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»Do numbers make sense of the world or do they make a world that makes sense?«

Marilyn Strathern

Workshop

Numbers

Empirical Stories and Analytical Framings

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Workshop Abstract

Do numbers make sense of the world or do they make a world that makes sense? An aura has come to surround numbers and, despite the caveats of professional auditors, it is those unfamiliar with financial auditing who tend to sanctify them.

Marilyn Strathern

Do numbers make sense of the world or do they make a world that makes sense? Or, do they do both simultaneously? We propose the last formulation, which is neither and both universalist and relativist, and emphasises the material practices in which numbering is accomplished. Our workshop asks how we might study those processes?

Some specific puzzling characteristics of numbers are their singularity, and their certainty constituting capacity—How are those effects achieved and how do we study that?

Many institutions like to treat numbers as hard facts, using them to fix views and silence debates. They set clear limits to the lengths of academic articles, to the heights of vehicles passing under a bridge, and to the age of children allowed to play a video game. Numbers are normative. They celebrate winners of elections and sports contests, the best students of the year and the richest man in the nation. Numbers are frightening. They reveal the horrors of massacres and the severity of a diagnosis. Numbers are democratic. They ignore gender differences when counting academic publications. Numbers are ambiguous. They depend on the quality you get for the price, they are contingent upon aesthetics of size. Numbers are practical. They put me in touch with my friend on the phone, they help us agree on a date to meet. Numbers are useless for expressing sadness and for threading a needle. Numbers are powerful. They facilitate surveillance, they enable governance of populations and bodies; they sort people and standardise behaviour. Numbers combine. They express knowledge across disciplinary boundaries. Numbers are tricksters. They turn the complexity of violence into a position on the aggressive personality scale, they make song-lines disappear and territories emerge.

There are multiple ways to approach studies of number. Mathematicians and philosophers of mathematics who study numbers emphasise numbers' rationality, but disagree with each other on whether numbers are real abstract objects or 'mere' instruments; on whether numbers exist ';out-there' or only in minds. Impressed by numbers' capacities to compel assent in the 19th century some philosophers began to formulate the idea that (metaphysically speaking) numbers are a 'third sort of stuff' – of neither the mind nor the 'out-there'. Social studies of numbers began in the 19th century in various forms of philosophical anthropology. Here numbers were a useful tool for articulating a hierarchy of civilisations – Greece and its European descendent civilisations at the top, Africans at the bottom, Aboriginal Australians not yet on the lowest rung. In the twentieth century historians began the task of revealing how

numbers contribute to 'seeing like a modern state', and the study of numbers in cultural anthropology developed into a significant although small sub-discipline offering a relativist treatment of numbers as symbolising. These approaches assume numbers as 'abstract objects out-there'. In science and technology studies relativist social study of numbers has been important from the beginning of STS in the second half of the 20th century. More recently a science studies approach to studying numbers as formalised relations which refuses relativism and recognises the multiplicity of enumerated entities has developed.

The workshop brings together a small number of scholars for an intimate debate of the multiple agencies and diverse identities of numbers encountered in empirical research. More than empirical findings, we want to discuss how empirical puzzles about numbers are framed analytically. Participants are asked to bring their puzzles about numbers, but also (and we think this is important) a story about how their approach to analysing the puzzle is framed.

RETRIEVING THE STORY OF A QUANTITATIVE SOCIAL SCIENCE PAPER: SEEING NUMBERS' ORDERING WORK

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The focus in our presentation is quantitative social science papers using numbers to make a truth claim about the relation between aggressive behaviour in children and habitual playing of video games featuring violent actions. The following claim is typical: "The estimated HVGV (habitual video game violence) longitudinal path for the 2 younger samples (B = .152) was larger than the corresponding path for the older sample (B = .075).... This result strongly supports the theory that playing violent video games is a causal risk factor for relative increases in later physical aggression." (Anderson, *et al,* 2008: e1070). The diagram below presents further evidence for the truth clam in the form of numbers.

