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Vorwort

In der Reihe "Working Papers kultur- und techniksoziologische Studien" (WPktS) soll die diesbezügliche Forschung, die am Lehrstuhl von Prof. Karen Shire (Ph.D.) erfolgt, dokumentiert werden und NachwuchswissenschaftlerInnen, die eine sehr gute Seminar- oder Abschlussarbeit in einem vornehmlich kultur- und techniksoziologischen Rahmen verortet haben, die Möglichkeit gegeben werden diese in Form eines Aufsatzes einer breiteren wissenschaftlichen Öffentlichkeit zugänglich zu machen. Außerdem soll die Reihe aber auch als Plattform für den inhaltlichen Austausch mit KollegInnen dienen und steht insofern auch (Nachwuchs-)WissenschaftlerInnen anderer Universitäten und Instituten für die Veröffentlichung ihrer Arbeiten offen.

Eine soziologische Betrachtung von Technik zeichnet sich unter anderem dadurch aus, dass das Bedingungsverhältnis zwischen den technischen Artefakten und den sozialen Kontexten, in die jene eingebettet sind, als ein interdependentes - zu beiden Seiten hin gleichermaßen konstitutives - angesehen wird. Diesem Wesenszug soziologischer Perspektiven auf Technik trägt der Titel dieser Reihe Rechnung, insofern von einer kulturellen Einfärbung von Technik sowie - vice versa - eines Abfärbens von technikinhärenten Merkmalen auf das Soziale auszugehen ist. Darüber hinaus schieben sich zwischen den vielfältigen Kontexten der Forschung, Entwicklung, Herstellung, Gewährleistung und Nutzung zusätzliche Unschärfen ein, die den unterschiedlichen Schwerpunktsetzungen und Orientierungen dieser Kontexte geschuldet sind: In einer hochgradig ausdifferenzierten Gesellschaft ist das Verhältnis von Sozialem und Technik von je spezifischen Ent- und Rückbettungsdynamiken gekennzeichnet. Die vorliegende Working Paper Reihe möchte mit jeder Ausgabe einen kleinen Beitrag zur Klärung dieses verschlungenen Verhältnisses leisten.

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Morality of a Pill: Tracing Boundary-making in the Discussion on Cognitive Enhancement in Academia

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Abstract

From medical treatments to recreational purposes, cognitive enhancement increasingly plays a role for healthy individuals aiming to improve their intellectual or cognitive performance. Much attention has been paid on educational settings such as elementary, high-schools, and even undergraduate students, especially in the United States. Yet this paper focuses on the contemporary role, meaning and moral boundaries of cognitive enhancement placed in academia. Clear-cut and simple dichotomies of 'normal and pathological' cognitive functioning, of 'healthy and unhealthy' persons, and the value of 'authentic and altered/fraud' working results ask for closer reflections. Hence, this paper explores the following questions: How do academics draw moral boundaries between accepted cognitive enhancers and non-accepted cognitive enhancers? How can the given arguments be characterized? This paper aims at advancing our understanding of moral boundary work in the discussion on cognitive enhancement in academia by studying the case of several master, PhD students and research members of the Maastricht University community in the Netherlands, as a study for qualitative research.

Cognitive Enhancement in Academia

> The Ritalin helped me in the way that improved my concentration, but of course my concentration was far below the average so then it came a little bit more in the average. But of course is hard to say what is the average. But I'm quite sure I'm not the average. I was always looking around and thinking why people do concentrate so well. (Master student)
>
> But that are not ethical questions like making somebody sick who is healthy. It's not harming the welfare of humans and animal and things like that. (Assistant Professor)
>
> If you wanna develop some level and you do it parts on drugs...its weird - I wonder, why can't you do it without drugs? And then it created in me some pressure: do I then also have to take drugs to be as hard working? (PhD student)
>
> So I have to sign my articles with my name plus 3 doses of Ritalin or 4 bottles of wine. This is ehm...no. This is you! (Assistant Professor)
>
> The day before the deadline. Going back to 'do people get less responsible', I actually had that thought, 'I can just do this, I can just not do my work, just take Ritalin the day before and write a lot'. Because I did write a lot that night, I wrote something like 15 pages on that one night. It wasn't bad work, I got a B on that essay, which would be an 8. You would think if I wrote 15 pages in one night, it would be a bullshit, but it wasn't it. (Master student)

It is actually none of my business, they are adults. (PhD student)

It is said that in ancient Greece students pursuing enhancement of their memory capabilities would entwine rosemary spring into their hair (Cakic 2009: 611). Thus, the use of substances and practices that could be defined as cognitive enhancers is not a new trend in scholastic milieu. Nonetheless, living nowadays in a "hypercognitive culture" (Downs in Hughes 2006) and "technological society" (Bijker 2001) can amplify conflicting reactions concerning the quest for diverse ways to self-improvement. Although various stimulants and mind-altering practices such as meditation have far-reaching ancient roots, the current rapidly expanding possibilities for cognitive boost offered by technoscientific developments have become ubiquitous indeed.

Specifically, developments on pharmacotherapies for neurocognitive disorders, such as dementia, attention-deficit/hyperactivity disorder (ADHD), schizophrenia, have led to what is defined as cognitive enhancing drugs, 'smart' drugs or ''nootropics'' - from the Greek roots noo-: mind, and -tropo: turn, change (Cakic 2009: 611). For example, while methylphenidate (brand name Ritalin) as an amphetamine is usually prescribed to people with ADHD, the 'same' amphetamine gains popularity among healthy adults in academic settings (Kapner 2003).

Many of these drugs are not new - Ritalin, for example, appeared on the market in 1955 (Singh 2008: 351)[1]. Nevertheless what has been recently noted is the increasing use of these substances by healthy individuals aiming to improve their intellectual or cognitive performance (Kapner 2003). Even though there is no consensus on how widespread is the use of these drugs[2], there seems to be a general agreement that numbers are growing (Turner & Sahakian 2006: 79). The debate is not restricted to scholarly papers or reports,

1 Market by Ciba Pharmaceuticals (now Novartis), Ritalin was initially indicated for the treatment of mild depression and narcolepsy (Singh 2008: 351).

