I have tried to show how biomedicine and enhancement are connected through the concrete fears and hopes through which technologies of curing operate, and through which rationalities of treatment are established and enacted. The connection is ambiguous, to be sure; but this is because the link between treatment and improvement is shot through with tensions and paradoxes of practice, a messy reality out of which widely-held ideal-types are abstracted. Enhancements, in sum, are situated problems, in that their ethics are worked out through practices and logics of optimization and cure, of disease prevention and profit maximization, and of everyday hopes and fears.

Coda

In this dissertation, I have conceptualized a way to ethnographically study the ethics of technological self-improvement in the contemporary moment. In the coda, I want to draw out some of the implications of the preceding chapters. I am not interested in making proscriptions for what is "right" or "wrong", in part because thinking in terms of situated problems addresses a (set of) dilemmas and questions at hand, rather than "ethics" in general. Rather, this work is intended to be propaedeutic to asking clearer questions about enhancement; as Isabelle Stengers has suggested, its aim is to "slow down" thought to "create a space for hesitation regarding what it means to say 'good'" (2005).

One reason to slow thought is that is often precisely the urgency of finding a quick solution that leads to a reliance on familiar and unreflected patterns of thinking. Undoubtedly prompt answers are necessary in many cases. But if one believes the historical record, surely in this case thought can be slowed down: for decades we have been standing on the cusp of an impending technological revolution that would remake society and humans, a dream variously claimed by molecular biologists in the early decades of the 20th century, pharmacologists in the middle, or geneticists at the end of the last millennium.

Writing about the ethics of humanitarian intervention, Didier Fassin advocates a form of critique that is "supported by the lucidity and reflexivity of actors…without abandoning the autonomy of a sociological and anthropological approach that strives to explore areas to which they [i.e. the actors] are blind" (2011:246). He draws on the philosopher Michael Walzer's reading of Plato's allegory of the cave to heuristically characterize two positions: what he calls a "lofty radicalism" outside the cave, in the "'blaze of truth'", and "readily complacent understanding" inside the cave of "'contingent truths'" (2011:245). Fassin opines that the role of anthropology can be to further a critique at the entrance to the cave, "a critique that includes us [social scientists]—individually and collectively—and not one that leaves the social scientist alone outside the cave" (2011:246). I find this useful to emphasize the anthropologist's double-engagement of analyzing a situations' logic while also reflexively engaging it as someone who inhabits the same world(s) in which that logic operates. Whether Fassin's claim is novel or not, I take him to be advocating for critique that works inside lived worlds rather than standing outside of them; one is not outside the cave basking in the sun, nor inside complacently stumbling in the dark, but is trying to let more light into the metaphorical cave with the help of funny mirrors that are anthropology's method of denaturalizing and situating, reflecting the familiar in strange ways.

I suggest that the assumptions denaturalized by an account of enhancement in Germany should be taken seriously despite being 'culturally specific', and informed by what can can easily appear to be an overly "conservative" debate. Compared with other countries, the debate is probably conservative, especially when compared with the unmarked US. However, Margaret Lock's (2001) account of a long-running public debate about brain-death in Japan is instructive here. An easy assumption about that debate would be that the Japanese debate was triggered because of a "traditional" culture that is opposed to technology or biomedical innovation. But Lock argues that in fact the Japanese have a complex relationship to "modernity" and "tradition", which is not straightforward enough to explain resistance to brain-death. Instead, there are several concrete reasons: most consequential was the history of scandals around organ transplant in Japan, in which doctors appeared to remove organs in a highly unethical manner (e.g. without obtaining consent). There was also disagreement within the medical profession itself about the desirability of transplants, and many professionals recognized that the infrastructure to coordinate transplants did not exist. For many family members, it was difficult to believe that a warm body was really dead, and families needed time to accept that their relatives would never "wake up again". There were uniquely "cultural" concerns held by some opponents of brain-death, like respect for ancestors or the wholeness of the body, but Lock argues that these groups were actually much more concerned with basic rights of individuals and with questions of justice. Lock shows how transgressions took place, which made some members of the public (professionals, doctors, intelligentsia, etc) aware that brain-death raised issues worthy of broad consideration, and galvanized them to push for public debate. The point I take from Lock's account is that the fact that a debate is carried out in a culturally specific terms does not render it irrelevant elsewhere. The *questions* a debate raises can be distinguished from the *conclusions* of any given debate; the ethnographic project of making strange "that which is assumed to be natural, normal, and without culture or history" (ibid.) can thus become productive for other, unmarked, locations.