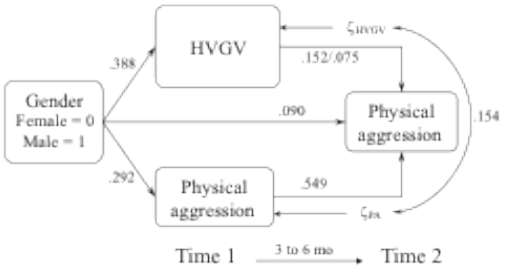

FIGURE 1
Longitudinal model of long-term effects of habitual playing of violent video games on physical aggression assessed 3 to 6 months later, controlling for gender and earlier physical aggressiveness, combined across 1 US and 2 Japanese samples. The 2 path weights for the HVGV path to time 2 physical aggression (PA) are for the younger/older samples ($P < .0001$ and .01, respectively). All other paths were constrained to be equal across samples and are statistically significant at $P < .0001$. Path coefficients are standardized.

As part of a larger study of generalizing in the social sciences we wish to retrieve 'the story' embedded in these papers. This involves recognizing quantitative social science papers as texts narrating a series of events ordered into a temporal succession. In making a generalization, the numbers and calculations contribute specific elements to the scientific narrative, establishing specificity, precision, and certainty. But as method assemblage they also contribute to ordering the world, in this case, particularly a children's world. We show how the chain of transformations of numbers is simultaneously a transformation of the category 'children'. While the numbers generate a flickering tension between plurality and singularity, between complexity and certainty, they also produce a sequential tension between the absence and presence of children, abstracting from children-in-the-flesh while ensuring their continuous presence through representations and indexes.

Thick Numbers and Tentative Connections: When Risk Computations Travel

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As an ethnography of numbers, this paper aims at a “thick” understanding of scientific numbers. Drawing on empirical material from radiation epidemiology, I will follow the trajectory of a statistical risk estimate and the multiple recombinations in scientific, regulatory and compensation contexts. The paper is an attempt to reconstruct the performativity of numbers in different social worlds that seem to be held together by nothing but the number. In other words I will follow the surprising, usually black-boxed connections that are both inherent to and enacted by numbers.

RUMMAGING THROUGH DATA: SECONDARY ANALYSIS AS A KNOWLEDGE PRACTICE

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The 'knowledge societies' of today are fuelled by the generation of data in unprecedented volumes. Social knowledge – knowledge concerned with describing and analysing the actions, behaviours, conditions and capacities of humans and their social settings, such as markets, networks, groups and organisations – has become a ubiquitous feature of policy and institutional work (Camic, Gross, & Lamont, 2011, p. 3). An array of reports, think tanks, experts, and research endeavours, supported by considerable funding, now produce volumes of data, often numeric in nature, to support decision making in social policy.

A significant characteristic of these large data sets is that they are amenable to 'secondary analysis'. Secondary analysis involves 'the re-analysis of data for the purpose of answering an original research question with better statistical technique, or answering new questions with old data'(Glass, 1976, p. 3). Large data sets tend to be descriptive in nature, revealing trends and patterns; secondary analysis may focus on these patterns to perform a more detailed (perhaps qualitative) explanatory study. A well-known example is Durkheim's (1952) use of official records in his sociology of suicide (Smith, 2006). In many cases, more than one large-scale data set might be used. Much of the data available for secondary analysis is in the form of aggregates – i.e., they are already analysed and presented as a summary.

The importance of secondary analysis as a method of generating policy-relevant social knowledge is widely acknowledged (Smith, 2006). The availability of large, high-quality data sets for free or at nominal cost has increased the appetite for this form of analysis, and it is being encouraged through various funding and other incentives. In the UK, the training of doctoral students and early career researchers in secondary analysis is now a national priority (ESRC, 2011).

However, there are a range of concerns about secondary analysis as a knowledge practice. Numeric data sets may be incomplete, skewed, (merely) socially constructed and organisationally defined (Smith, 2006). The translation of the world into numbers performs an inevitable reduction (Gorur, 2011a). Differences in purposes of research may mean that data collected for primary research may not suit the secondary research. Assumptions and compromises made in the primary data collection, whilst apparent to the original researchers, may be invisible to secondary users. The variables significant to the original purpose may not coincide with the variables in the secondary research. Definitions across data sets may not match. Differences in nomenclatures

and the indicators used in the measurement may significantly impact the validity of the secondary research. The significant lack of expertise in conducting secondary analysis, often resulting in formulaic use of methodologies and software, and, consequently, to useless or misleading research has been noted (Gorard, Taylor, Rushforth, & Smith, 2003).

