

Producing difference in an age of biosociality. Biohistorical narratives, standardisation and resistance as translations

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received 29 Dec. 2006, received in revised form 13 April 2007, accepted 23 April 2007

Abstract

This paper brings together thinking from the history of science, science and technology studies and social/cultural anthropology to better understand how human diversity is handled in everyday practices in science and beyond. Our aim is to take the social and historical contingency of practice as a starting point and to focus on the patterning of practice, which arises from the constraints of socio-material alignments and leads to the co-production of diversity.

Under the headings of race and ethnicity, sorting practices with regards to human diversity have been at the centre of anthropological thinking and critique since the age of Enlightenment. Constructivist critique has insisted on understanding "race" as a social construct and warned of reifying differences of a socio-cultural making. This critique has so far not been particularly fruitful in dealing with human biological difference as produced in different everyday practices in science and beyond.

Recently, molecular genetics have reinvigorated the interest to stratify human populations into subpopulations to improve drug development and targeting, to ascertain vulnerabilities and plasticity, to adjust nutritional intake or therapeutic strategies or to trace ethnic ancestries. We suggest that the shortcomings of constructivist critique in the face of these latest developments are due to its focus on theoretical concepts and self-descriptions rather than the practices and their implicit logics within and outside science proper. By employing Hacking's concepts of 'making up people' and 'looping', Rabinow's 'biosociality', as well as Callon's concept of 'translation', we hope to show the interactive dynamics of classification and response which take place at the interface between different knowledge practices. We trace translations through the life sciences into clinical practice and beyond into different social constellations, involving medical practice, made-up people and social bodies in order to show how human diversity is produced in practice. We put an emphasis on the different roles that biohistorical narratives, standardised packages and forms of resistance and appropriation play within these constellations.

1 Introduction

1.1 Making a difference

Practices of sorting and classification are an all-pervasive feature of everyday life not only in modern societies (Star/Bowker 2000). These practices create difference. In many cases, they are procedures structuring daily activities such as separating administrative papers from academic papers on our desks or distinguishing between options for lunch. Already at this seemingly trivial level, "sorting things out" as a knowledge practice requires different actors, strategies and artefacts to relate to each other in order to make sense of particular constellations.

Where society or social order is concerned, the effects of sorting practices have always been at the centre of social scientific investigation without the practices themselves necessarily receiving a great deal of attention. It is perhaps Luhmann's thinking on the nature and role of observation as *necessarily* distinguishing between two kinds, which has been most centrally concerned with sorting practices themselves rather than just their effects (Luhmann 1992).

The need to distinguish between kinds gains a particular relevance when it comes to biological differences between human beings. While state-of-the-art biological knowledge portrays the human species as existing along a spectrum of continuous variation within which reasonable categories cannot be justified¹, everyday practice in the sciences as elsewhere necessarily makes distinctions also on the basis of biological markers. How this discrepancy is handled, rather than its ontological status, is the focus of this paper. Classificatory practices are thus

understood as necessarily intertwining scientific-technical knowledges with political-moral discourses.

Under the headings of race and ethnicity, sorting practices with regards to human populations and diversity have been at the centre of anthropological thinking and critique since the age of Enlightenment. As scientific practices, they gained more importance in the late 19th century, at the peak of colonialism, and with the rise of empiricism in administration as well as the sciences (Hacking 1990). Throughout the 20th century, notions of human diversity have undergone fundamental changes, not only as responding to the terrible consequences of racist thinking, but also due to alterations of political as well as epistemic cultures.

Although cultural anthropologists and social scientists particularly in North America had begun to critique biological notions of race and ethnicity since the beginning of the 20th century, this critique became influential in political and scientific contexts in the second half of the 20th century. After World War II, with active participation of geneticists and anthropologists in anti-racist campaigns, a seemingly stable public consensus was reached about the biological insignificance and meaninglessness of racial differences (Reardon 2004). The idea that race is a social construct and thus an object of social rather than biological inquiry has been gradually developed towards a constructivist critique ever since.

The scientific "puzzle" of human diversity, however, has not disappeared. Physical anthropologists around the world did not abandon concepts of race but carried on employing racial categories in working routines and academic textbooks. Towards the end of the 20th century, population genetics shifted notions of human diversity from race to population. Public proclamations of the biological meaninglessness of race accompanied the en-

¹ See, for example, the publications of the Max-Planck-Institute for Evolutionary Anthropology (Grine et al. 2007) or the American Anthropological Association (AAA 1998).

deavours to decipher the human genome in the late 1990s.²

Yet only a few years later, the problem of "found"³ biological difference re-emerged and with it the question how to interpret and attach meaning to it as well as its usefulness in biomedical research and therapy (Reardon 2004). The Human Genome Project and the subsequent "-omics" initiatives to decipher different levels of complexity all the way to the epigenome (Murrell et al. 2005) have reinvigorated the interest of the life sciences to stratify human populations into subpopulations for a whole range of reasons: to improve drug development and targeting (Anderson et al. 2003, Evans/McLeod 2003, Evans/Relling 1999, Watters/McLeod 2003), to ascertain vulnerabilities and plasticity (Hsu et al. 1996), to adjust nutritional intake (Afman/Muller 2006) or therapeutic strategies (Lin et al. 2006, Pi/Simpson 2005) or to trace the ethnic ancestry of individuals. While the vision of personalised medicine still faces fundamental obstacles on its way to market fruition (Kollek et al. 2003, Lee 2003), biomedical sorting of human populations finds broad support in research and industry and is common practice today.