2 A 2005 report from McCabe et al. stated that the non-medical use of methylphenidate and amphetamine in different USA schools ranged from zero percent at the lowest to 25% at the highest (McCabe et al. 2005: 103). Hall et al.'s research observed a gender difference in relation to these users - 17% among the men and 11% among women (Hall et al. 2005: 169). While the work of Teter et al. reported that the rates were higher for White (9.5%) and Hispanic (8.9%) students than for African-American (2.7%), Asian (4.9%), or other racial student groups (5.8%) (Teter et al. 2005: 256). In another study, at a small university in the USA, 35% of the sample reported using illegal amphetamines without prescription; of these users 10% made use of it monthly, and about 8% weekly (Low & Gendaszek 2002: 285).

but also presented in mass media (e.g. Gibbs et al. 1998; Seth Engel 2011; Hope 2009; Hugo 2011). A very interesting news article, for example, Harvard on Speed, portrays stories from several students who decided to make use of 'smart drugs' aiming to improve their academic performance (Goodwin 2006).

A major challenge one has to consider in relation to this emerging trend is what kind of consequences these cognitive enhancers could have on the relations within studying and researching in academia.

Beyond the blurriness of boundaries between medical therapy and self-improving purposes, it is also unclear and contestable to define the boarders of cognitive enhancement in relation to educational performance. What is the difference between coffee, energy drinks, organic products such as guarana, or Ritalin to attempt improvement of scholarly results - if at all? Can 'intellectual doping' affect the work produced? How to encounter the proposal to expect drug-testing in scholastic settings just as in athletic competitions (Turner & Sahakian 2006: 79)? In which ways are the limits between improving one's performance and cheating contested?

Given these current developments and discussions around cognitive enhancers, clear-cut and simple dichotomies of 'normal and pathological' cognitive functioning, of 'healthy and unhealthy' persons, and the value of 'authentic and altered/fraud' working results ask for closer reflections. With that in mind, our research questions are:

How do academics draw moral boundaries between accepted cognitive enhancers and non-accepted cognitive enhancers? How can the given arguments be characterized?

Methodology

Attempting to better understand the complex web of theories, opinions and relations concerning cognitive enhancers, we set ourselves into research. A current limitation in the literature examining non-medical use of cognitive enhancers in academia is that it focuses on undergraduate students. Thus, we wanted to explore beyond this group and investigate how other members of the academic community relate with them. Since this debate is

broad, as aforementioned, we took as our gateway Ritalin, considered to be one of most commonly used 'smart drugs' for cognitive enhancement purposes (Greely et al. 2008: 702; DeSantis, Webb & Noar 2008).

Data Collection

We decided to conduct interviews with members of the Maastricht University (UM) - the university we currently attend -, including people from different academic levels and from distinct faculties.

A qualitative interviewing pitfall is that researchers can deploy a strategy to bring out answers fitting best the intended goal. This is to some extend unavoidable[3]; notwithstanding, aiming to diminish this in the best manner possible, we decided to conduct semi-structured interviews. Under this structure, the interviews have a rather dynamic and conversational character - without following defined questions catalogue but rather a broad topic guide - allowing a better grasp of what is important and emphasized by the interviewees.

Interviews

We have conducted eleven semi-structured interviews that ranged from 45 minutes to 1 hour and 20 minutes. Our interviewees were:

- one associate professor: [Associate Professor 3]
- two assistant professors: [Assistant Professor 1] and [Assistant Professor 2]
- one post-doc: [Post-Doc 1]
- two PhD candidates: [PhD1] and [PhD2]
- three master students: [Master Student 1], [Master Student 2] and [Master Student 3]
- two student advisors: [Student Advisors 1] and [Student Advisors 2]

[3] We are obviously aware that the result is always an interaction between interviewer and interviewee and that there is no uninfluenced situation - what Holstein and Gubrium define as 'active interview' (Silverman 2001: 120).

Furthermore, our interviewees were from the following faculties:

- Arts and Social Sciences (FASoS)
- Health, Medicine and Life Sciences (FHML)
- Psychology and Neuroscience

They were from diverse countries - although the majority were Dutch (seven) -, from inside and outside Europe. Some were already acquaintances, others we saw for the first time. Some meetings were more formal than others; all of them were recorded and conducted on university ground[4].

Our questions were grouped into four sections. The first ones were rather intended for 'relational-warming-up', by asking about personal academic background[5]; however, usually we were brief in this part. The second section focused on the academic milieu, and how she or he experienced different aspects of university life. The third tackled cognitive enhancers in a more general way, and we tried to introduce the debate around Ritalin, if the person had not done so already. Finally, we questioned different aspects concerning cognitive enhancers / Ritalin in academia; at the same time, we tried to bring up the comparison with sports and the arts. As semi-structured interviews, we were flexible on the order proposed and allowing space for follow-up questions. Additionally, we also had particular questions: either because the interviewee had scholarly dealt with the topic or a similar one in her or his academic life, or because we already knew he or she made use of Ritalin.

Limitations & Considerations

The interviews were all English. One could see that as a limitation, since it is not the native language from any of our interviewees - nor it is ours, the interviewers. This limitation may, nonetheless, not be so relevant, since all are familiar to UM's international character, used to working and studying in English.

4 It has been a troublesome situation for us to decide how much information we reveal about our interviewees. Since some of them talked about very private and delicate matters, we decided not to disclose all information relating to the interviewees, in order to not make it easy to identify them.

5 Rubin & Rubin (2005) recommnds this stategy in order "to provide the interviewee almost with a comfort level" (Rubin & Rubin 2005: 117).

Being students from the same university as those we were interviewing probably have had an influence in the data collected. Since we were 'known insiders' some might have felt more at ease discussing such delicate matter. That might be especially true with the two acknowledged users. Nonetheless, it may have had an effect with how much and what kind of information our interviewees were prepared to share, perhaps especially among those from FASoS - where we study. Concerning those outside FASoS we might have been perceived as more 'unknown outsiders', with low probabilities of ever seeing each other again, which might increase both the willingness to share information or a reserved and formal attitude. These are all assumptions that should be clearly reflected upon, but cannot be verified.