Given the promise of secondary analysis to contribute to policy, the growing significance of international comparative data in national policy, and the concerns regarding this form of social knowledge, secondary analysis as a knowledge practice, and its use and effects on policy, present interesting and significant topics for research. More specifically, two concerns arise:

What are the nature, boundaries, complexities, affordances and limitations of secondary analysis of large-scale, numeric, international comparative data sets?

How are secondary analyses of international comparative data informing and shaping national policies, and how their use might be impacting national policy imaginations?

These are the broad questions which I want to investigate empirically.

Numbering Malaria, Performing Publics

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Every 45 seconds a child in Africa dies from malaria. (Roll Back Malaria)

This week we publish surprising and, on the face of it, disturbing findings. According to Christopher Murray and colleagues at the Institute for Health Metrics and Evaluation (IHME) at the University of Washington in Seattle, there were 1·24 million deaths (95% uncertainty interval 0·93–1·69 million) from malaria worldwide in 2010—around twice the figure of 655000 estimated by WHO for the same year. (The Lancet, 4th February 2012)

I don't think either the IHME or the WHO know how many people die of malaria worldwide — the truth is that nobody really knows. But that's not going to get the headline news. (Prof. Bob Snow, Epidemiologist)

Malaria control is saturated with numbers. Malaria numbers are 'matters of concern', they can communicate urgency as much as success; they warn to maintain the cash flow and of epidemics. They guide politicians and practitioners; they move celebrities and philanthropists. However, they struggle to succeed as 'matters of fact'. Malaria is "so beautifully complex and entangled that it resists being treated as a matter of fact" (Latour, 2004: 234). Instead there are estimates, approximations, controversies and compromises being passed of as facts. In this presentation I propose to think through the role of numbers in malaria control. Analytically, I struggle to find my way through malaria's complexities and uncertainties. Numbers being passed of as facts produce real effects for malaria patients. These (intended and unintended) effects seduce me to perform a similar reality trick (akin to the one done by IHME and WHO) and expose their numbers as uncertain, in order to discredit some effects and make others stronger. But malariologists and disease control practitioners know already that there are few facts in malaria control. My argument would be obvious and similarly reductive than the numbers themselves. Nevertheless, the numbers perform the public in a particular way – as unable to understand complexity and deal with uncertainty, but as willing beneficiaries. So, for now, I hesitantly focus on the effects that numbers have on practices of malaria control – for patients and publics in malarious countries.

MALARIA INDICATORS IN TWO COUNTRIES – KENYA AND TANZANIA

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Conceptualized as an exploration of the "social life" of malaria indicators in two countries – Kenya and Tanzania – and among global-level stakeholders (e.g., World Health Organization, Global Fund to Fight AIDS, TB and Malaria), this study will investigate a tension that has surfaced during exploratory fieldwork among malaria experts: on the one hand, the growing appeal of indicators as composite numerical representations enabling comparison, monitoring and ranking of interventions and countries and, on the other hand, the difficulty of obtaining sufficient and sufficiently reliable data concerning malaria in low-income country settings. Since experts appear to be continually negotiating and navigating by this tension, I am interested in exploring their epistemological and analytical assumptions vis-à-vis malaria indicator production, and especially the role of aesthetics – "attractive" numbers and figures appeal and persuade - in these puzzling processes.

SELF-TRACKING AS A VEHICLE FOR PERSONAL CHANGE

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Academic personality psychology has been wary of self-reflection, by questioning the validity of "self-monitoring" as a mean for gathering data about clients' or research subjects' activities, symptoms, or mental processes. Meanwhile, how persons reflect upon their mental and/or physical states have been in the limelight in many contemporary self-enhancement discourses. Policy discourses often encourage increased self-reflection, for instance in order to adapt more healthy habits. A lot of psychological intervention also requires "harnessing" the powers of self-reflection for changing the self, as seen in cognitive therapy, as well as in the sprawling field of "positive psychology". When Luthans et al.(2007 talk of "psychological capital", the basis of the idea is that the self-care of individuals leads to increased profit in companies. Self-enhancement is also social enhancement. Common to these approaches is an idea of the value of reflecting upon bodily or psychological states or activities in a standardized, objectifying manner, which will lead to higher well-being and unfolding of human potential. The so-called "Quantified Self" movement provides an example of how information technology is used to further not just self-knowledge, but also self-improvement, through the numeration of bodily and mental processes throughout the arenas of everyday life. As put by self-tracking advocate Gary Wolf; "If you want to replace the vagaries of intuitions with something more reliable, you first need to gather data. Once you know the facts, you can live by them" (Wolf, 2010).