This calls for attention on part of the humanities and social sciences. Yet particularly in Germany, the response has been virtually non-existent. While scholars in the humanities approach human diversity studies – and that means, mainly publications of biologists – from the perspective of discourse analysis, social science investigations of current biological or medi-

cal *practice* and its effects *outside* science proper with respect to human diversity are rare. Internationally, particularly in North America, the response has been different if not necessarily all that more fruitful. In the US and in Canada, anthropology⁴ enjoys a much more prominent position within the scientific debate and has insisted on understanding "race" as a social construct, warned of reifying differences of a socio-cultural making and continuously critiqued any sign of re-naturalisation and essentialising (Cooper et al. 2003, Duster 2006, Epstein 2004, Goodman 1995, Holden 2003). Nevertheless, beliefs in race as a biologically clearly identifiable difference remain prominent not only in parts of the scientific community but also in public and media discourse. Further, in politics and administration, race as a non-biological concept is still used in prominent processes such as the US Census.⁵ It is thus by no means clear what effect the constructivist critique of cultural anthropologists is producing. The American Anthropological Association (AAA), however, is set on continuing their line of critique and has now begun to think preventively by starting to produce educational packages designed to deliver the constructivist message to schools.⁶

² The "population paradigm" seems to allow for a much more differentiated, and hence more sophisticated, representation of human diversity, but it differs significantly from the constructivist idea that human diversity is nothing but a social construct.

³ "Found", as a play of words, is here meant to point to the problematic relationship between data and knowledge as well as representation and fabrication of scientific facts.

⁴ Translations between German and English often lead to terminological confusion: In Anglo-American contexts, "anthropology" means "cultural anthropology", if no attribute is added (such as "physical anthropology", which is a discipline in its own right). Especially in Germany, "anthropology" stands for "physical anthropology", if no further attribute – such as "historical" or "social" – is added. Furthermore, the terms "race" and "Rasse" are no equivalents either. While "Rasse" stands for biological aspects of diversity only, "race" represents more than biological notions, however it might be reduced to its biological meaning in certain situations.

⁵ See www.census.gov

⁶ For further information see the American Anthropology Association website, with links to various scientific statements, edu-

The response of the bioscience community to this critique needs to be examined carefully. Since the debates around the Human Genome Diversity Project, public and scientific resistance to research that operates with race as an implicitly biological concept is being taken seriously. A number of editorials appeared in prominent places to clarify that race has no biological basis, that intra-group variation by far exceeds inter-group variation in all meaningful studies, that it is a social construct (Holden 2003, Kittles/Weiss 2003, Lee 2003, Whaley 2003). Yet, while accepting race as a social construct, biological differences within human populations nevertheless remain important.⁷ Many recent controversies have illustrated that the decision whether these biological differences are accepted as a viable means of differentiation depends on a whole host of factors in- and outside of science proper, only some of which are being problematised to a certain extent within the biomedical community itself.⁸ In the spectacular cases, such as the US FDA approval of the heart failure drug BiDil for African-Americans (Kahn 2006) or the stalling of the Human Genome Diversity Project (Cavalli-Sforza 2005), the reasons lay in regulatory policy, economics, political and moral resistance as much as in the science itself (M'Charek 2005).

In the laboratories, however, away from the relative glare of public social and ethical scrutiny, race continues to be used for rather pragmatic reasons of data availability, comparability and

cation projects and material: www.aaanet.org and <http://raceproject.aaanet.org>.

⁷ This is not to say that the changes, which have occurred have been merely rhetorical; though a perceptible increase of the use of a biologically based notion of ethnicity in scientific publications has occurred (Kaplan & Bennett 2003; Zhu et al 2005).

⁸ See the 2004 supplement of the journal *Nature Genetics*, titled "Genetics for the Human Race", that discusses the problematic aspects of this phenomenon 2004 (2004).

marketing chances. This difference between politically correct, purified self-description and everyday practice is significant. Althusser and Bachelard have pointed out the need to distinguish between the natural scientists' spontaneous philosophy and the operative epistemologies of scientific practices (Althusser 1990). Yet current social constructivist critique struggles to deal with this differentiation because it attaches to the theoretical concepts and self-descriptions rather than the practices and their implicit logics.

Further, we suggest that social science research has systematically failed to take into account materiality. From the turn of the last century, scholars such as Durkheim, Weber and Simmel and, later, Kuhn, Adorno and Habermas have insisted on a domain of the social resolutely purified from materialist encroachment; all, of course, for very good reasons of resistance against an increasing "confused positivism" (Whitehead 1968: 179 German version, transl. by authors). In Germany, a new sociology of technology, which emerged in the 1980s, (re)introduced materiality by analysing its complex integration and multiple role within networks of agency (focusing particularly but not only on technological artefacts) (Joerges 1987, 1988). In a similar vein, studies on the social construction of technology emerged around the same time, portraying materiality as enacted or at least conditioned by social practice (Bijker et al. 1987). This paved the way for an historically informed science and technology studies and actor-network-theory, which further differentiated the role of materiality as technology in social analyses of scientific practice (Biagioli 1999, Knorr-Cetina 1999, Latour/Woolgar 1986, Pickering 1995). Yet materiality as body, as physiology and as biology has remained largely outside of social scientific analyses, with very few exceptions in performative approaches which focus on em-

bodiment as body enacted through technological practice, but do not cross the border to integrate physiology (Akrich/Pasveer 2004, Berg/Akrich 2004, Epstein 2004, Gomart 2004, Latour 2004, Lock 2004, 2005, Mol/Law 2004, Van Der Ploeg 2004). Still firmly entrenched in a constructivist dialectic, much of cultural anthropology is not even prepared to talk about biological difference for fear of being accused of reifying social difference.

1.2 Beyond constructivism

How to move beyond constructivist critique has thus become a prominent challenge in the social sciences. The annual meeting of German sociology 2006 seemed to offer a somewhat realist position, which begins to take materiality as revealed by the biosciences as fact. As a consequence, sociology – at least according to the emerging consensus of its practitioners – ought to focus on the non-material aspects left to socio-cultural shaping. We take this position to be too defensive.

Taking up some of the strands from the more courageous debate in the 2006 STI special issue (Schulz-Schaeffer et al. 2006), we use the example of human biological difference to demonstrate a different way of handling the modern dichotomy between nature and culture by bringing together thinking from the history of science, science and technology studies and social/cultural anthropology.

This paper, then, is meant to demonstrate the need for a heightened sensitivity towards certain theoretical strands when working in and on knowledge practices concerned *inter alia* with different forms of materiality. While it leans to a degree on concepts from a social anthropology of knowledge, actor-network-theory and a historically sensitised science and technology studies (STS) as well as philosophy of science, its primary goal is not the positioning in one or another theoretical framework. Rather, we understand theory in the sense of

Deleuze and Foucault as a tool, which is necessary to understand the logics of modern constellations (Deleuze 1997).