All of our interviewees, even those we already knew before, were aware they had been selected because they are members from the academic community. Assistant Professor 2 [AP2] even explicitly highlighted that "this is an academic point, but you are interviewing me as an academic".

Structure and Aims

In the following, we will introduce our research by providing a general overview of the ongoing debate around cognitive enhancement based on literature. Furthermore, theoretical conceptions related to boundary-making are introduced and compared by drawing on Thomas F. Gieryn's (1983) definition of boundary-work and Steven Wainwright et al.'s (2006) ethical boundary-work and Bruno Latour's (1993) conception of boundaries. Subsequently, empirical data (i.e., extracts of our interviews) are presented in relation to boundary-making by addressing the notion of authenticity, different uses of Ritalin, and doping in the fields of sports, arts and academia. In this part we aim to show the ambiguity of drawing boundaries in relation to other definitions and settings. In the final part, we examine types and patterns of arguments made by our interviewees by introducing and drawing on the philosophical framework of the so-called NEST-ethics. Here we aim to show that despite ambiguity in drawing boundaries, similar moral argumentation patterns can be identified. Finally, in the final reflections we bring our main findings together concerning tracing boundary-making. Furthermore, we argue that different uses of a

technology can alter the relations, meanings and discussions it brings forward requiring an approach capable of encompassing such transformations.

Mapping the Field

Developments in life-sciences have fundamentally altered our individual and collective understandings of cognition and enhancement. As a consequence - the fusion of both terms -'cognitive enhancement' has become a hot topic among scholars from different fields. The blurry and intangible borderline between treatment of disease and improvement of cognitive function lays the ground for heated discussions around issues of acceptability and tolerance concerning the 'thing' called cognitive enhancement.

In the current debate important issues are questions concerning effects on personhood and authenticity (human nature and health), equality and fairness (competition) among others. Paul Schnabel, Director of the Social Cultural Planning Office, was invited to speak at the symposium Experience of the future. In his presentation entitled 'Our future happiness' he discussed the rise of so-called enhancers and that of the 'magic pill'. Schnabel refers to the Chapter Test Bed Holland; Psychopharmaceuticals and recreational drugs from the Gezondheidsraad (2002) report. In this report the Committee comments on a vision of the future featuring "a chain of stores where customers can buy substances [...] to improve their moods, enhance their experiences and sharpen their cognitive performance" (Schnabel 2003: 14).

Another author, Arthur Caplan, Professor of Bioethics and Director of the Center for Bioethics at University of Pennsylvenia, counter-argues the idea that only "earned happiness is the authentic happiness" (Caplan 2006: 9). For him, not all sorts of achievements are designed to make us happy; some are scored by us out of duty, others out of desire, ambition or conviction. Moreover, so his argument goes, we welcome shortcuts in order to facilitate our way towards achieving a goal, especially when it is only for practical reasons. But still, if one desires to hike up the Himalaya top once in a lifetime, then it is not a practical reason but a personal ambition - he would not mind taking the helicopter. 'Hard' achievement entails surely greater satisfaction, but as Caplan argues, it does not automat-

ically mean that it makes us happier when we achieve something in the most difficult conditions.

Not everyone is as optimistic regarding cognitive enhancement as the author presented above. As mentioned afore, the line between therapy and enhancement is (increasingly) blurry, the Health Council Committee states, "chemically altering one's own personality [may] adversely affect authenticity" (Gezondheidsraad 2002: 36). The British sociologist Nikolas Rose describes how, in the previous decades, we have become Neurochemical Selves, and also warns possible consequences: "If we are experiencing a 'neurochemical reshaping of personhood', the social and ethical implications for the twenty-first century will be profound" (Rose 2003: 59).

Another important issue is the question how to conceptualize our human nature. Philosophical materialism — the idea that there is nothing besides a material reality — is an important issue of our contemporary Western culture. The USAmerican political scientist and economist Francis Fukuyama expresses his concerns: we might even lose our humanity and enter post-human history without realizing that we traded an essential human quality "because we lost sight of what that essence was" (Fukuyama 2002: 101). Others see continuity. The prominent and fiercely disputed British philosopher John Harris claims that cognitive-enhancement, be it in form of coffee, guarana, energy drinks or Ritalin is a continuum of an age-long pursuit by humans to improve themselves (Harris 2010). He proposes in line with Caplan that we should make the best use of our intellectual and technological capabilities to adjust ourselves to changing circumstances: "They are making the conceptual error, that the way we are, is the way we should be" instead of accepting that there is nothing in nature to "tell us anything about the way we should be or what we should become or how we should decide to change ourselves" (Caplan 2006: 38).

The debate around cognitive enhancement and diverse types of practices and substances associated with it, has not reached yet exhaustion. There seems to be not only an ontological side to materialism, but also a moral one. Most of the proponents and opponents of cognitive enhancement use moral principles - e.g., equality, health, authenticity - as their starting point for their argumentation rather than attempting to define features of cognitive enhancement in the first place. This immediate morally charged position-taking is not only

reflected in the current literature and debate but also in the interviews conducted for this research.

In relating the debate around cognitive enhancement in the scholastic field, the question raises: How is cognitive enhancement / enhancers understood in the academic community? And how do academics draw ethical boundaries between accepted cognitive enhancers and non-accepted cognitive enhancers? In the following, we will first discuss diverse 'boundary' concepts found in theory, and in a second step present by means of empirical examples (several interview extracts) how these boundaries are defined 'in practice'.

The Many Boundaries of Cognitive Enhancers

The uses and definitions related to the concept boundaries are quite ample in the social sciences field, being part of the field's classical conceptual tool-kit. Already in Durkheim's Elementary Forms of Religious Life, it is presented how the realm of sacred is demarcated in contrast to that of the profane (Lamont & Molnár 2002: 167)[6]. In this paper we will focus on two different - although intertwined - conceptions of boundaries.

The American sociologist Thomas F. Gieryn coined the notion of boundary-work to describe the discursive practices in which scientists distinguish their work and its products from what they consider non-scientific activities (Gieryn 1983: 781-2). Certain qualities are attributed to scientists, scientific methods, and scientific claims in order to construct a distinction between what is to be considered science and what is 'non-science'. Gieryn's work shows that these boundaries "are ambiguous, flexible, historically inconsistent, and sometimes disputed" (ibid: 792).