The self-tracking practices employed by Quantified Self practitioners may seem radical, but basic tenets of self-monitoring-as-quantification are widespread in current self-enhancement practices, both at the individual and the societal level. To quote Wolf once again, "We tolerate the pathologies of quantification [...] because the results are so powerful. Numbering things allows tests, comparisons, experiments. Numbers make problems less resonant emotionally but more tractable intellectually. In science, in business and in the more reasonable sectors of government, numbers have won fair and square." (Wolf, 2010; p. 2)

Self-quantifying is part of many of the self-technologies that we use to enhance our selves and our lives. The focus of this project is how persons utilize self-tracking tools to conduct their lives. Self-tracking tools standardize self-monitoring across practices, but since such standards are in themselves abstractions from concrete practices (and work by way of this abstraction, cf. Bowker & Star, 1999), their import varies across in individual practices (Busch, 2011). This study will use the concept of "conduct of everyday life" from German Critical Psychology (Holzkamp, 2012; further developed by

Dreier, 2008) to study how persons configure their participations and concerns in relation to the requirements of everyday life. Self-tracking practices focus attention on specific areas of the person's bodily and/or mental processes – so which advantages and limitations do these focuses lead to in relation to how persons arrange their conduct of life? How does the abstraction in quantifications of mental processes such as "mood" or "positive emotions" relate to how persons manage their daily life? Empirically, the project will look at self-tracking interventions in Danish companies, based in cooperation with a Danish personality assessment company.

I have been given access to some of the company's projects, among them an ongoing project at a large Danish manufacturing company, where administrative employees daily registered mood and productivity levels; as well as an upcoming project with "energy diaries", that draws upon Positive Psychology self-monitoring theory (cf. Hippe Brun & Ejsing, 2010) Since I have been given access as an "academic outsider" into a practical world of work-life interactions, I could very much benefit from the anthropological/ethnographical views that seem to be the focus of discussion at the workshop – hence this application for participation!

LIVING BY NUMBERS: YOUNG OLD'S USE OF MEASUREMENT TECHNOLOGIES ON THE IN THE DANISH PROVINCES

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71-year old Elizabeth uses a pedometer on an everyday basis and her aim is to take 16,000 steps per day. "I have not made it beyond 11,00" - she tells me during an interview - "but I have made it to 11,000. And then I will excuse myself, because the first couple of hours when I am walking around here at home, I fail to get it on. I also take some steps during those hours - at least 500 I would say." During my ethnographic fieldwork in the provincial municipality of Vordingborg, I was surprised to learn about the extent to which the young old (50-75 years) orientate themselves towards specific numbers. Elizabeth thus also worries about her cholesterol level, which gets measured every three months in the consultation room of her General Practitioner. She relates the following: "During these Easter holidays we have had guests over two or three days - then you happen to get more of the fat food stuffs. And I focus on that because I know that it is all it takes [...] to increase it. If you are out - you desire an ice cream. Many times I feel like it, but many times also know that there has been something for a couple of days, and then I don't eat the ice cream. What few people know is that ice cream increases it [the cholesterol level] colossally."

It is reasonable to claim that the numbers act on Elizabeth and influence her behavior by urging her to take more steps and telling her not to eat ice cream. At the same time, it can be argued that Elizabeth has entered into a dialogue and negotiation with the numbers - adding and subtracting - according to her method of measurement. This paper traces how numerical expressions of the body have become pivotal for the everyday practices of the young old and the work they perform on themselves using pedometers, blood pressure meters, calorie counters and scale weights. Although they relate their own individual numbers to normal law values computed by epidemiologists (often published by life style magazines, tabloid newspapers, and patient organizations), the elderly not only work hard to keep their scores in place, but also allow the numbers to work on them. My interlocutors thus appear to be very enthusiastic about the numbers that emerge from their use of the many different measurement devices, because the strict monitoring of numbers, scores, and values becomes a motivating factor in and by itself. In the paper I therefore argue that the numbers create a horizon, whereby gradual improvements are made possible through attention to specific numbers.