In the case of enhancements, an ethnographic attention to the practices and discourses in Germany denaturalizes several key assumptions about enhancements: First, it troubles the ostensibly obvious presumption that "enhancement" is synonymous with a desirable "improvement". Enhancement may undercut self-development and wellbeing, and may be a sign of being insufficient to reigning norms rather than going beyond them. Second, the practices of users unsettle the notion that the appropriate ethical yardstick for judging these technologies should measure the extent of 'improvement', or how comparable this type of self-betterment is to more traditional forms. In fact, 'enhancement' seems to be about self-realization, which operates according to a different moral economy. Third, contemporary biomedical practice and discourses about health, which at times make norms of pathology and improvement almost indistinguishable, entail that these judgments are not only grounded in firm biological parameters, but are inextricably social; this insight also focuses attention on how those boundaries are drawn.

From Potential to Actual I: Self-Creation

But to move past denaturalizing familiar suppositions, norms, I want to briefly use my ethnographic data to raise a different set of questions about the ethics of enhancement, which are are not typically posed. Two areas are important here: creating oneself through technology, and the biopolitics of medical improvement. As I argued above, human "nature" or identity are not primarily at stake because humans' "molecular basis" is under threat, but because habitual ways of giving form to the human being have been called into question. With "form" I do not mean a "nature", but something similar to Rabinow's (2003) invocation of the Greek word "anthropos". Form gestures towards the complex production of subjectivity, physical capacity, and relationality through social practices and material conditions. A particular human form typically functions as the basis for ethical judgments, which therefore also enables the possibility of a breakdown in understanding that form. Throughout the dissertation, I have tried to understand how one particular "form" is produced in Germany, and used this to sharpen the questions at stake in pharmaceutical enhancement.

I propose that one vantage point (among others) on these stakes is to examine the conditions *under* which and the technological interventions *through* which humans are given form, in other words their transition from "potential" to "actual". In Germany, many presume that individuals have a set of capacities that can best be developed in relative freedom from external influence. Self-formation (*Bildung*) is an aesthetic project, rather than an instrumental one. It follows that individual's capacities can—but do not need—to primarily be oriented towards some kind of productive activity. Yet, contemporary economic arrangements and political rationalities seem to figure everyone from schoolchildren to workers as self-caring and self-maximizing, and demand that individuals orient themselves towards productivity. Pharmacological enhancements seem to enable individuals to meet these inordinate demands, but critics claim this comes at the cost of individuals' self-formation and self-actualization.

This (largely critical) voice in the debate in Germany presumes certain potentials of humans: that those who are younger have the "most" potential and thus deserve the greatest protection; that potential has its own logic of unfolding (perhaps an idea of an "un-mediatedly" developing self); and that the potential inscribed in the "natural" biological capacities should not be intervened in. This perspective values the individual and her "autonomous" self-development, so it attends to the conditions under which actuality is achieved.

A main difference between critics and users of pharmaceutical enhancements seems to be in how they view the consequences of contemporary conditions for actualizing oneself: the former seem to think that current neoliberal economic arrangements threaten the realization of potential, while the latter are working within those logics, trying to integrate them into their own self-shaping.

Users appear to acknowledge an idea that has been central to Western thought, that humans can "overcome" their own limits. Users took their biological "nature" seriously, though for them intervention was a way to support nature or help to "reveal" it. They saw their potential as being less inchoate, something that one could seize (rather than hoping for its development, or relying on unsure means to bring it about). As I showed, their view of their self-fulfillment incorporated thinking of themselves in terms of 'self-maximizing', which probably made it possible for them to view their biological capacities flexibly.