As we will see, our interviews performed boundary-work when they compared academia with sports and/or arts. Nonetheless, this dynamic was not present when discussing cognitive enhancers inside academia. In this case, scholars (or more generally, those

6 Other examples mentioned by Lamont & Molnár (2002) of the use of boundaries as a conceptual tool among the classics includes Marx's accounts account of the dynamics between several class boundaries in The Eighteenth Brumaire and Weber's analysis of ethnic and status groups as one of the most influential sections in Economy and Society (Lamont & Molnár 2002: 167-8).

somehow related to academia) did not attempt to exclude others having as a reference element the use (or non-use) of a specific type of cognitive enhancer. The general approach was to argue it was a private matter, that individuals should be responsible for themselves. For example, none of our interviewees agreed that we ought to test scholars - like athletes are - on 'intellectual doping'.

Thus, inside the academic sphere, the construction happened less in Gieryn's sense (between defining the limits of institutional realms) but more in terms of what Wainwright et al. define as ethical boundary-work. These authors expand Gieryn's notion and propose a concept that concerns "not about differentiating science from non-science, but rather, about drawing boundaries between what is ethically preferable" (Wainwright et al. 2006: 739).

This idea that boundaries are not given nor fixed is present in the work of many scholars. Bruno Latour - together with other scholars from the interdisciplinary field of science and technology studies (STS) - has claimed throughout his work that boundaries are constructed. It is important to highlight, however, that Latour does not argue that there are no boundaries, but that this distinction is not given, but the late result of stabilization (Latour 1993: 86)[7]. In order to establish the limits of what is ethically preferable, our interviewees grounded themselves in other drawn boundaries, e.g. being (not) authentic.

[7] Bruno Latour also explores these boundaries (or the lack of them) when he presents the notion of hybrids. In the book 'We have never been modern', Latour identifies two sets of practices that he considers to be distinguishingly 'modern'. The first one is hybridization, which "creates mixtures between entirely new types of beings, hybrids of nature and culture" [emphasis added] (Latour 1993: 10); and these hybrids are everywhere (ibid: 11). At the same there is also purification, creating "two entirely distinct ontological zones: that of human beings on the one hand; that of nonhumans on the other" (ibid: 10-11). As mentioned, it is important to underline that to talk in terms of hybrids does not mean that there is no distinction between nature and culture, but that those are a result not a given status.

Boundary-making in Action

Authenticity

As cited in the mapping of the field, authenticity (e.g., Gezondheidsraad 2002) is a key discussion point when talking about cognitive enhancers. It is interesting to see how some of interviewees defined such notion. For example, Post-Doc 1 [PD1] advocated that:

> I think that notion of authenticity is fluid; it is like a moving target. It changes all the time, in different societies […] I would be really against the discourse of that cognitive enhancers is changing something that is authentic or essential or natural. (PD1: 46'13)

Thus, for her authenticity cannot be used in order to draw boundaries in academia. It is not to say that for her there is no distinction - she later argued that there is a difference between coffee and Ritalin, for example - but that it is impossible to make such differentiation in terms of being or not authentic, essential or natural since these are constructed and contingent. Contrary to this position, one of the PhD students [PhD2] claimed

> The more we compete we each other, the more we want authenticity, or the less we want to allow cognitive enhancers. Certainly this is related to our value system. (PhD2: 43'00)

He does not develop what he means by authenticity, but we can conclude there is such a notion and it is something we strive for, especially under the context of competition. He seems to equal more authenticity with less cognitive enhancers, creating almost a direct effect relation between these two. Student Advisor 2 [SA2] made yet a different position, when asked if a paper written under Ritalin would still be authentic.

> My first answer would be no, it wouldn't be authentic. But immediately I have to say, I don't know really what Ritalin does, only a little. I am sure if you take it the right way, you know under doctor's prescription, I am sure, it's not so bad that it changes your personality. It depends on the amount and the way you are using it. But in general, it would be like if you are saying that people with ADHD taking Ritalin would not be able to do something authentic. Ha! And that's of course ridiculous. (SA2: 45'43)

The student advisor acknowledged that her first answer would be that it is not authentic - thus, we can infer that for her there is such a thing that could be defined as being (not) authentic. Then she distinguishes two use modes: in the 'right way', i.e., 'under doctor's prescription', it would not change your personality. Those with ADHD taking Ritalin can still

do something authentic. Hence, we can conclude that for her usage manner will reflect on the work's authenticity.

Different uses of Ritalin

As mentioned above, Student Advisor 2 distinguishes different ways of using Ritalin, and that this could affect the substance's relation with for example authenticity and personality. It is noteworthy that other interviewees drew boundaries having the use manner as basis.

Hence, another example of this type of boundary delineation is Master Student 1 [MA1]. She diagnosed herself with ADHD, was later confirmed by doctors and made use of Ritalin for three years. She was later diagnosed with hypothyroidism and is currently under medication for this disease. When enquired how she felt towards people who took substances like Ritalin for studying or working, she replied:

> I think then it's drugs. I think you should never do those. Because I have an experience with all these things, with these pills. I've never taken drugs. Although I know alcohol is not really good, and I have drank alcohol. It's not a good idea. […] I think it's stupid. You don't know what you're doing, and it's not something innocent. (MA1: 36'14)

In this account one can clearly comprehend how the aim changes the substance. First, the subtle use of the word 'then' implies a transformation. Additionally, she defines Ritalin as drugs, then states to have experience with these pills, and at the same time she affirms that she has never taken drugs, except alcohol. This apparent paradox is only possible because of the change Ritalin has undergone due to its different use. She took it because at the time she was diagnosed with ADHD, even though she currently is aware not to have this disorder. Based on the goal of the use, she draws boundaries between drug and medication[8].