COUNTING THE DEAD AND ACCOUNTING FOR THEM

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We understand War Discourse as the distributed discursive handlings of war/combat experience in and amongst political cultures. War-discourse-in-action deals with professional vision 'out there', with (de-)legitimizing reports and (un-)critical assessments. Most sensitive instances of war discourse include the deaths out there and the subsequent death tolls. We analyse the changing death tolls after a German ordered bombing in Afghanistan – the Kunduz airstrike of September 2009. The numbers turned from unproblematic, or better, celebrated destruction of the enemy, to highly problematic killings (of civilians) in need for justification. The death tolls show how numbers are morally loaded, how counting is a moral activity that implicates a certain membership status (quality) of the objects quantified. The Kunduz case confronts the recipients with a confusing variety of counting results and methods. Confusion and doubts, however, emerge only due to initial counter-evidence: they open a field somewhere between the initial definite null ("no civilians") and a proximate vague speculation ("many villagers"). The ensuing re-counts oscillate between these two, on the one hand, and changing categorizations, on the other. The latter deny that one could account for what happened in terms of counts. This denial of a possible (definite) count implies a twofold diversion from modern accounting: it denies the possibility of moral responsibility as well as the possibility of responsible action out there. What cannot be counted and not accounted for could not be defended either: the Afghan people.

COUNTING HEADS, CUTTING HEADS : A NOTE ON THE POLITICS OF POLLING

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What does it mean to do politics? And how are numbers involved? In this paper I address these questions by telling three interrelated stories about the ways in which democratic politics is expressed in and through numbers, and discussing what those numbers in turn tell us about political participation in a democracy.

All three stories come from my recently completed PhD thesis, which is a material-semiotic analysis of the Parliament in Hungary – a country where democracy is said to have begun after the fall of communism in 1989. Indeed, my first story leads straight back to the first democratic election in 1990, in which the Alliance of Free Democrats (AFD) – a liberal party that is often portrayed as the movement that initiated the regime change in Hungary – came second behind the conservatives, gaining 24.09% of the seats in the new National Assembly. Four years later, with 17.62% of the seats, the liberals retained their second position, despite the fact that by then the conservatives lost most of their support, and decided to form a coalition government with the Hungarian Socialist Party (HSP), which received more than half of the votes in the second democratic election. Whether it was the difficult economic situation of post-communist Hungary or the political scandals of the first liberal-socialist coalition that then led to the dramatic loss of popularity of the AFD is difficult to tell. What is certain is that in the third democratic election the liberal party barely crossed the 5% threshold required to make it into the parliament, and so it became one of the smallest parties in the National Assembly. After 1998, the liberals could not break out of the small party status: both in 2002 and in 2006 they received only 5.18% of the mandates. This allowed them to form another governing coalition with the socialists, but also made them look like the little brother of the HSP with no will of its own.

Just how frustrating this little brother position must have been for the liberals becomes clear in my second story, which is about the AFD's attempt to liberalise the Hungarian healthcare system. Healthcare was regarded as one of the symbolic issues of the second liberal-socialist coalition, and so from the beginning of the 2006-2010 term the conservatives did whatever they could to undermine all healthcare-related initiatives. In the end of 2007, when the government's new healthcare bill was passed by the National Assembly, the opposition called for a referendum, arguing that it was the people's right to decide whether they wanted to pay daily hospital fees and consultation fees, or preferred the healthcare system to remain publicly funded. The outcome of the referendum, which took place on the 9th March 2008, was devastating for the government: 84.08% of the people voted against the daily hospital fees and 82.22%

against the consultation fees. As a result, the socialist Prime Minister announced the withdrawal of the new healthcare law, and – adding insult to injury – on the 31st March 2008 unilaterally sacked the liberal Minister of Health, blaming entirely her and her party for the failed reform.

As if the result of the referendum and the sacking of their key minister were not enough trouble for the liberals, in the end of March 2008 a large commercial opinion poll company published a survey report, according to which the popularity of the AFD among Hungarian voters was not higher than 1% – the worst result since the regime change in 1990. My third story is about this survey report, and the liberal politicians' bitter realisation that if they wanted to stand any chance in the 2010 election, their party had to be urgently repositioned in the political market. This had to be achieved by making liberal politics more distinguishable from the politics of the socialists, and by convincing liberal voters that the AFD was still the only true representative of liberal politics in Hungary. The first part of the dual task went well: a month after the publication of the survey report the AFD officially quit the second liberal-socialist coalition. The second part of the dual task did not go well at all: in the 2010 the liberal party could not make it into the parliament, and soon after the election became an insignificant political entity.