One could say that these users were willing to consider their "nature" as a plastic rather than fixed resource. To put this in slightly different terms: In chapter 3, I suggested that one could ask what ethical reflection would look like if it did not espouse a necessary identification between the kind of subject one believes oneself to be (using Foucault's inflection of the terms, one's "humanism") and the rationality according to which one thinks about and intervenes in the world (one's "enlightenment"). Users seem to be negotiating this boundary, committed to intervening in the world through technology (their enlightenment), while open to an alternative view of their subjectivity (their humanism). Paradoxically, it seems that by viewing their "nature" less rigidly, users could see their potential as being less incipient: an "almost real" potential could be guided to realization, which required their "nature" to be more open to intervention.

What I find useful to think with here is that users do not take a common-sense "given" for granted, where the given *prima facie* sets limits on biological intervention.[1] Posing the perspective of users against critics might raise the question of adjudicating which side is "right". However, recuperating Foucault's notion of "enlightenment" as above all being a *reflexive* attitude towards the present, I want to take the difference in views between users and critics as an invitation to think about whether and how to guide the development from potential to actual through technological intervention. By "reflexive" I mean firstly acknowledging that ways of being a self and of living "ethically" are contingent, and then secondly tracing how they are produced.

I suggest that this opens up different questions about the ethics of pharmaceutical enhancement: as chapter 4 showed, there is a close affinity between user's attempts at self-fulfillment and political discourses about self-maximizing and self-caring individuals. In fact, this ethic of maximization is difficult to live up to, and emphasizes a kind of generic accumulation of "good" experiences rather than an individual shape to self-fulfillment. It seems to me that the history of this form of the human—a pharma-enabled, self-controlling subject—makes it possible to ask whether self-fulfillment, or its counterpart notion of authenticity, should be the guiding ideals for evaluating the ethics of pharmaceutical enhancement. A more fruitful set of questions might be about what kinds of subjectivities are desirable (a classic question of ethics); which subjectivities can be technologically attained; and how these technologically-formed selves can recognized.

Thinking in terms of 'potential to actual' could also direct attention to the *conditions* of self-development, which are collective ethical questions: self-actualization along one's own vision of self-fulfillment is an expansive and ambitious ideal. Its realization would seem to require political intervention somewhere between the two extremes of on the one (utopic) side

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[1] As I pointed out in chapter 3, proponents of enhancement like transhumanists simply have a different humanism (one in which the self is characterized by its tendency to self-overcome), and enlightenment (distinguished by "rational intervention"). However, like critics they seem to view a particular kind of humanism as necessarily entailing a type of enlightenment, and vice versa.

actually enabling everyone's autonomous *self-fulfillment*, and on the other side of failing to live up to shared political commitments by invoking the "*autonomy*" of, and thus responsibility for, self-fulfillment. Here, questions about contemporary economic arrangements could re-enter the picture, as contingent arrangements with troubling effects rather than as firm anchors to orient ethical action and self-formation. In short, pharmacological enhancement might be seen less as a solution to the question of how to achieve self-realization, than raise questions about what *kind* of self-realization could be achieved in particular circumstances, using particular technologies.

From Potential to Actual II: Biopolitics

Foucault famously argued that once death ceased being the tool through which life was governed, death became the limit of political intervention. Thus, biopolitics was born around the 18th century, whose "highest function" was "to invest life through and through" in the service of the state (1990:139). At the same time, Foucault points out that individual biological life and claims to well-being became *central* to politics (cf. Arendt 1958). Though managing life is no longer the prerogative only of sovereigns, the tension between maximizing life and "letting live" at the heart of biopolitics has persisted: In Germany as elsewhere, biomedicine is on the one hand a key site through which individual well-being is secured. On the other, it is thought to enable and solidify heightened norms of performance, progressively expanding its purview by "medicalizing" or "pharmaceuticalizing" healthy individuals into need of treatment, or by performing health-improvement services as "Wish-[fulfilling]-medicine" (*Wunschmedizin*). In short, one can see the tension in biopolitics displaced into biomedicine in the form of ambiguity around whether biomedicine restores pathology, or improves on "normal" states of health.

Ian Hacking casts some light on how this ambivalence might operate. Giving a history of the word "normal", he argues that it originally derived from physiology. There it referred to the "normal state", from which pathology was viewed as a quantitative deviation (cf. Canguilhem 1989). Auguste Comte, so Hacking claims, was essential to transforming and popularizing the meaning of normal, by claiming that it transcended the “ordinary, healthy state”; as Hacking says, it is the state “to which our energies are tending” (1990:168). Thus, Hacking sees the “normal” as referring to both the “ordinary” or “average”, and the “ideal”. In a slightly different inflection, he terms this as “two ideas, one of preservation, one of amelioration” (1990:169).