What we can recognize is that grounded on this delineated boundary, this Master student engages in an ethical boundary-work in Wainwright et al.'s (2006) sense. During our meeting she was clear that she needs more time because she is slower and that she needs medication in order that "things get more normally possible" (MA1: 51'40). However

[8] In other moments of the interview she talks of Ritalin as medication, e.g. "the medication in ADHD is used to supress the symptoms" (04'52).

when someone makes use of Ritalin and substances alike beyond their medical use she perceives as ethically less preferable.

On the contrary, the Associate Professor [AP3] did not delineate such distinction:

> Why should I miss a good opportunity to improve memory? The end goal is always disease of course. So if it does work actually for healthy people, that's nice, too. (AP3: 30'33)

For him, no boundary can be defined in relation to use and goal. Cognitive enhancers would be understood as the same substance in relation to those who have a disease and those who are healthy.

While several other ethical boundary-making could be traced, by means of the aforementioned examples, it became already clear that in the cognitive enhancement discussion, authenticity is not an isolated term or phenomena, rather it is interrelated with other terms such as personality and (human) nature. This relational aspect of boundaries becomes even more difficult to pinpoint if one considers the multiple links one can create: authenticity, nature, personality, health, either put in comparison or as contrast to medicine/therapy and 'normality/average'. These vague and interrelated aspects are linked up with further seemingly paradoxical features of 'contingency', 'fixed/essential', 'fluidity', etc. While many interviewees compared academia with other domains such as sports or arts in terms of cognitive enhancement, in the following we will scrutinize this part as another way of boundary-work.

Cognitive enhancement in relation to arts, sports and academia

To move from the above defined ethical-boundary work to Gieryn's classical sense of boundary-work[9] it becomes apparent that his boundaries definition gains more relevance when relating cognitive enhancement to the fields of arts, sports, and academia. Although these realms are always somehow related, certain qualities and features are attributed to academics, athletes and artists. A scale of comparison was the relation between creativity

[9] As defined before, Gieryn's sense of boundary-work is to describe the discursive practices in which scientists distinguish their work and its products from what they consider non-scientific activities.

and productivity, which we raised as a question in each interview: what is the relation between creativity and efficiency? Which role do creativity and efficiency play in academia/sports/arts? This was usually the breaking point of bringing in 'competition' and defining boundaries by constructing distinctions between what was considered to be 'accepted' and 'non-accepted' cognitive enhancement'.

> A sport event is a very localized thing, writing an essay is something that takes three, four months to write. There is a lot of reason you do these testing in sports. There is a direct correlation between doping and performance. (MA3: 20'00)

This Master student interviewee stresses the time aspect as crucial for demarcating academia from sports: sports is for him tangible, a 'localized' event, in which doping tests are justifiable, while in academia time plays an equal important role yet is much more extended and not fixed. After we asked about the relation to art and cognitive enhancement, a new parameter emerged: creativity.

> It's a better analogy than in sports. Because it's a field of life where to function well it needs to be non-formalized. It very much relies on individual freedom to connect different areas of their lives in interesting and creative ways. It's very much on the quality of the product. It's contingent upon the analyzer and the analysis. That's not on sports, where everybody can tell who won. On arts you need a certain degree of knowledge to be able to appreciate, often in academia you need a certain degree of knowledge to understand it, and appreciate an argument, to be able to analyze it. (MA3: 25'30)

More characteristics emerge, arts and academia are closer related than to sports, due to common features of 'non-formality', individual freedom and creativity in the way of working. Interestingly, he demarcates sports due to the easiness to tell who won or lost, which is not as clear-cut in the arts and academia since it requires, in his view, knowledge and appreciation. In relation to cognitive enhancers the following interviewee introduces the role of 'data' in academia as a feature to draw boundaries among the other fields:

> Sports is about fair play. In academia the real problem would be of inventing data. (17'21) […] Sports is more contested than in academia. [...] Artists have this reputation of taking stuff that helps to enhance creativity. You cant just say "Ok, stop it!". (AP2: 51'19)

As the quote portrays, the role of 'data' is as important as 'fair play' is in the sports, and 'enhancers' in the arts. At the same time she also creates boundaries in starkly contrasting

sports from academia, while arts seems to be closer related to academia because of 'creativity' - much in accordance with Master student 3.

In the same line of reasoning, yet for different motives, the Post-Doc interviewee also draws boundaries in situating sports much further away from academia than arts:

> Sports doping is much more to the point, than intellectual doping. Doesn't make people better in writing grants or papers whereas in sports doping, the effect is much more direct, to the goal, for which it is being used. […] So in academia one is always looking out for fundings, for all academics to survive. What's funny, because sports is based on competition, right? In the professional realm, there is a winner and there are losers. But in academia it is not supposed to be about winners and losers at all. (PD1: 39'42)

Although her positioning and drawing of boundaries are similar to the above presented views, the Post-Doc mentions an interesting twist in the relations: both, academia and sports, share the competition pressure, - in academia to compete for funding, in sports to compete to win - as sharing the success goal. Yet, she feels uneasy with this comparison of competition and concludes that academia "is not supposed to be about winners and losers at all"; hence should not be about winning and loosing - as in sports. This uneasiness reflects a moral twist of having difficulties where to demarcate boundaries.

A final example contrasts the aforementioned positions:

> For an artist, I wouldn't really consider it as doping. Yes, artists do compete for selling pictures, luxury product, but as an artist you strive for some genuine expression - they only compete with themselves. On a scale of competitiveness, sports is as in academia. People compete as well, but on different levels.[...]The more we compete we each other, the more we want authenticity, or the less we want to allow cognitive enhancement. It relates to what we want.... do we want to be genuine, do we want to be fair? But no one said that things would be fair! When you are professional cyclist you can drink coffee in the morning but no steroids; the academics you can say, at times when they have a conference or to write this paper, maybe once they could take Ritalin. If not on a regular basis. But maybe we wouldn't. But for the artists; we would say "Ah well, okay it's only an artist. We want this genuine expression. Maybe it would not be good for him personally, but especially if he or she thinks that she needs a substance...you say, its okay, its an artist. (PhD2: 43'00)

This PhD interviewee perceives pressure in academia differently; more closely related to the winning-and-loosing idea in sports, while in the arts competition is understood as competing only with one-self. In relation to academia, he mentioned before the pressure for publishing as well as financing. He introduces further boundary-making features such

as ’genuine expression’ (in the arts) and ’fairness’ (sports). Thus, so he argues, cognitive enhancement could be more accepted in the arts, less so in academia, not at all in the sports, where competition and ’authenticity’ play a major role. He situated academia somehow in between of acceptable and unacceptable boundaries of cognitive enhancement.