These three stories about a series of elections, a referendum, and a survey could be easily read as three moderately interesting episodes from the political history of post-communist Hungary. My intention in this paper, however, is to advocate another reading – one that focuses on the multiplicity of numbers on the one hand, and the political implications of that multiplicity on the other. The first and the second story are obviously different. The first is about a people that exercises its sovereign rights through elected representatives, no matter what issue is at stake, while the second is about a people that is expected to make decisions about various issues, no matter who is in government. What a closer look at the numbers, more precisely at the logic of enumeration, associated with elections and referenda indicates, however, is that these two stories are also quite similar: both are about counting heads, that is, calculating the percentage of individuals within a political community. It is this similarity that makes the logic of enumeration presented in the third story look radically different. Unlike elections and referenda, surveys are about cutting heads: they are predictions about which parties and politicians are likely to fall from power in the near future. As such, what they take for granted (and thus help to perform) is not a people but of a political market, where political participation is limited to discreet acts of voting. By juxtaposing counting heads and cutting heads as distinct logics of enumeration, the purpose of this paper is not to critique political markets per se, but to articulate the possibility of doing politics beyond the reality of markets, within democracy.

GIVING AN AGE-RATING TO A COMPUTER GAME: HOW IS IT DONE? WHAT DOES IT DO?

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Classification of computer games (in Germany) is done via age-ratings; the classification agency is thus tasked to give a number to each game, delimiting the age above which people are allowed to buy the game. At the same time, the actual procedure used to arrive at this number is a thoroughly qualitative one (albeit standardized to a considerable extent): a classification board will follow a presentation of the game on screens, visually identifying the elements of the game they might consider detrimental to children's education or development. This begs the question of how the board members go about translating those 'qualitative' visual experiences into a number; and, relatedly: what does the number do (both within the actual procedure and beyond)?

These questions might usefully be addressed by framing them in terms of a 'career' of the number, as it appears both in the procedure and in my actual data: the classification agency's written decisions.

Starting with the former, the classification procedure begins with the producer or publisher of a game applying for a rating; usually (but not always), this involves indicating which age-rating the applicant desires. Here, the number/age appears as a proposal. When the game, along with the application form indicating the number-as-proposal, arrives at the agency, in a first step the number seems to be 'set aside', temporarily detached from the game. The latter is being subjected to a testing / 'sighting' phase, with a tester playing the entire game and preparing the presentation for the expert rating board. At the beginning of the deliberation phase, where the experts and the state representative comprising the board exchange their views on the possible/expected effects of the game on children, the number-as-proposal is reintroduced by the state representative (in his capacity as chair of the session). The board's deliberations are concerned to establish the appropriate numerical age-limit for the game to be no longer harmful or detrimental to children. In this process, the number-as-proposal (as proposed by the application) will (sometimes) be met by further numbers-as-proposals (as proposed by individual board members). Deciding on a number involves fixing the classification board's view on the game.[1] What emerges

[1] If necessary, this is done by simple majority vote – another intermediary step in which the individual board members are related to each other and to the various numbers-as-proposals in a numerical way. Participants do however prefer one specific numerical relation: the 'limiting case' of unanimous decisions.

from the procedure is another number (which might or might not be equal to the number-as-proposal introduced by the applicant), this time figuring as a decision.

This number-as-decision also provides a common point of reference for interaction between the classification agency and applicants: Following the board's decision, one of the involved members writes up a decision report, which is then sent back to the applicant; in this written decision, the board lays out its arguments for the number-as-decision in such a way as to convince readers (primarily the applicant) that this number is the right decision (applicants do have the possibility of appealing the decision). In these written decisions, in particular, the number-as-rating, delimiting who may or may not buy the game, is explicitly related to the number-as-category, mobilizing the qualities or predicates required of players to play the game in a competent (i.e., non-harmful) way; here, the number emerges as central to relating the game to its prospective players. However, the number in itself is not enough to ascribe qualities, abilities, and the like to the inhabitants of a given age group. Written decisions arguing the number-as-decision must therefore apply further categories; these are either taken from the educational system (e.g., pre-school children, elementary school children, etc.) or from more mundane types of 'stages-of-life'-categories (e.g., the youngest children, young children, etc.). It is these non-numerical categories which effectively provide the abilities required of children to play the game competently. By the same token, however, the age of the children becomes centrally relevant to connecting knowledge about them to wider social contexts: here, the number-as-age could probably also be seen as an institution, stabilizing action across time and (social) space.