Our "field", human diversity in everyday scientific practice, at a first glance seems to be primarily one of scientific actors, hence suggests an investigation using an STS vocabulary. Yet what we are hoping to show is the multiple embeddedness of scientific practice in social and political contexts. While concepts such as epistemic culture (Knorr-Cetina 1999) have been developed from work on scientific contexts, the multiple interactions, resistances and co-productions between scientific practices and social contexts have received less attention outside a rather narrow social psychological or public understanding of science perspective (Stifterverband 2000) and its critique (Irwin 1999, Irwin 2001, Wynne 1996, 1999). In spite of many more or less successful attempts to abandon the division line between science and the public (Goschler 2000), historians of science have rarely traced the easy travelling of knowledge practices between those spheres (Hess 2000). Similarly, social science work rarely focuses explicitly on the multiple interactions between scientific practice and a wider social context.⁹

We thus take as our starting point Ian Hacking in order to focus on the interfaces between scientific and everyday practice:

"I coined two slogans. The first one, 'Making up people' referred to the ways in which a new scientific classification may bring into being a new kind of person, conceived of and experienced as a way to be a person. The second, the 'looping effect', referred to the way in which a classifi-

⁹ A notable exception in sociology is certainly Ted Benton's 1991 programmatic paper on biology and social science (Benton 1991), while Peter Baldwin's "Contagion and the State in Europe" opens up another line of thinking on the link between scientific expertise and political ideology (Baldwin 1999).

cation may interact with the people classified." (Hacking 2006: 1)

The interactive dynamics of classification and response take place at the interface between different knowledge practices, hence they demand not only a different theoretical repertoire but also a wider approach to empirical work. While this paper does not focus on the inherently political nature of classificatory practices, it is important to note that *making up people* and *looping*, particularly in contexts of illness/disease, are intimately tied to transformations and thus technologies of the self, which are themselves – as patterns of practice – part of wider biopolitical assemblages in motion (Rabinow/Rose 2006, Rose 1998, 2001)¹⁰.

As a philosopher and historian of science, the material on which Hacking draws has a tendency to lead to a rather linear thinking of classification processes. Though his "engines of discovery" escape the narrow focus of a history of ideas, they nevertheless lack the attention to knowledge practices in the public domain and outside of science proper. Callon's concept of translation appears to be more useful in this context (Callon 1999). We take translation to refer to a dynamic knowledge practice aimed at creating an alliance or network, which in this shape or form did not exist before. Translation emphasises the transient nature of alliances, the spatial-temporal patterning of interactions as well as the ambivalent dynamics of such constellations of *actants*. Translation allows for symmetry of material and human agency¹¹ and operates via *interesse-*

ment to position and engage actants. Central to these mechanisms is the notion of something fact-like, which is able to travel across contexts. This fact-like entity has been referred to as standardised package (Fujimura 1992), *faitiche* (Latour 2002) or boundary object (Star/Griesemer 1989) with different connotations.

The following section will trace translations through the bio- and life sciences into clinical practice and beyond into different social constellations in order to show how human diversity is produced in practice.¹² Giving the breadth of the topic and the focus on the epistemology of social scientific investigation, this paper is necessarily only able to produce a cursory impression, which must neglect details many readers will perceive as important.

2 Practicing Diversity

2.1 Biohistorical narratives

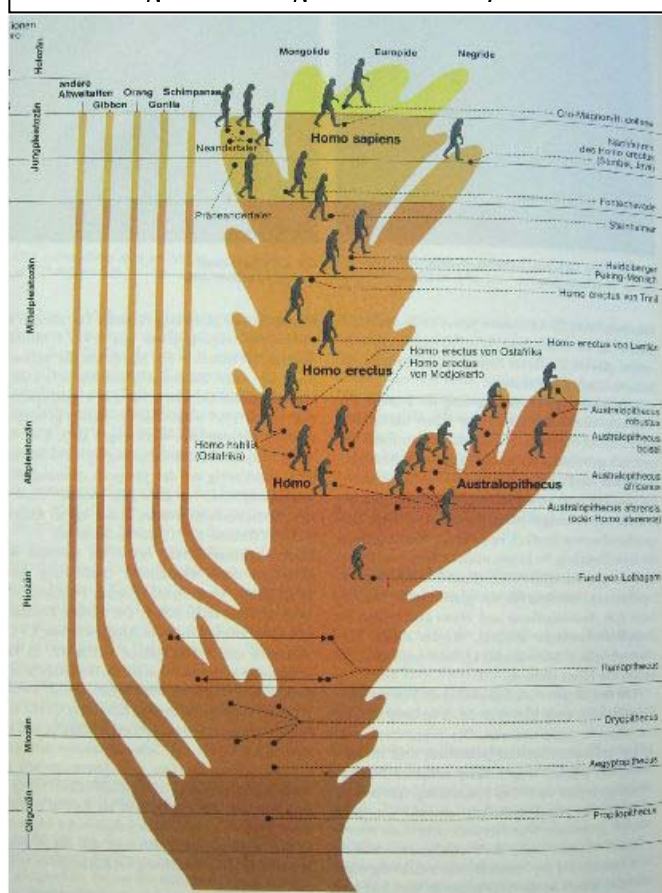
The following sections use observations on the production of knowledge surrounding human diversity to illustrate how classificatory practices produce difference. To avoid an overly complicated picture, we focus on the knowledge production in regard to one specific "branch" of the *homo sapiens* pedigree, namely, the Europeans. This branch, however vague its extensions were imagined, was termed "the European race" in the beginning of the 20th century, "Caucasian" or "White" in anglo-American contexts and "Europids"

standing of agency as we know it from social science.