The boundary-work in Gieryn’s sense between institutional realms such as science and other spheres of social life, consensus among all our (academic) interviewees could be reached, when it came to distinguishing academia from other domains: some related academia closely to arts because they share the idea of creativity, while others related academia more closely to sports because of the high level of competition. Without explicitly stating what makes neither academia nor cognitive enhancement so distinct, the interviewees revealed boundary-making by comparing what is rather (un)acceptable in the arts and sports domains in relation to cognitive enhancement. Notwithstanding, it is difficult to pinpoint a core message of how the boundaries were created, since characteristics related to both academia and cognitive enhancement were multiple and varied.

As it became clear so far, tracing boundary-work around cognitive enhancement in academia is ambiguous and difficult to pinpoint. Many different types of arguments were raised by referring to notions of health, authenticity and dependency yet how can these types of arguments be understood? How do certain moral and ethical assumptions influence the patterns of argumentation? Thus, in the following we look through a different pair of theoretical glasses, the so-called NEST-ethics (new and emerging science and technology ethics), in order to characterize general patterns of moral argumentation. By using the NEST-ethics framework it will be possible to make visible how arguments in favor and against cognitive enhancement do share a common moral ground. Moreover, by applying the NEST-ethics framework on the discussion on cognitive enhancers, we will point out that NEST-ethics is not merely confined to the analysis of new and emerging technologies - for example nanotechnologies. As we show in the case of cognitive enhancers, it can be extended to analyze already (long) exiting technologies such as Ritalin, which receive a new and emerging meaning due to its different use.

What is NEST-ethics?

NEST is an acronym standing for new and emerging science and technology and NEST-ethics refers to a "hypothetical structure observed in ethical debates over novel science and technology" (Niculescu-Dinca 2009: 5). NEST-ethics was originally developed for engaging with discussions around nano-science and technology in a critical manner to analyze specific characteristic "tropes[10] and patterns of moral argumentations which provoke each other into existence" (Swierstra & Rip 2007: 3).

Why ethics and morals of technology? The point of departure for entering the realm of ethics/morals in discussions around technologies is that technologies are not neutral or innocent: they mediate our understandings and actions of the world at the same time we build and influence technologies in myriad ways. In this sense, it becomes crucial to discuss approaches to technological development case by case, since "responses from society vary (…), some existing alignments will be threatened or at least opened up" (ibid: 5). In the discussion on the boundary-making of cognitive enhancement it became through our interviewees clear that enhancers such as Ritalin are not viewed as 'innocent' or neutral for different kinds of reasons. While some argued in favor or against the use of certain enhancers, the argument to support their view shared often the same grounds.

In order to understand how ethics and morals relate to each other in the discussion on the boundary-making of cognitive enhancement, the NEST-ethics framework offers conceptual distinctions between ethical and moral types of arguments. Nest builds on philosophical pragmatism, drawing on John Dewey's (1994) understanding, in which morals exist mainly as routines and are taken rather as self-evident, in a way that they become invisible. However, they come to the fore when new technologies emerge or when older ones, e.g. Ritalin, gain a new ground for discussion triggered by altering use from originally medicating purposes, to recreational consumption to nowadays increasing use for educational performance by healthy students. Ethics are closely connected to morals: "[w]e perform ethics when we put up moral routines. In discussions about emerging technologies, values like health, safety and sustainability and economic growth are usually 'hot' [ethics]; the use

[10] By 'tropes' the authors refer to a recurring motif or argument that is aimed to have a particular force (Swierstra & Rip 2007: 4).

of enhancement are ’cold’ [morals]" (Swierstra & Rip 2007: 6). The distinction between ’cold’ and ’hot’ in relation to morality and ethics is explained by the authors as follows: "Whereas morality is characterized by unproblematic acceptance, ethics is marked by explicitness and controversy. Ethics is ’hot’ morality; morality is ’cold’ ethics." (ibid) In this case, the discussion around cognitive enhancement is ’hot’ since its uses are still ambiguous, while moral arguments - health, authenticity, dependency - are used as taken-for-granted, or in Dewey’s sense as self-evident to maintain why a technology is good or bad.

In our empirical investigation, the question emerged: on what grounds do our interviewees make their statements? Thus, what makes the NEST-ethics framework so attractive for our interviews about cognitive enhancement is that it provides an overview for different types of moral arguments. In the following, the diverse classifications of moral argumentation (consequentialist and deontological[11]) will be explained by exemplifications of some empirical data.

Consequentialist argumentation

In practice, NEST-ethics starts with a consequentialist pattern of ethical argumentation: the new and emerging technology is deemed desirable, or not, because its consequences are desirable, or not (Swierstra & Rip 2007: 11). Since consequences of cognitive enhancers are still speculative and not determined yet, the arguments raised are pointing towards "promises, warnings and concerns" (ibid). One of our interviewees, a Master student [MA3], told us about his experience with Ritalin, taken the night before an essay deadline. He described his experience in an enthusiastic tone by referring to his temporary cognitive improvements, e.g., increased focus, pattern thinking, and staying awake. He portrayed a specific type of use, of how to do it ’right’:

> […] it enhances your concentration, you will be able to work a lot. You should make sure that you’re working when you take it, because after you take it, if you’re doing something else, you’re gonna continue doing that something else. You just get in that mood. If you’re dancing, you’re just gonna end up dancing for 6 hours. (MA3: 39’08)

[11] In the NEST-ethics framework, there are beyond Consequentialist & Deontological argumentations two further forms, namely ’Justice’ and ’Arguments from the ’Good-Life’ Ethics’. Since our empirical data were more related to the former two forms, we restrained ourselves to these.