The last two chapters speak to this duality. As I showed, the threat of Alzheimer’s dementia casts a long shadow in German public discourse: it robs individuals of their personality and memory, is seen as an increasing burden on families and health insurance, and remains incurable. To stave off the decline, researchers and pharmaceutical firms have been moving clinical trials of vaccine treatments for dementia to earlier and earlier points in the disease progression, hoping to halt neuro-degeneration. By moving to earlier stages, these trials attempt to control risk. Specifically, trials aim at securing a (neuro)biological state that is as free of decline as possible (i.e. actual degenerative disease), but also as free of *tendency* towards decline (i.e. as “low risk”) as practicable. This logic of intervening in “risk” takes signs of potential decline and naturalizes them into moments of actual disease progression that must be arrested. The goal is to allow individuals to retain as much (ideally all) of their capacity as they can, and to prevent them from sliding into decline. This fits with the rationality of biomedical intervention, which tries to secure a reserve of (physiological) capacity to adapt to future stresses.[2] What is central here is that the logic of guarding against any decline seems to concurrently have two ends: to maintain the “ordinary” or “normal” level of capacities that someone has; and to secure her highest level of function into the future, a kind of “optimization” of her capacities that works against the impending decline. Going back to Hacking’s observation, one can see how norms of risk—the threshold of intervention—seem to reflect the duality of norms: normal as both “ordinary” and “ideal”. Crucially, then, attention must be directed to the practices and discourses through which this duality operates and becomes effective, re-shaping what counts as “health” and “well-being”. In the case of dementia, I argue that duality can become efficacious by linking up with

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[2] Canguilhem called this “normativity”, which is the ability to remain open to the future and form “new norms” for one’s life. See chapter 6.

fears about the loss of self, individuals' waning productivity in late middle age, and the hope and hype of clinical trials to transform dementia into a "chronic disease".

Importantly, I think enhancements clearly pose these same questions about how the duality of norms becomes effective. While norms' doubled quality often remains hidden in biomedical practice, enhancements reflect this tension in their definition: enhancements are (typically *medical*) interventions that can achieve levels of function above what treatment or restoration would assure. As I showed in the introduction, human growth hormone was one of the earliest instances of enhancement on account of it being a treatment for both children who were short both due to pathology (e.g. malfunctioning protein) and heredity (i.e. who were "normally" short). Prozac became the poster-child of "cosmetic psychopharmacology" because it overshot the goal of "treatment". Current "cognitive enhancers" like ADHD drugs are said to discipline unruly impulses to the point of producing not only 'average' but 'good' students. In essence, one could say that an enhancement is an enhancement when the technology materializes the *dual character* of norms. Thus, and this is my point, I argue that it is not the doubled material effects of enhancements are troubling; rather, enhancements are difficult to categorize in the register of biomedicine because they incarnate an ambiguity between *simultaneously* achieving the ordinary and the ideal that is at the heart of biomedical norms.

Characterizing what makes enhancements problematic in these terms widens the range of ethical issues at stake. During the course of my fieldwork, the researchers I spoke with had different views about whether enhancements were a pressing concern. Karin Lohmann, a public health scholar, pointed to her data about a Berlin university at which 1% of students were enhancing, to say that it was "not a problem", though students' use of other drugs (e.g. pain medications) was. An ethicist, by contrast, thought it was important to realize that "if you say that the way Ritalin is used in practice is largely enhancement, then it's no longer a marginal issue….If the aim is to improve our moral capacity, or to improve our intelligence, or make us immortal—then it's of course an utopic project!" These perspectives highlight how reflection on enhancements could be a question of speculative ethics, impossible to realize; or “marginal” because not enough people were enhancing to make it an issue. But the second quote also hints that enhancements become significant if they are about familiar interventions to medically manage capacity, where unstable boundaries must routinely be drawn.