¹² Much of the methods and the empirical material discussed here comes from three interdisciplinary research projects all coordinated at Humboldt University, Berlin: C:SL Collaboratory – "Social and Cultural Anthropology of the Life Sciences" (www.csal.de); collaboratory project "Imagined Europeans. The scientific construction of the *Homo Europaeus*" (www.imagined-europeans.org); research cluster "Preventive Self: an interdisciplinary investigation of an emergent form of life", www.csal.de)

¹⁰ We thank the reviewers for emphasising the intimate link between Hacking's argument and the line of work on governmentality and related concepts. While we will certainly take this into account throughout the course of the forthcoming work, we apologise for having to leave the political nature of classification rather more sketchy than it deserves in this context.

¹¹ The concept of material agency (see below) does not imply an analogue under-

Figure 1: Pedigree of *Homo Sapiens*

source: Linder/Bayrhuber 1991: 428

– in contrast to "Mongolids" and "Negrids" – in Europe, particularly in both Germanies, up to the 1990s.

The first scientific attempt to classify different human kinds was undertaken by Carl Linné, who separated the *homo sapiens europaeus* from three other 'races' already in the 18th century. Shortly after, Johann F. Blumenbach coined the term Caucasian for white people who according to his thinking were the ancestors of the human species and had emerged from the Caucasus (Baum 2006, Jacobson 1998).

In the late 19th century, the classification of human beings increasingly required much more than mere theoretical speculation. It became, first of all, an empirical enterprise. Skulls and bones were excavated and measured; bodies of living humans were scrutinized and the results carefully reported in complex inscription regimes. As

soon as serological methods were available for large-scale investigations, blood samples were taken and analyzed in laboratories in order to find racial differences. Anatomists searched for racial diversifications of brains and skeletons. Methods and findings of such research endeavours in the materiality of human diversity might not seem very convincing to today's reader, but they enjoyed the prestige of objective and empirically proven scientific practices at the time.

The European was not the primary object of anthropological interest.

Anthropologists throughout the 19th and the greatest part of the 20th century simply took for granted that Europeans existed as a clearly demarcated biological group. Rather than making the *homo europaeus* an object of their research, anthropologists used him as a point of reference and control in the investigations of non-Europeans. Especially during research endeavours to the colonies, anthropologists and medical practitioners were engaged in distinguishing and comparing human groups according to their physical constitution. The primary sorting mechanism relied on the difference between European and non-European.¹³

In contrast, investigations within Europe focussed on sub groups of the Europeans, such as "national" or "regional races". During the first half of the 20th century, attention shifted towards subdivisions of Europeans themselves. Not contradicting this focus on subdivision, it often went without saying that the sub group under scrutiny was at the same time considered European. Against the backdrop

¹³ This is obvious from the research design of studies such as Bruck 1907, Fischer 1913.

of a common European ancestry, anthropologists also began to focus on distinctions between Northern, Eastern and Southern Europeans, between and even beyond nation states.

More detailed differentiations hence did not contradict or break up the classification of mankind into several major races, such as Europids, Mongolids and Negrids. From the early beginnings of human diversity studies all classificatory schemata were based on three or five races. Although, for example, the vision of an "Aryan race" began to dominate the first half of the 20th century in Germany, simultaneously the classification into three groups introduced by anthropologist Egon Freiherr von Eickstedt in the early 1930s was retained as reliable scientific knowledge (Eickstedt 1934). After World War II, in both German states, as in the UK, the USA and the former Soviet Union, and in spite of anti-racist activities, a classification of humans into three or five races gained wide acceptance and was retained in encyclopaedias as well as teaching materials until the 1990s (Reardon 2004, Feustel 1990, Knußmann 1996, Nesturch 1959, Straaß 1978).

Since the 1980s, population geneticists have continued to point out that the genetic diversity of the human species does not permit such coarse classifications. Rather, the species can only be separated into manifold subgroups – populations – separated by continuous transitions instead of sharp breaks. Molecular genetics seems to have issued the final word on the race question. The "population paradigm", as one might term it, has allowed for impressive public and political proclamations about the biological meaninglessness of race.¹⁴

Yet at the same time, racial classifications remain central to biomedical research as well as clinical practice.

Race has been (re)invented as a meaningful category in medical genetics research in the last ten years or so. And while human geneticists proclaim that the inter-individual variance of human genomes is not significant, the work in human genetics laboratories concentrates on genetic differences between populations – be it European, Japanese, Danish, or Afro-American. This discrepancy not only demonstrates Althusser and Bachelard's argument, it also marks the gap which makes constructivist critique difficult.

In order to explain this discrepancy, it is important to take a closer look at the historical presumptions as well as current narratives inscribed into DNA sequences from the perspective of evolutionary biology. Each DNA sequence with its particular piece of genetic information is wrapped within a certain biological story: several variants exist of each sequence. To explain how this variety has come about, biologists tell evolution stories which require only a few concepts such as mutation, selection and drift. In laboratories, these stories are continuously produced and reproduced, diversified and finally told as the stories of larger groups or races. We term these biological stories told by bioscientists "biohistorical narratives".

Plants and animals do not pay much attention to the stories biologists tell about their ancestry, and they do not leave behind historical records and documents. In the case of human diversity, however, these stories describe historical events using biological terms and might therefore generate conflicting narratives on human history.

Biohistorical narratives are not confined to the domain of science – quite the contrary: They constitute integral elements of the identity building of many nations, families, ethnic groups or other social entities. However, since genetics and evolutionary biology have become the predominant source of knowledge on diversity and heredity,

¹⁴ See for example the UNESCO statements on race (Reardon 2004).

most of those rather mystic narratives need to be aligned with modern genetics in order to be consistent with contemporary understanding of "how life works". To explain, for example, why children resemble their parents, families draw on their understanding of modern genetics. To explain how the early ancestors of modern Europeans became European, geneticists tell stories about historical events that shaped what today we know as ethnic diversity or human populations.