He had never consulted a doctor or student advisor before, however, he concluded that for 'climbing up the academic stairs', cognitive enhancement in form of Ritalin, is a highly attractive option to be considered even among healthy students:

> It is a very interesting mode of working, where you always take Ritalin. Could you imagine writing 15 pages every day in your life? You would climb the academic stairs in like a year. (MA3: 37'50)

When asking him about often-raised ethical concerns such as negative impacts on health or side effects, he answered:

> If I have an increase of 0.0005% chance that I might get some disease in 50 years by taking this Ritalin, but I have this essay due tomorrow, if I don't pass, I'm gonna fail my course. I would say 'take it!'. But if the other alternative is I just wanna go out tonight and have a good time, then maybe it's not a good decision. (MA3: 14'00)

These short interview extracts reveal not only certain cognitive enhancement boundaries - i.e., the dependency on situations and justifications for taking Ritalin 'for an exam' versus 'for partying' - but also underlying patterns of moral argumentation. In the NEST-ethics framework, this type of moral argumentation is related to the meta-ethical discussion on agency, which can be characterized as consequential: there is the optimistic view that technology, in this case Ritalin, is basically beneficial for everyone, not only for persons with a diagnosis but also for healthy alike. This strongly optimistic argumentation "short-circuits the problem of uncertainty and ignorance by arguing that there may be small mishaps, but all in all, and in the long run, the technology will benefit us"(Swierstra & Rip 2007: 13). Although the line of argumentation of Master student 3 is not deterministic in the sense that "you should not want to stop this technological advance, but you cannot either"(ibid), it certainly does reflect how we have a choice to enhance. He equals this choice with an option that is beneficial and should be available to everyone. This way of reasoning is mirrored by this specific moral typology in NEST-ethics, namely that: "Underlying most consequentialist arguments is a utilitarian ethics"(ibid: 12). The Master student's core of arguing is that cognitive enhancement should not be limited to certain individuals, such as persons diagnosed with ADHD, but to healthy persons as well.

The above-presented pattern of argumentation is not only bound to optimistic uses of Ritalin. Interestingly, the same pattern of arguing appeared with other interviewees (PhD2

and Assistant Professor 1, among others) being clearly in opposition to take Ritalin at all - regardless of a doctor's diagnosis, or social pressure such as keeping up with the academic work rhythm and meeting deadlines:

> Ritalin is thought to be for ADHD...it is highly critical to give them these drugs, there are also other techniques to make them flourish. It is not all biochemical. It is our social system...[with an ironical voice] if you cant help someone who has a problem then you just give him some drugs. So easy! Like a technological fix-idea. If something doesn't work, then technology is going to fix this. (PhD2: 24'08)

The follow-up question concerned the coping with a hypothetical ADHD diagnosis. This question was intended to breach, to stimulate the interviewee to take a clear position and to put forward further arguments:

> If a doctor would tell you, diagnose you with ADHD, and prescribes you Ritalin... would you consider taking it? How would you feel about it?
>
> It would make me feel like a Zombie. Because if I would be diagnosed with it, it means that I would not fit in the setting where I am living. Then maybe I should consider moving or doing something else. (PhD2: 26'02)

The interviewed assistant professor made a similar point:

> The threat is that new technologies stress tendencies that are already there. That's the dominant frame. It gets only worse with Ritalin. (AP1: 34'10)

The quotes depict a skeptical attitude when framing cognitive enhancers such as Ritalin. The positions from PhD student 2 and Assistant Professor 1 are in terms of NEST-ethics specified as a moral argument representing "the (un)desirability of 'technological fixes' and 'social fixes.' There may well exist alternatives that address the problems [...]. The assumption here is that social problems deserve social solutions, not technical ones that only address the symptoms anyway"(ibid: 13). In this sense, PhD student 2 rather questioned the social norms of creating and maintaining forms of pressure in settings such as academia and proposed "applying pre-caution at times" (PhD2: 59'14). The precaution (or the lack of it) is also a specific aspect in the consequential argumentation, since it addresses similar to the proponent position of Master student 3 an utilitarian aspect in terms of access: while this Master student sees an opportunity in using cognitive enhancers, and

generally argues for an access of Ritalin beyond ADHD diagnosis to healthy persons[12], PhD student 2 and Assistant Professor 1 perceive a threat and argue for fundamental reflections on our social system and thereby to pause and seek for other (social) alternatives for the greater good. It is important to highlight that these pessimist perspectives - just like the optimist ones - short-circuit the question of risk and uncertainty because "you may not know exactly what will go wrong, but go wrong it will" (ibid: 11). As in consequentialism, the same type of argument can be made by bringing other concerns touching on deeply felt convictions and existential interests, interpreting and applying the principles differently. In the following, the duty and right based argumentation characterized as deontological argumentation, will bring to light another way of framing arguments in favor or against in the discussion on cognitive enhancement.

Deontological argumentation

> Do you see any limits to enhancement?
>
> The limits are ethically, not the technology. Technology will move on, and I believe in technology. Other scientists have the responsibility to think about what does it really mean. On the other hand we also have the responsibility to explore. All the options.[…]Why should I miss a good opportunity to improve memory? The end goal is always disease of course. But if it does work actually for healthy people, that's nice, too. (AP3: 30'33)

Associate Professor 3 is a peculiar interviewee, since he is the only among other interviewees active himself in neuroscientific research (brain plasticity and gene therapy) and openly interested to advance cognition. He proclaims to be a clear proponent of cognitive enhancement.

According to the theoretical framework of NEST-ethics, the presented argumentation can be characterized as 'deontological argumentation', which refer to right and duty based arguments when a new technology provokes deeply seated convictions and interests often described as 'duty' or 'obligation' (ibid: 14). This professor's position of moral argumentation in supporting cognitive enhancement with "the end goal of disease" in mind, is what

[12] "Generally, I would be for making it more available. So there are all these moral arguments out there. Ritalin is a legal substance. […] Again is completely arbitrary which ones are available or no." (MA3: 19'08)

Swierstra and Rip characterize as a deontological "duty to further human progress, a duty to help diminish suffering, a duty to acquire knowledge, and last but certainly not least: the right to choose freely whether or not to use a particular technology (as long as this does not harm others, of course)"(ibid). For Associate Professor 3, in contrast to the positions discussed in consequentialism, he delineates responsibilities: his is to "explore all the [technological] options" while others are responsible for "ethical issues" (such as the neuro-ethics committee). However, he sees limits in the latter one. It becomes clear that an underlying technological determinist idea strengthens his moral argumentation to support development in cognitive enhancement: "the argument about [...] technology as an unstoppable train, because 'if we don't do it, our competitors will'. […] The optimism gains extra 'muscle' by combining it with determinism" (ibid: 14).

