INTRODUCTION
Health and Difference:
Rendering Human Variation in Colonial Engagements

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Human variation, with its many dimensions, represented a fascinating topic of research for life scientists and posed challenging administrative issues for colonial bureaucrats in the first half of the twentieth century. For officials, managing the challenges of colonial administration was often dependent on acquiring data on their subject populations, while, conversely, the scientific pursuit of that data was firmly embedded in colonial rule. For people who were or became colonial subjects during this time, colonial rule meant, at the very least, struggling with new kinds of illnesses, expertise and exploitation. It also often meant being counted and categorized in the name of welfare and reform.

In this volume, contributors follow physicians, demographers, nutrition experts, physical anthropologists, colonial agents, military officials and missionaries in colonies all over the globe, drawing specific attention to how they tried to sort out pressing health problems of populations they perceived to be diverse. From these eight empirical contexts concerned with health and difference in colonial projects, we start from what others have shown, namely that scientific racism, racial medicine and colonial rule were linked in predictable but also ambiguous and contradictory ways (Ernst 1999; Tilley 2014).

Recently, scholars have recognized that a focus on race science or racial research is too narrow to understand how biological differences were made productive in colonial contexts. Helen Tilley (2014) has pointed to the fact that for colonial administrators, racial categories and racial hierarchies were often not the kind of information they could comfortably draw on and that racial research was not the most favoured scientific domain in the colonies. However, while Tilley correctly interprets this as the beginning of political maturity by a lessening adherence to racial ideology, another aspect is that actors developed a new attentiveness towards scientific inconsistencies or incongruities in local constellations. In the realities they encountered,

differences did not necessarily map onto racial classifications, but instead seemed to point to other, more distinctive, more meaningful, or more clear-cut fixed differences. Hence, colonial administrators and scientists might have simply reacted to the one 'signal of resistance' (Fleck, Trenn and Merton 1979) that seemed strongest while documenting the situation. This includes the possibility that they set aside racial research, racial thinking and racial classification in the light of more convincing evidence in one particular instance, but maybe did not dismiss 'race' as a convincing explanation, classificatory tool or potential topic in other respects.

With a broad perspective, this volume explores various scientific attempts to locate order in or generate explanations for the overwhelmingly complex picture of human variation. Scientists did so by employing a multitude of categories and classifications from heterogeneous sources. As stated above, not all were meant to classify *racial* variation; some were centrally oriented towards assessing the variation of other biologically relevant aspects of population health such as the impact of different cultural lifestyles on nutrition and digestion. Attempts to standardize these locally dependent categories proved difficult. To be sure, racial categories were often more or less visibly implicated in these attempts. But still, it is noteworthy that not every life scientist who researched human variation – or who drew on human variation for researching other topics – was necessarily engaged in race science. Those scientists often employed multiple social and biological variables and categories of identity in their efforts to understand and improve the population socially, bodily and hygienically. 'Race' was only one aspect in the categorization of difference, and even where 'race' was an important consideration, it was often considered in relation to – or alongside – other biological and non-biological factors.

Accordingly, and as a contribution to the history of science, this collection builds on historians' previous work on studies of human difference in colonial contexts (e.g. Rich 1990; Ernst and Harris 1999; Dubow 2006; Douglas and Ballard 2008) in that it suggests a shift in focus by looking beyond the realm that is usually described as 'race science'. Many historical accounts of race science or scientific racism have been framed as histories of scientists' explicit interest in 'race', and have focused on how researchers generated 'racial' classifications or typologies measured through anthropometric or serological methods (Stepan 1982; Barkan 1992; Weindling 1993). The chapters here show how 'race' and racial categories surfaced as significant components of colonial research on other topics pertaining to the health of human groups, such as nutrition, demography, medicine and human biology. The chapters also show how all of these research fields employed 'race' in relation to other categories of human difference. In this way, the chapters show how 'race' stood for a firm belief in innate differences as rather fixed and unchangeable in relation to other kinds of more mutable differences. Addressing multiple categories of difference, we aim to embed the history of racial categories in a somewhat more broadly construed history of categorizing differences. At the same time, we acknowledge that notions of 'race' and racial categories played a crucial, if not structuring, role in any categorization of difference.