The concept of biohistorical narratives is meant here to illustrate on the one hand how cultural-historical presumptions enter lab science. On the other hand, it demonstrates how scientific facts emerging from labs influence the discursively mediated conceptions of nature and history and how they can have an impact on the production of biological difference. They act as devices of *intersement* in the sense that they form translations between DNA sequences and biological methods, presumptions about history, institutional settings as well as mediated public discourse (Callon 1999). Thus biohistorical narratives go significantly beyond metaphors and also beyond a Foucaultian concept of discourse in that they are conceptualised relationally and embedded in practice in as far as this is possible in historical research.¹⁵ The following sections focus on the particular narrative of "the European" and how it is translated into biomedical and social practice. Given the complexity and breadth of the issue, our account is necessarily sketchy pointing out in an exemplary manner the kinds of issues relevant in an in-

vestigation of classificatory processes as practice.

2.2 *Homo Europaeus*: hunter and gatherer

Biohistorical narratives denote stories about nature, narratives about inheritance, generation and evolution, which have become indispensable for the empirical life sciences, but are not being reflected as cultural presumption that are epistemologically contingent. The biological narrative about the European is a prominent example. Bioscientists report how Europeans have come to be what they are today; that today's Europeans decent from seven European molecular Eves (Sykes 2001) and, furthermore, not from peasant immigrants from the Middle East, but from native hunters and gatherers (Haak 2005); why they possess particular enzymes which predispose them to a particular health, a specific metabolism as well as certain nutritional needs, and how the latter co-evolved with agriculture and the domestication of plants and animals (Bloom/Paul 2005, Enattah 2002).¹⁶

None of these research concepts explicates which criteria have been recruited to select the "European". In most cases, it seems that the white skin colour would have been the foremost criterion. Accordingly, there are narratives about how, when and why European skin turned white: that is, under which circumstances it has been a selective advantage to possess a genetic make-up which did not favour the storage of dark pigments (Jablonski 2000). For each gene, which appears to separate the European from the non-European, such an evolutionary narrative is available.¹⁷

¹⁵ Of course, many would argue that metaphors, or language in general, as well as discourse, particularly of a Foucaultian provenience, already incorporate relationality and materiality. However, the mainstream in linguistics and post-structural social theory appears to take a rather more textual or symbolic perspective on the notion of the narrative.

¹⁶ For the latest findings on lactose intolerance and the surrounding discussions about uniqueness and Europeaness of mutations, see Burger et al. 2007.

¹⁷ Though, as to be expected, the findings do not stack up to an uncontroversial body of research. See e.g. Spielman et al. 2007 for some of the latest findings.

These narratives, however, do not remain confined to the rather narrow bounds of evolutionary biology. As empirically determined (and to a large degree naturalised) genetic differences, they translate into clinical practice where they are being used to differentially treat people, for example, in health services. Ethnicity is commonly seen and used as a phenotypic shortcut to the genetic make-up. BiDil exemplifies the pharma industry's interest in these developments (Kahn 2006). Questions about the "nature" of ethnic differences have thus again acquired significance posing fundamental new challenges for health systems with regard to observational practices, diagnosis and administration of treatment.

The concept of the biohistorical narrative exposes part of the translational work which goes into the production of naturalised accounts of human difference. Yet narratives alone would probably not suffice to bolster the plausibility of these accounts. To a significant extent, it is the routinisation of particular lines of thought in technical procedure and its locking in biological material *cum* technology which supports the reification of Euro-peanness in biological practice.

This process is exemplified by the genealogy and current use of the so-called Anderson sequence, i.e. the standard DNA sequence to measure genetic difference from the European. M'Charek reveals in a detailed laboratory study how the Anderson sequence is reified in work routines and treated as a neutral piece of technology representing standard European DNA (M'Charek 2005). She reports that leading geneticists admit that there is a racial bias in this neutral piece of lab technology: Instead of a European sequence, one might have chosen an African or Asian or Neanderthalian sequence as well, but since the first analysed sequence happened to be a European, it was just convenient to take this as a standard reference. A

closer look reveals that the Anderson sequence not only stems from different women but that at least one of them has been African-American. It is particularly due to these standardisation procedures that ethnocentric diagnosis or treatment regimes are often highly problematic.

Having lost this particular context, however, the Anderson sequence as a scientific tool enables the production of genealogical trees of the human species that are able to ignore the historicity of the sequence while giving an accurate historical insight into the development of the human species. Within evolutionary biology the Anderson sequence serves as a *standardised package*— an element of a material-discursive alignment which has become central to the study of human ancestry so as to largely escape further disciplinary reflection and questioning (Fujimura 1992). Furthermore, human diversity – or, more precisely, genetic differences between ethnic groups – is more than just an epistemic object in this context (Rheinberger 1997): it also gains the status of a technical object, or tool, that helps to investigate other objects of interest, such as disease distribution and ancestry, or to distinguish between 'criminal' and 'innocent citizen'.

2.3 Making up people

For single disciplines, such as evolutionary biology, the different aspects of the concept of the standardised package have been widely discussed in their many facets. Across disciplines, the theoretical repertoire narrows somewhat. While the concept of the epistemic object (Rheinberger 1997) and the immutable mobile (Latour 1995) are able to focus on the modes of production of distinct and stable alignments of knowledge, technology and materiality as well as their ability to travel and reappear in different contexts, less has been said about their reception and the effect they may have

on contexts within which they are reproduced.

The following section, therefore, briefly illustrates how medical research on obesity and cardio-vascular risk translates evolutionary biology into its own knowledge practices to strengthen particular hypotheses and aetiological models:

Overweight continues to trouble public health experts and molecular biologists alike (WHO 1998). Many aetiological models have been discussed without any of them fully able to explain the current increase or the distribution of weight across populations (Faith et al. 2002, Farooqi 2006, Rosmond 2005, Vitaliano et al. 2002). Since the mid-1980s, overweight is being discussed in the wider context of the metabolic syndrome: a statistical co-occurrence of metabolic and physiological parameters, i.e. weight, serum lipids, cholesterol, blood pressure and fasting glucose predisposing the afflicted to an increased risk of atherosclerosis, diabetes mellitus type II and cardiovascular disease (Kahn et al. 2005, Khunti/Davies 2005, Reaven 1988). The existence, definition, utility and diagnosis of the syndrome are being fiercely debated.¹⁸ The genetics of the syndrome has become increasingly important over the last five to ten years in line with a general expansion of research efforts at the level of genes and the genome (Hughes/Aitman 2004, Illig et al. 2005, Roche et al. 2005, Shmulewitz et al. 2006).¹⁹

¹⁸ The controversy is currently being investigated from a science studies and ethics perspective (Chatterton October 2006). See also Niewöhner 2007.