As in consequentialism, the same type of argument can be made by an opposing position. It was crucial to follow how some of our interviewees brought up moral arguments for or against cognitive enhancement based on the same argument type, same moral pattern of argumentation. An example may clarify:

> If we continue thinking "anything goes" we start with a little pill and end up with a chip in the brain. Seriously, I don't want my bus driver to take coke. I wouldn't want the ambulance person to take coke. There are always downsides of taking drugs. We can do without these little helpers. (PhD2: 20'21)

This PhD student was alert when relating the cognitive enhancement topic to academia. The examples of a "bus driver" and "ambulance person" underline the notion of common responsibility and duties in terms of maintaining safety and security. This argument gets morally enforced in foreseeing a straight development from cognitive enhancers in terms of substances to other enhancing technologies like the mentioned brain chip. For PhD student 2's moral argumentation reflects consequentialism aspects - i.e., "technology, although seemingly innocuous or even beneficial now, will inevitably invoke further technological steps that will later result in applications that are blatantly immoral"(ibid: 13) - in portraying a continuum from a pill to a chip in the brain. The deontological side of his argument refers to the common responsibility and necessity to reflect on our cognitive capacities rather than inabilities, as he said: "We can do without these little helpers."

Associate Professor 3 and PhD student 2 views oppose regarding speculated consequences of cognitive enhancement, yet they share the common ground of moral argumentation in terms of responsibility, duties and determinant character of foreseeing developments of cognitive enhancement. The presented moral argumentations within the deontological realm revealed that the nature and the boundaries of cognitive enhancement are still vague, however, the patterns of argumentation follow the same logic in arguing against or for cognitive enhancement.

In conclusion to this section, our aim was to open up the phenomena of existing moral patterns of argumentation in relation to cognitive enhancement in academia. It was confounding to realize how some of our interviewees being for or against cognitive enhancement in scholarly settings used the same kind of arguments. With the approach of NEST-ethics we gained grounds to classify these patterns of argumentation into consequentialist and deontologist argumentations.

In the process of reordering the arguments in relation to these categories, we recognized that consequentialism and deontology are not exclusively separate types of frames but enable each other and allow overlaps: for instance, the comments made by the PhD student 2 were partly consequential (in seeing continuity from a pill to a brain chip) and partly deontological (by assigning negative features of enhancers - such as cocaine - impacting on duties and responsibilities of specific professions e.g. ’ambulant person’ or ’bus driver’). In our view, NEST-framework provides a useful perspective to analyze ambiguities inherent in not only new emerging technologies, but also to new uses of already existing technologies.

Final Reflections

Throughout our research project, ’ambiguity’ was our main companion in trying to find out the complex issues entangled in the-thing-called ’cognitive enhancement’. When we started to approach scholars, master and PhD students, the idea of getting a clearer vision on how cognitive enhancement is understood in academic community soon proved to be an illusion: the more we interviewed, the complexity along with ambiguity around cognitive

enhancement grew. Tracing ethical boundaries between accepted and non-accepted cognitive enhancers that academics drew was therefore a challenging task.

According to our initial literature inquiry and empirical research, the ambiguity of defining cognitive enhancement is due to the underlying individual's multiple interpretations and conceptions of cognitive enhancers (from chocolate to pharmaceutical substances such as Ritalin, to diaries and a good portion of sleep). However, the intriguing nature of the cognitive enhancement topic brings not necessarily or immediately the boundaries of (un)acceptance to light, but the values in academia. The questions about cognitive enhancement stimulated our interviewees to reflect and reinstate certain ethical aspects around the experience in academia and the meaning of 'good', appreciated and tolerated and 'bad', disapproved and criticized academic performance. These values addressed aspects such as 'authenticity'. But still, as aforementioned, authenticity was not a self-evident term, and further interrelated notions such as personality, (human) nature, and health were mentioned in relation to threats or benefits of cognitive enhancement in academia. While some argued for contingency and 'fluid-essences', others demonstrated that authenticity in academic work is inherently essential and necessary. With the comparison to sports and arts, boundary-making was more visible than before: doping as a form of enhancement was perceived and morally judged differently in each field, demarcations and alliances were defined in relation to creativity and efficiency, and argumentations concerning competition revealed how pressure is perceived and coped within the scholastic community.

Another final astonishing finding was to realize that opponents and proponents of cognitive enhancers (e.g., Ritalin) made the same kind of arguments. How could this be possible? To come to terms with this seemingly paradoxical particularity of drawing boundaries by providing similar if not the same arguments, we expanded our theoretical scope of boundary-making concepts to the philosophical framework of NEST-ethics. Although NEST was originally developed for understanding patterns of moral argumentation around new emerging technologies, older ones, such as Ritalin, gain a new ground for discussion triggered by the apparently increased use in educational settings, deviating from the original 'medical' purpose or recreational use and beyond for educational/academic

improvements of performance. This move to NEST-ethics enabled us to look behind the curtains of reasoning and arguing and to characterize by means of some empirical examples the patterns of moral argumentation. The frame of ’consequentialist’ and ’deontological’ argumentation has shown how different types of arguments have a common ground such as utilitarianism: the idea that cognitive enhancement as a technology (in this case Ritalin), is basically beneficial or detrimental for everyone. Hence, tracing boundaries in academia around the discussion of cognitive enhancement revealed many ambiguities, challenges in academia, and contrasting views within same patterns of argumentations. Ritalin is a good example on how a change in the use alters the meaning and identity a technology connotes. Through tracing the boundary-making and the patterns of moral argumentation we tried to bring light into this ’new’ technology and its emerging relations. An interesting point for further research can be to look at other ’old’ technologies with a new emerging identity and meaning.

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