Along these lines, I will attempt to further elaborate on the number's career in its various guises, with an eye to the practices involved in achieving the necessary translations from one step to another. This will serve to find ways to get a grasp on what is practically involved in classifying computer games according to the age of players, and on the role(s) played by numbers both within the classification procedure and in its various social contexts.

THE OFFICE: THE WEAKNESS OF NUMBERS AND THE PRODUCTION OF NON-AUTHORITY

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It often seems to be taken for granted that numbers produce effects and that practices of accounting enhance authority. This also goes for accounting and the environment. This paper shares this belief and argues that practices of accounting have been a crucial technology for taking nature or 'the environment' into account in the post-war era. Nevertheless, the 'constitutive turn' in the studies of accounting should not tempt us to leave unexplored the limitation of accounting practices and the inabilities to govern by numbers. With a point of departure in a pollution control agency, the paper explores the making of a nonauthoritative office. It points to the emergence of what is labelled 'accounting intimacy' rather than the exertion of government at a distance. The paper also points to the ways in which the agency, rather than building a separate and distinct authority, came to reproduce the actor subjected to being governed, i.e., the polluting factory, within its own office. The author argues that this can be related to the investment in a shared 'technical interest' and the belief that the right (emission) number in itself would be sufficient to move the factory. The paper then explores the conditions for which numbers nevertheless came to have effects. The argument is that this should be seen as inextricably linked to the emergence of an 'interesting object', i.e., 'the environment' and an environmental interest, within the office. Thus, we need to pay attention to the formation of interests, and as accounting scholars turn to 'the environment', the latter should not be taken for granted.

How do organizations make sense of numbers?

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Looking back at the past ten years, German universities have become a site of different processes of quantification of activities in research, teaching, and administration: The Bologna Process has installed the European Credit Transfer System (ECTS), and the new compensation system for professors in Germany – the so-called "W-Besoldung" – has introduced incentive structures that pose a challenge to universities: the activities of a professor must be measured and translated into incentive structures. The numbers of publications, citation impacts or the amount of external funding are brought into play when it comes to resource allocation. Furthermore, it is assumed that other systems of socio-calculation (Vormbusch 2007) are still being constructed or already sitting in the drawers of university offices, waiting to become part of the formal structure of the university.

These processes of quantification have been analyzed from various perspectives in the Social Sciences. The vast majority of these approaches ascribes certain effects to numbers as such. Whereas a certain type of literature, mostly economic and politological, is in agreement that numbers have a motivating, incentive effect and lead to a more conscious, sustainable and rational behavior, another type of literature, particularly sociological, identifies an original logic or dynamic, a particular persuasive effect in numbers (Heintz 2008; Vormbusch 2007) that eventually leads to employees becoming human calculating machines (Vollmer 2004). The effect changes again if numbers are made public and are (explicitly) related to other numbers (Heintz 2010). Then the effect is that something counts only if it is countable (Sauder / Espeland 2009).

However, I will argue that both the economic and political sciences as well as the sociological approaches underestimate the "Eigen-Sinn" of the organization and imply that numbers or indicator systems have an unfiltered and direct effect. The reason might be that their perspective is heading toward a social theory. In my paper I will look specifically at how *organizations* communicate those new numbers (Wagner 2008). Based on Luhmann's works (Luhmann 1976), organizations are characterized by system-specific communicated expectations. Thus, in regard to numbers organizations form specific expectations; these expectations might – with regard to membership – be formal or informal.