¹⁹ Particularly the implication of insulin resistance in the syndrome's aetiology supported a molecularisation of the research landscape as the metabolic syndrome became attractive to the diabetes research community, which already had a significant interest and research capacity in the genetics of insulin action (Ahima et al. 2006, Bjorntorp 1995, Gil-Campos et al. 2004, Hughes/Aitman 2004). Furthermore,

Intricately linked to this rise of genomics research are questions about the transmission of disease relevant factors between generations and, consequently, questions about the evolutionary basis for current diseases and their distribution. This is where the biohistorical narrative about the European hunter gatherer enters the frame. While the so-called "thrifty gene" hypothesis had been developed already in 1962 as a general concept (Armitage et al. 2004, Neel 1962), it re-emerged during the 1990s as a more specific explanatory model to understand the differential increase and distribution of weight across the globe. According to this hypothesis, the early Europeans were striving through Europe hunting and gathering. Those with a high fat storage capacity had a selective advantage in an environment of variable nutritional supply. Hence genomes were selected for in the human population that favoured rapid fat storage. With the change to a modern, Western lifestyle, marked by a continuous nutritional supply and little effort in the acquisition of food, the thrifty genotype has now turned from a selective advantage to a maladaptation predisposing the carrier to a higher risk status. Those of us that put on weight easily are presumed to possess this thrifty genotype. This hypothesis has been further developed to include a thrifty phenotype (Hales/Barker 1992) determined by imprinting processes through behavioural and environmental influences within and across several generations (Griesemer 2002, Jablonka/Lamb 2002, Vijver et al. 2002).

The concept of the hunter gatherer shifts from evolutionary biology into biomedical research and epidemiology

advances in the understanding of adipose tissue as hormonally active (Hutley/Prins 2005, Rosmond/Bjorntorp 2001) have been influential as has an increasingly systemic understanding of the involvement of peripheral and central nervous activity (Bjorntorp 1999, Richard et al. 2002).

and is confronted with a totally different set of assumptions. Whereas the Anderson sequence, concepts of drift, mutational clocks and selection made up the context for the hunter gatherer in the evolutionary biology labs, the translated European hunter has become a fact, a naturalisation and reification of history in biomedical research, which is able to increase the plausibility of certain arguments about the interactions between genetic predispositions and lifestyle in modern societies. If the hunter gatherer narrative were not available, it would be more difficult to argue the case: settled peasants who moved into Europe, for example, would have had less difficulties in maintaining a constant food supply. Thus a thrifty gene would not be such a selective advantage. It often seems to be the intuitive plausibility of many evolutionary accounts as well as its ability to act as a boundary object (Star/Griesemer 1989) supporting translation processes across diverse research practices, which makes these broad sweeping hypotheses so immensely powerful in scientific as well as public discourse.

This brief illustration emphasises how the context within which the concept *hunter gatherer* has been initially produced is not simply lost. Rather, it remains a somewhat abstract and implicit source of legitimacy, which is able to resonate with different research practices.²⁰ They meander between a mere metaphoric use and an ability to organise a way of seeing the research field, generating hypotheses

²⁰ John Law has pointed out that the creation of presence necessarily creates absence or othering as well (Law 2006). Here, the presence of the hunter gatherer as factual knowledge others the uncertainty attached to the concept in evolutionary biology. In a more systems theoretical language, one might consider different research practices as operationally closed systems, which develop something akin to structural coupling (Luhmann 1983) in order to handle increasing external complexity and create legitimacy.

and influencing study design. While they help to legitimise a particular dynamic in biomedical research, it is crucial to note that this new context is not able to break up the routinisation of the concept and reflect the implicit assumptions inherent within it. Rheinberger lucidly analysed how epistemic objects oscillate between routine use and epistemological questioning (Rheinberger 1997). This works within disciplines because the context within which the object operates is intact and the assumptions can usually be made explicit. Once the object has been standardised, packaged and translated into a different disciplinary context, the possibility to reflect the implicit assumptions is largely lost. Biomedical researchers are not sufficiently familiar with the methodological and theoretical development of evolutionary biology so as to be able to return the standardised package from routinisation.²¹

Rather than critiquing this form of evolutionary translation, then, we *follow the actant*, i.e. we briefly turn our eye to the effect of the hunter gatherer on diagnostics.

²¹ A point in passing: Latour has written about the concept of the *faitiche* (Latour 2002) to reveal that it is indeed the conventional constructivist position which reinforces the naturalisation of scientific fact. The constructivist argues that it is him who reveals to the positivist that his fetish-like object is merely a social construction; that if only he stopped believing, he could see what lies behind the construction, namely a particular social constellation. Of course, by so doing, he is blind to the fact that the science community does not invest ontological belief in its objects: they merely work in practice. Thus telling the scientist about the social constructedness of their objects makes little difference to most. Social scientific analyses thus need to accept the contingency (Rorty 1989) of scientific practices as a starting point from which to investigate the unresolvable entangling of representation, production and materiality as well as its consequences.

Figure 2: Ethnic Stratification of Waist Circumference		
source: International Diabetes Federation: Diagnostic Criteria for Metabolic Syndrome 2006		
Country/Ethnic group	Waist circumference† (as measure of central obesity)	
Europids*	Male	≥ 94 cm
	Female	≥ 80 cm
South Asians**	Male	≥ 90 cm
	Female	≥ 80 cm
Chinese	Male	≥ 90 cm
	Female	≥ 80 cm
Japanese***	Male	≥ 85 cm
	Female	≥ 90 cm
Ethnic South and Central Americans	Use South Asian recommendations until more specific data are available	
Sub-Saharan Africans	Use European data until more specific data are available	
Eastern Mediterranean and Middle East (Arab) populations	Use European data until more specific data are available	

* In the USA, the ATP III values (102 cm male; 88 cm female) are likely to continue to be used for clinical purposes

** Based on a Chinese, Malay and Asian Indian population

*** Subsequent data analyses suggest that Asian values (male, 90cm; female 80cm) should be used for Japanese populations until more data are available.