I think it is most useful to try to understand enhancements in the latter, biopolitical register—about the kind of health and well-being at issue, and which norms and ends they are related to—and to draw out the ethical questions. I prefer this to working within the pre-defined confines of “enhancement”, in which the ethical questions seem so readily apparent. Pharmaceutical enhancements represent new ways that individuals are managing their everyday lives that seem to be carving out a space of non-therapeutic practice; but as I have shown throughout, it is not possible to think “improvement” without referring to how social norms and biomedical pathology have rendered individual capacity insufficient. Indeed, the idea of “enhancement” may be a “red herring”, diverting attention from what I take as the key concerns:[3] on the one hand, these are about how individual performance is imagined, as both deficient and technologically improvable. On the other hand, questions of risk come to the fore. I have showed how improvement can easily be folded into risk logics, which can cause questions of ethics (i.e. ‘is this improvement acceptable’) to disappear (perhaps reappearing as questions of procedure, i.e. ‘how can we make sure that everyone gets this treatment’). Instead, the issues may be about how much biomedical intervention and practice should be based on a naturalized version of risk in which potentials for disease are pathologized. It is as though a fetishization of individual (biological) potential has led to a situation in which anything that threatens this realization must be eliminated; thus a range of risks are made real and treated. These issues can often remain unnoticed, “flying under the radar” of perceptibility, in part because of the powerful ambiguity of norms to both refer to the status quo, and to point towards progress. But not all solutions are technological; somatic intervention clearly has limits. It seems that by pointing to the ideals that

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[3] Thanks to Joe Dumit for pointing this out.

technology is said to be able to realize, one can reflexively interrogate those claims. And as these are matters of bio*politics*, concerns about collective ethics are entailed. Thus, I am arguing against the priority of somatic solutions when political solutions might be more effective; and advocating that it may be more helpful to think of "progress"—of the collective goods that seem worth pursuing—less in technical, and more in political and ethical terms.

In closing, I want to link this reflexive critique to what I see as the task of ethics. An implication of referring to ethics as coming out of a moment of "breakdown" that needs to be situated is that ethics can be thought of along dialectical lines. A breakdown is a moment out of joint, when familiar ways of thinking and acting seem to fail, a rupture in search of repair. It is a "negativity" that asks to be "overcome." Negativities have particular histories, arising out of tensions in the concepts and practices that preceded them. Stated differently, a dialectic moves when its set of tensions—its own "situated problems"—are being worked through. In a dialectic the "resolution" is partial and provisional, a moment in an ongoing process that will set the stage for the next rupture.

In bioethics, resolving an ethical dilemma is typically thought to entail determining which possible responses to a given situation conform to universal principles. However if ethics is thought along dialectical lines, rather than primarily adjudicating which options are most ideal, ethics would discern how these ideals can be realized in practice in a necessarily incomplete form. Hence the purchase of thinking about the important questions of enhancement in terms of a movement from potential to actual: ethics would be reflection on to the unfolding of social life, helping to guide potentials, as it were, toward politically chosen ends.

It seems to me that the costs of misapprehending the task of ethics are high. Claiming that technological innovation is driving novel possibilities and dilemmas sets up a relationship in which we are always peering into the future: typical approaches are to celebrate technology's potential; caution about its perils; or some more nuanced assigning of good and bad parts, and the policy recommendations that should follow. This strategy is pseudo-visionary, because it projects a scenario of society and technology to pronounce judgment on its "ethics". But by locating the ethical concerns in the near (or far) future—when the powerful technology is here and thus the ethical dilemma has materialized—important questions that could be posed in the present tend to be pushed into the near and far future.

These approaches to ethics bear resemblance to what has been called "scopic" regimes (Jay 1988). They peer into the horizon of the (imagined) future, bringing it into sharper focus and projecting its lines backwards. I contend that a more useful way to proceed in grappling with the ethics of biomedicine is to invert one's ethical attention, focusing on the present and following its trails forward. One might use ethnography, in the register of a different perceptual metaphor, as a sonograph of the unfolding future, tracing the sounds of the present echoing forward. The idea, again, is that ethics is less about the seemingly self-evident concerns that can be read off; ethics emerges from a situation as, to stay within the metaphor, what one hears depends very much on one's position, and the same sounds is differently refracted by various surfaces (situations).

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