We highlight these shifts in focus in the history of science by analysing how such research was connected to colonial administrative requirements. Colonial adminis-

trators and researchers shared the perceived requirement of delineating a population and the differences within that population. The categories deemed administratively and socially relevant for dividing people in colonial contexts were entangled with the scientific categories and conceptual tools used in sciences of human diversity. Actors in both spheres shared common interests, resources and networks, practises and discourses. Following multiple categories of difference to a broad range of health concerns reveals that the sphere of colonial administration and the sphere of colonial medicine were indeed closely tied, adding to the significance of the categories of 'race' and 'culture' in colonial medicine that others have so clearly shown (e.g. Vaughan 1991; Anderson 2006).

The scientists' desire and capacity to document was matched by colonial officials' prolific output of reports, letters and other publications. Documentation was a central preoccupation in the bureaucratic routines of health administration (Widmer 2008). The countless reports of medical doctors (Bado, Coghe, Ehlers), military researchers (Mitchell), UN nutritionists (Galluzzi Bizzo), anthropological researchers (Cândido da Silva, Cooper, Pols) as well as correspondence from settlers concerned with social and cultural reform (what they might have called 'civilization'), and letters from various humanitarian groups in the colonies as well as in metropolitan centres piled high on the work tables of colonial administrators, as they pile high in archives today.

Colonial health administrations and medical researchers in their employ presented their statistical data in a wide variety of publications and reports. They assembled tables, graphs or maps to convey accuracy and in-depth coverage of minute details on the health status of populations and individuals subject to colonial rule. Sometimes these tables underlined the author's claim that the health situation of those populations was under control; sometimes they helped to express worries that control might get lost, or that it might not be possible to even establish control. In any case, knowing the numbers was one of the first steps for both researchers and administrators attempting to solve logistical or epistemic problems.

What these colonial tables or graphs represent, read in concert with related paper trails, are countless encounters and multiple and arduous forms of labour leading up to their publication on paper. Often enough bureaucrats or medical personnel failed to accomplish their intentions for medical care in the face of messy realities and few resources; but reports had to be written and results had to be presented. We want to emphasize that the classifications in these documents are not to be taken as a starting point from which to write a history. On the contrary, the categories are often ugly placeholders and poor witnesses of an extremely rich and troubled history of relationships between human beings. The classifications can be taken as a point to begin inquiries that point to the encounters and relationships that preceded the tables and census forms. Understood as dynamic and temporary placeholders, these classifications can help us to explore the many dimensions of the contingent and multiple kinds of practical historical relationships of colonialism. As Pels writes, such scientific classifications 'both indicate and obscure practical historical relationships…. The savage and the civilised never existed in separation: their definition itself already marked

a relationship' (2008: 280). The discussions of classifications in this volume reveal some of those hitherto neglected practical relationships. Like the anthropological categories that Pels is writing of, the categories of human difference in the life sciences 'have to be understood as historical relationships before they can be treated as objects, tools or rules of the discipline' (ibid.).

Once these classifications and categories have landed on paper, it is well worth investigating their material, technical and processual lives. How were they part of the reorganization of social and political relations? From regulating labour standards, to the fight against sleeping sickness, what did the documents do, what did their material presence, their production, their circulation, their storage, their retrieval systems produce? The power and effect of colonial discourse is of course important, but given the imperative of both scientists and administrators for innovating styles and tools of documentation, the making and the circulation of documents is also a crucial activity. What did the creation of what colonial historian Sean Hawkins calls 'the world on paper' (2002) produce as it pertained to health administration? The documentary practices – makeshift though they might have been at times – were central to colonial statecraft and colonial forms of governmentality (though not exclusive to other ways of controlling territories) (Appadurai 1993; Cohn 1996; Prakash 1999; Dirks 2004). Together, the chapters show how the peculiarities of colonial bureaucratic routines, documentary practices and forms of governmentality were entangled with the questions and practices of life scientists. While the connection between anthropology, medicine and colonial governance has been made before, one of the contributions this volume makes is to show the breadth of overlapping bureaucratic and scientific practices aimed at categorizing and understanding human difference.