† In future epidemiological studies of populations of Europid origin, prevalence should be given using both European and North American cut-points to allow better comparisons.

Although a higher cut-point is currently used for all ethnic groups in the USA for clinical diagnosis, it is strongly recommended that for epidemiological studies and, wherever possible, for case detection, ethnic group specific cut-points should be used for people of the same ethnic group wherever they are found. Thus the criteria recommended for Japan would also be used in expatriate Japanese communities, as would those for South Asian males and females regardless of place and country of residence.¹¹

The International Diabetes Federation concerned with and about the current obesity epidemic is keen to improve early diagnosis of metabolic changes in order to intervene as preventively as possible with lifestyle changes and drug-based therapy. The current booklet on their worldwide consensus definition of the metabolic syndrome (IDF 2006) includes waist circumference as one of five diagnostic criteria. This in itself is highly controversial, as body mass index and waist to hip ratio are also being put forward as the more powerful indicators, but not unusual (NCEP 2001, WHO 1998, 1999).

Unusual is the ethnic stratification of waist circumference shown in figure 2.

These ethnically sensitive cut-off points are based on epidemiological data from various sources rather than biomarkers indicating a thrifty genotype. Yet the thrifty gene hypothesis strengthens the role of genetic predispositions in aetiological debates and, combined with the hunter gatherer narrative, suggests that genetically different subpopulations will display different rates of obesity and cardiovascular disease. It thus favours an ethnic stratification of diagnostic criteria over a range of others that might be equally suitable and readily available, for example: socio-economic status.

While statistical data can never make any claims about individuals but must

necessarily remain at the aggregate level of populations, the translation of evolutionary biology into biomedical hypotheses and into global clinical guidelines acts as a classificatory device in the sense of Hacking's *making up people*. The production of an individual cardiovascular risk profile through an anamnesis at the local general practitioner including a conversation, biometrics and standard lab test links the individual to a global disease distribution. It translates population risk into a personal fact if not danger with very real consequences.²²

2.4 Biosocialities

Hacking argues that *made-up people* understand their new identity as a way to be a person. He refers to this interactive dynamic as the looping process (Hacking 2006). Hacking argues that whereas classifications such as autism, multiple personality disorder and homosexuality could at different times serve as ways to be a person, obesity will remain a mere attribute of a person rather than a determining characteristic.

We take a different view. Certainly, obesity in its non-clinical forms does not seem to interfere with everyday life as much as autism seems to do. There are no particular treatment regimes disrupting day-to-day practices as with many other chronic diseases; obesity does not really interfere with a person's ability to partake in working life, and perceptions and experiences of the self need not be massively altered to bring together body and self-images with appearance and possible social roles.

However, it seems to us too narrow a view to focus only on the medical-scientific element of a classificatory process. Neither the classificatory process itself nor the responses are driven purely by changes in a scientific

rationale. Instead, both are entangled in wider issues of changes in social, political and moral order. The dynamic interactions of classificatory processes usually occur within a series of wider shifts involving public perceptions, institutional responsibilities and moral attributions.

From a social anthropological perspective, obesity as part of the metabolic syndrome has become not only a different diagnosis but the most important risk factor for cardiovascular disease; a disease that kills an estimated one million people each year globally and already binds around 7% of annual national health spending in the industrialised world. Primary prevention and health promotion have been identified as the most important strategies to get control over the 'obesity epidemic' (Apitz/Winter 2004, Walter 2004, Windler et al. 2004). Prevention in individual terms essentially means a change to a more sustainable lifestyle including exercise and a moderately caloric diet. Prevention in institutional terms means intervention. While this has become a global effort that reaches from a WHO charta via an EU white paper to national guidelines (WHO/EU 2006), the German health minister has indicated that the solution from her perspective will not lie with national sanctions such as a tax on fat, television or cars (Walter/Scriba 2004), but with individually tailored local solutions administered via the health insurers.²³ Coercion, this lesson has been learned, does not work well within a state the people of which perceive themselves and their approach to governance as liberal. Yet, as a consequence, the focus is firstly on a kind of prevention which seeks out those people who traditionally do not respond to appeals to self-management ("aufsuchende Prävention"). Secondly, this liberal regime of intervention firmly

²² On the discussion of risk and danger in diagnostics, see also (Aronowitz 1998).

²³ Presentation at "Berliner Republik, InnovationsDialoge" November 2006, Hotel Alexander Plaza, Berlin, Germany.

rests on a view of the individual as a *homo oeconomicus* (Kirchgässner 1991), as a self-regulated subject trying to optimise its own life by rational choice.

The implication of this is not only an increasing pressure on individuals to conform to medical and economic rationalities. More importantly, in its rhetoric it also conveys a strong moral message: not losing weight and starting to exercise despite better knowledge is a wilful disregard of the community of solidarity that is our society. To economically and morally sanction this kind of deviance has become the explicit target of many who advocate setting approaches to prevention, for example, at the workplace: it can no longer be *cool* to ignore health promotion efforts at work; instead, it needs to be a decision, which is sanctioned by the peers as an attack on their wallet and solidarity in itself.

It is clear from these impressions that classification as overweight or *at risk* is not merely a medical process but increasingly strongly loaded with social and moral meaning. It is, then, easier to see how being overweight can quickly become a way to be a person. Also, it is in this wider context of prevention that the hunter gatherer and its translations into ethnicity-bound regimes of difference enter into social practice beyond individual practitioner patient encounters. The US American National Association for the Advancement of Colored People (NAACP) has started to offer fitness programmes to its members to counteract the obesity problematic in its community. The association's president announced in his opening speech for the annual congress in 2006:

"...We've got a Freedom Fighters Fitness Challenge. Go to the workshops, check it out. It speaks to obesity, and it speaks to the fact that there is a higher percentage of obesity in our communities than there is in the majority community. And we know all of the bad things that go along with obesity, like diabetes, and high blood pressure,

and heart disease. And we know that we've got it, right."²⁴

Though this appeal carefully avoids any reference to genetics, the statement "we've got it" at least implies also a biological component. Other materials by the NAACP make the appeal even clearer:

"With genetic predispositions coupled with poor diet and little to no physical activity, these numbers will only increase."²⁵

Here, the hunter gatherer appears as the risk to a specific ethnic subpopulation, which then needs to respond. And it does respond as a community with a genetic predisposition. The fact that ethnicity may not be a sensible marker, that by far not everyone 'in the community' is affected and that more likely than not a whole range of other factors are significantly implicated in producing increases in cardiovascular risk, are sidelined. The hunter gatherer, while running across a number of social ordering effects, is translated into community practice.