Nevertheless, both formal and informal expectations can be traced back theoretically to certain latent, pre-reflective schemes, analogous to what Fleck terms "Denkstil" (1935) or Weick, Sutcliffe and Obstfeld describe as "mental models" (2005). Based on

such schemes, one can again theoretically reconstruct system-internal structures of recognition (Wagner 2008). I will argue that those schemes in a way 'decide upon' the effect of numbers in organizations. It is neither "numbers that make sense of the world", nor do "numbers make a world that makes sense" on its own. If one wants to learn about the effects of numbers, it is necessary to look at practices of interpretation i.e. the communicative strategies, which have to be analyzed with regard to certain latent schemes (Kieser 1998).

In my research I assume that the university as an organization is home to a set of different and contradictory schemes in regard to numbers that paradoxically has the function of maintaining the system's frontiers. I assume that the direction and pace of the establishment of system-specific communicated expectations in regard to numbers is connected to system-specific structures of recognition. The approach does not neglect "the aura" that has come to surround numbers. It tries to reconstruct it, theoretically grounded, with a focus on organizations.

NUMBERS AND THE ENTERPRISE OF INVESTIGATING PSYCHIATRIC CARE PRACTICES

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In my current research project I am concerned with classification practices in psychiatry. In particular my colleague and I analyse how the classification of "chronically mentally ill" is produced in the practices of psychiatric care and which work the classification does in these everyday practices. As the classification of chronically ill is substantially questioned in the clinic the challenge of our ethnographic study is to elaborate on the practices and infrastructures that, nevertheless, keep the category in place. Our observational protocols are hence full of detailed descriptions of how professionals, tools and patients accomplish and struggle with psychiatric care. Numbers, of course, are deeply involved in these practices. We encounter them as clock time when patients and professionals arrange their appointments. We encounter them as a measuring unit for example when blood pressure or body weight is measured or when doctors decide upon the dosages of pharmaceuticals. We also meet numbers when professionals present new patients at the weekly team meeting. There, the team members learn about the age of a patient, the number of her siblings, about the length of time of her symptoms and so on. Patients, thus, are classified through numbers in various ways. Knowing about specific numbers is hence important for the professionals to know the patient and to make her problematics treatable in the setting of the clinic. Interestingly knowing about specific numbers is also important for me, the social scientist, if I wish to be acknowledged as a competent researcher. The numbers I am supposed to know may differ or not from those numbers which are important for the professionals. However, the degree I refer to accurate numbers is taken as a degree for my acquaintance with the psychiatric field. Which set of numbers is considered relevant for this purpose highly depends on whom I am talking with or writing for: the patient, the nurse, the head of the psychiatric department, or medical anthropologists, for instance. Intriguingly, it is not only accurate numbers that I need to be aware of while writing ethnographic sequences for some sort of an audience. Contrary, to cope with the standards of anonymization I need to change names but also to distort numbers. Lately, I have noted this while translating my field notes about a patient's case presentation into a sequence for an academic publication.

In all of these instances numbers are important actors. The workshop provides an excellent opportunity to broaden my thinking about how there agency can be included more explicitly in the study of psychiatric care practices.

Accountability in Practice: an ethnographic study of evaluation research in Afghanistan

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This is a paper on the computer program Microsoft Excel, based on work as an evaluator for an Afghan research organization evaluating development projects in the South of Afghanistan. In the evaluation procedure Microsoft Excel doubles as a tool for the analysis of development data and a mode of its presentation. Over time its empty grid becomes an ever-expanding workbook filled with heterogeneous data, to ultimately shrink into a concise series of clean rows and columns filled with numbers.

Evaluation research brings together lots of data different in form, content and origin. The data is hardly ever straightforward for those who have to work with it. In the evaluation of an education project explored in this paper this leads to countability and categorization problems. Salaries and blackboards might be easily countable, but what counts as a school when many children are homeschooled? Another issue is the reliability of the data. Local surveyors have secure, cultural, and linguistic access to educational data in the field. Internationals do not have this. They, in turn, claim to know what education should look like and claim to have more and better research skills and experience. Whose data is more reliable and how are incompatibilities dealt with?

In order for Excel to do its magic of producing rapid and visible results and insights in the data and present these in its powerful aesthetic, the heterogeneous mix of color-coding, Farsi/Pashtu/English words and numerical values, empty and filled cells, comments, and question marks that occupy the grid needs to be cleaned. This paper investigates this process of data cleaning, how the problem of the reliability and accuracy of data is dealt with and how different logics of, among other things, aesthetics, office politics, and accountability protocols factor into what counts and what doesn't count as a development figure.

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