The knowledge, documentary and archival practices associated with health and medicine were but one – albeit very significant – dimension of the expansive range of colonial documentary and archival practices (e. g. Bayly 1996; Stoler 2009; Roque and Wagner 2012). The chapters thus provide insights into the complex relationship of colonial knowledge to power and governance writ large. Implicitly, then, the volume engages with the colonial dimensions of biopolitics, bureaucracy and governmentality. Foucault's well known work connecting population knowledge, power and governmentality animates this volume, but, as Stoler (1995) and Scott (1995) have pointed out long ago, his analysis did not extend to colonial contexts. With the volume's focus on the connection between colonial knowledge and health administration, it shows the extent to which colonial governmentality was accomplished through the documentary practices of categorizing difference. Furthermore, focusing on categorizing practices in association with discourses and scientific debates points to the fact that colonial knowledge and administration were profoundly material, shaping relationships between, for example, human flesh, swamps and mosquitos and how parents could feed their children.

As indicated above, another way that this collection adds to literatures on colonial medicine and the science of human variation is by making a shift in focus regarding the methodological approach: the chapters collected here concentrate on documentary practices, in relation to discourses, scientific debates or ideologies.

Through examining paper trails of bureaucratic procedures, artefacts of institutional life, alongside scientific practices, we can partially reconstruct how such practices rendered human difference in multiple ways. This volume looks at the effects of these documentary practices, not just in their content, but as a practice of documenting the world that resulted in figuring out population categories for marriage certificates, travel documents, census forms, demographic tables, statistics pertaining to hygiene or nutritional requirements, or plotting different populations on maps. Those population categories were more than just convenient names or labels: they were productive tools of marking difference, endowed with the power to impact the lives of many.

Scholars have told remarkable accounts of the history of knowledge in the topics discussed here. However, in following Bernard Cohn's approach (1996), we maintain that analysing documentary practices helps to reveal and understand 'more complex constellations of difference categories' (Ernst 1999: 8).[1] To be sure, how notions of race intersected with those of gender, class and nation has been an issue in many studies recently, and these difference categories are also crucially important in the chapters assembled here. But, informed by work on classifying, sorting and categorizing from Science and Technology Studies (Douglas and Hull 1992; Bowker and Star 2000), we deem it necessary to go beyond these ever important difference categories and to look also at processes of categorization that could be more fleeting or temporary. Taking Boris and Janssens' invitation to 'complicate categories' (1999) by paying attention to a more local and contingent level, documentary practices bring to the fore classifications and groupings that were first and foremost context dependent and local, and that only made sense in a very specific setting. For example, in Letícia Galluzzi Bizzo's chapter, the 'rice eaters' formed an actors' category in mid-twentieth-century nutritional science. International experts tried to map 'rice eaters' onto racial categories. They failed in these attempts and the categories paved the way for other divisions of people, other policies, and other epistemic objects than racial classifications would have done. 'Rice eaters' described not only a community with a diet mainly based on rice, but a category that figured in the practices of the FAO of making recommendations and standards for daily calorie requirements. It is through the practice of documentation that these categories, which originated in specific contexts, could aspire to relevance beyond one particular setting.

The contributors to this volume explore the troubling presence of actors' concepts of 'race' in a range of different kinds of colonial research on human variation between 1900 and 1950. They focus not just on notions of human difference in racial science, but also consider the administrative procedures and data collection practices that produced human difference in a wider constellation of epistemic questions about human variation. This volume thus opens new questions about how the contingencies of colonial documentary practices of health administration and those in the life sciences shaped knowledge of human variation. The chapters contribute to an understanding of medicine in specific colonial empires, as well as to the history of anthropology, demography and the life sciences. Taken together, they open new intellectual spaces on the range of colonial concerns regarding the administration

of health and knowledge practices preoccupied with categorizing human difference. And yet, by looking at 'race' within these broader institutional and scientific frameworks, we do not intend to deny the harmful effects of race science. Rather, we want to draw specific attention to the research designs, methods and results that reveal the pervasive nature of racial thinking in research on human variation, and the colonial interventions with which it was entangled.