A very different story is told by the manifold nationally and internationally organised associations to advance fat or size acceptance, such as the National Association for Fat Acceptance or the International Size Acceptance Association (similar groups exist across the world). Here, the impetus is primarily on resistance to the moral connotations and the stigmatisation that increases around overweight – the kind of resistance Ian Hacking presumed would not happen because being fat is not a way to be a person. The science that links overweight to cardiovascular disease is disputed on the grounds that it is parameters usually associated with overweight rather than overweight itself, which lead to cardiovascular disease. As a consequence,

²⁴ Bruce S. Gordon addresses the 97th NAACP Convention, 2006. <www.naacp.org> last accessed 27th of April 2007.

²⁵ San Jose Chapter NAACP health watch <<http://sanjosenaacp.blogspot.com>> last accessed 27th of April 2007.

groups such as the above advocate a mobile lifestyle, which does not worry about weight. At the same time, many of them point to what they perceive to be work showing an increasing genetic basis for overweight and consequently argue that it is unhelpful to act against a biological reality. Here, the thrifty genotype translates not into a threat to a community but into an important driver in a complex politics of identity.

These two examples give a small flavour of the complex constellations that arise from translations involving medical practice, made-up people and social bodies. The concept of somatic individuality has already pointed to the increasing role of the body in producing selves (Novas/Rose 2000). It is, however, in the age of biosociality that medical, moral and political intervention logics increasingly blend into each other while controlling populations and shaping their nature according to cultural presumptions (Rabinow 1992). Biopolitics finds an ally in the governance of the soma (Beck/Niewöhner 2006).

3 Looping

In his original writings on looping, Hacking suggested more strongly than in the later lectures that a loop would imply an adjustment of the original classificatory categories (Hacking 1999). This closing of the loop was difficult to imagine from a science and technology focused perspective. The scientific community is not set up to receive feedback from those it classifies. The public understanding of science and humanities approach illustrates that, in some circles, this is not even perceived to be desirable. Yet understanding classificatory practices as translations in the way we have tried to show in the previous sections offers a new way to think the loop. Rather than looking for clearly delineated pathways from the classified back into science, it is via the entangling of the classificatory processes in political,

moral and economic practices that science remains engaged with the classified. This entanglement can take on easily visible forms, such as research priorities and funding, insurance companies putting specific drugs on their positive lists or media reporting.

Even more importantly though is the less visible shifting of translations that has to do with implicit understandings of statehood, individuality and sociality. These shifts render possible certain interventions and foreclose others. They make particular research avenues appear more likely and strengthen certain alliances while lessening others. In a somewhat different context, Hacking argued that the "taken for granted may have a greater effect on our sense who we are, or what it is to be a human being, than amazing achievements on the margins of our existence" (Hacking 2006). We take this as an invitation to further empirical work on translations in the banality of everyday life.

Seen from a historical perspective, looping effects have occurred since the end of the 19th century, when biological disciplines began to gain a greater impact on social processes. Classifications of human diversity have been used ever since to intervene in the biological make-up of populations by setting up laws, marriage counselling services, regimes of health and racial hygiene. The outcome of new loops as described above are yet unclear; however, neither cardiovascular risks nor fatness nor human diversity will remain what they are considered to be today, and this might be due to looping effects similar to those we have discussed.

4 Concluding discussion

We hope to have shown how translations produce human diversity in late modern societies as well as the different roles biohistorical narratives, stan-

standardised packages and forms of resistance and appropriation play within these. We have put a particular emphasis on the multiple entanglement of different knowledge practices across scientific disciplines as well as advocacy groups and sociality. And we have taken the social and historical contingency of practice as a starting point to move beyond constructivist relativism in order to take seriously the patterning of practice which arises from the constraints of socio-material alignments.

In our argument, we have sidelined issues of power and politics to an implicit role. While our historio-ethnographic approach would also support an analysis focused on the governance of human diversity and the implications for self-regulation and intervention, this has not been our point and we believe that it does not invalidate the analysis we presented here.

More importantly, however, it is not clear whether we have succeeded in a symmetrical analysis that (re)introduces materiality into social analyses. As far as technological and biological artefacts are concerned, we have given non-intentional agency to scientists and pressure groups, standardised cell lines and ethnically sensitive diagnostic criteria. This may count as fulfilling Latour's call for symmetry to some degree.

We have also employed the concept of translation to problematise what we believe to be dynamic socio-material practices, namely the co-production of diversity through technology, biological material, scientific practice all entangled in a wider socio-cultural context. We thus hope to contribute to a diffusion of modern dichotomies by focusing on a co-productive rather than a binary vocabulary.

Yet, while we are able to support notions of somatic individuality (Novas/Rose 2000) and biosociality (Rabinow 1992), we have failed to properly in-

corporate the 'body biological' into an historical and social scientific analysis. Further work is ongoing at Humboldt-University and the Charité Medical School to bring physiological parameters into contact with psychometric data and ethnographic reporting of everyday life. We are thus committed to take symmetry seriously and further investigate the multiple entanglement of the biological body, perceptions and experiences of the body as well as representations of the body.

Such an analysis can only succeed if it is embedded within a framework of research that is at the same time clearly focused on disciplinary perspectives and broad enough to integrate findings into a wider historio-ethnographic picture of social practice. This is, we believe, only possible in an interdisciplinary setting that operates beyond constructivism and with an ironic appreciation of contingency.

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