Social, cultural and ecological contexts at local and regional scales shaped the connections between the study of racial and cultural difference and the colonial administration of medicine. This has been well documented and analysed in such diverse places as in the Pacific Islands (Perez Hattori 2004; Anderson 2006, 2009), Africa (Tilley 2011) and India (Arnold 1993; Harrison 1999; Pande 2010; Deb Roy 2015). Related to such analyses, historians have also studied the entanglement of anthropology and the life sciences in European empires such as the British (e.g. Vaughan 1991), French (e.g. Osborne 2005), Portuguese (e.g. Roque 2010), Dutch (e.g. Stoler 1995), German empires (e.g. Zimmerman 2001). Indeed, because of the connections between colonial infrastructures, networks and ideologies, histories that focus on particular colonies or particular empires are methodologically practical and intellectually rigorous. In this volume, however, we present examples from across many empires and world regions and do not aim for a complete coverage of all relevant world regions. We see the breadth and scope of the chapters in terms of the empires – British, German, Dutch, French, Portuguese – and as well as the range of places – Nauru and the New Hebrides in the South Pacific, Angola, Brazil, Afrique occidentale française (AOF), British Uganda, Dutch Indies – as an opportunity. With regard, of course, to local specificities, this volume aims to respond to Warwick Anderson's provocation 'to look for what is colonial about Western medicine in any setting' (1998: 522). Furthermore, as Anderson makes clear, 'we need to recognize that the basic language of Western medicine, with its claims to universalism and modernity, has always used, as it still does, the vocabulary of empire' (ibid.: 529).

The time period covered by this volume starts in the late nineteenth century, focuses on the first half of the twentieth century and, in a few chapters, moves into the 1950s and early 1960s. It marks the heyday of colonial rule, but also a significant period in the history of medicine and the life sciences. Scientists in these fields conceived of human variation as a predominantly biological phenomenon, or they attempted to separate the biological from the cultural dimension to focus their investigations on the former. Hence, new bacteriological and biochemical methodologies were introduced in the study of human diseases and human variation. Even though the new methods would only become effective controls of disease in clinical contexts and public health much later (Quirke and Gaudillière 2008), in the beginning of the twentieth century the hopes of many rested on these new methodologies. Physiologists, biochemists and microbiologists produced new kinds of data – metabolic, transpiration or excretion rates for example – that all appeared to allow for studies of population difference. This growing stream of data added to classical data of human variation research, mainly achieved through

anthropometrics, although seroanthropology (with blood group studies) and the new genetic thinking effectively challenged this methodology from the 1920s onwards (Lipphardt 2012, 2014). In all those fields, the 1950s brought decisive changes. Research on human variation, as life scientists would come to call it, gradually abandoned anthropometry as a core methodology while biomedicine, as a 'new way of knowing' (Pickstone 2000), brought dramatic changes, for example in the scale of investment in research, with regard to the state as a scientific entrepreneur, and through a closer relationship between the laboratory and the clinic (Quirke and Gaudillière 2008). Although the new molecular approach in the life sciences was already underway, none of the chapters in this volume deals with a colonial context in which molecular biology would already have been applied by that time. This volume, then, takes the commonly accepted chronology of the emergence of biomedicine as a temporal frame and examines the wide range of issues that were analysed and administered under the purview of health and difference. The chapters connect and highlight population level themes related to health that colonial administrators and life scientists concerned themselves with: a population's vitality, with special regard to population 'mixtures', labour, infectious and chronic diseases, nutrition, and reproduction.

What does the concert of the chapters in this volume make audible? Or, what is colonial about medicine and Western thinking on human difference everywhere? Across the chapters, one can perceive a common thread in the activities of administrators and researchers. They were engaged in risky and gigantic projects that entailed – or hoped to entail – the management of entire populations.[2] Often enough, the main driving force in these management activities was pecunial exploitation or the maximization of territorial gains and military power. As well, and often relatedly, managing populations meant contending with medical and hygienic concerns and the logistics of food supplies. What made this management so perfect a context for collaboration between administrations and scientists were the parameters that needed to be managed. Most of these parameters could be expressed in quantitative terms. They concerned the management of proximity and distance, both physical and social. Their mandates included handling increases or scarcities, of food supplies but also of population numbers, or of available workers. Furthermore, it involved managing the exposure and protection of certain populations, sometimes with the perception that populations had specific abilities to withstand their circumstances, like, for example hard labour or lower calorie diets. If managed optimally, these relations promised to guarantee a smooth process of adding value. Health, food, feelings, animals, plants, landscape, working places, settlements etc. were all meant to be aligned to this process that required so much effort to manage. In addition to the material dimensions, there was also symbolic value to be considered: managing increases in value was also about demonstrating to the world that a colonial power was able to bring life to a population and to turn it into a thriving productive one – a 'civilized' one. Managing specificity was about efficiency, but it was also about proudly presenting healthy, strong, disciplined, willing individuals.

This project of making differences a viable tool for management points to a tension that has been aptly described by Bowker and Star: 'Classification and standards are two sides of the same coin'. And yet, they state, 'classifications may or may not become standardized […] while every successful standard imposes a classification system, at the very least between good and bad ways of organizing actions or things' (2000: 15). Bowker and Star also emphasize the role of classifications and standards as 'objects for cooperation across social worlds' (ibid.: 283), or boundary objects. As, for example, Letícia Galluzzi Bizzo's chapter shows, establishing an international standard for nutritional requirements became complicated when new categories needed to be considered in the context of global cooperation for nutritional standards.

Writing accounts of colonial medicine and studies of human difference entails challenges in how to use historical actors' terms, like 'race', 'blacks', 'civilized', 'natives'. These terms have despicable histories and prejudicial meanings that we clearly do not want to replicate in the present. And yet, citing the terms cannot be avoided because they were also common descriptions of categories of people at the time. Furthermore, the terms are also used today with different sensibilities depending on the context. To deal with this situation, however imperfectly, wherever possible the contributors have indicated that such terms are historically accurate actors' terms by using quotation marks. The contributors work to contextualize them in the conventions of the day.

The chapters deal with the management, administration and study of the following health concerns: a population's overall health and vitality, labour, infectious and chronic diseases, nutrition and reproduction. These are issues that today are increasingly considered to be biosocial or biocultural. By drawing on the chapters of this volume, we aim to demonstrate how each of those concerns led to both differentiation and standardization, as two sides of the same coin, both of populations and of health care solutions (Bowker and Star 2000: 15).

Health And Vitality

The very definition of health was researched with respect to a population's biological and social characteristics. Such lines of inquiry were connected to colonial concerns such as indigenous populations' suitability for a labour force or Europeans' ability to live outside Europe. Cândido da Silva's chapter presents a German tropical medicine expedition to Espírito Santo, Brazil in 1936, when Germany had aspirations of regaining colonies. The team leaders, Giemsa and Nauck, studied three generations of German settlers by taking anthropometric measurements and genealogies. They also compared the heights and weights of school children in Germany with third-generation German children in Espírito Santo. Differences in growth rates were explained not by genetic inheritance, but by phenotypical aspects, and exposure to tropical conditions in particular. From this, Cândido da Silva argues that although the researchers, Giemsa and Nauck, did engage with the racial thinking popular at that time in National Socialist Germany, they ultimately put more emphasis on social and environmental dimensions. In their studies, the Germans in Espírito Santo, Brazil were not so much 'racially degenerate' as unhealthy and isolated.

'Race' was an explanation for both the presence and absence of the vigour of the indigenous population on Nauru, a Pacific island administered by the German Pacific Phosphate Company from 1906 to 1919. German colonial health reports and the Pacific Phosphate Company's correspondence reveal that prior to the company's need for labour, researchers perceived Nauruans as a happy, mentally and physically healthy and vigorous 'race'. With the introduction of waged labour in the phosphate mines, however, when the Nauruans showed no interest in mining and contracted introduced diseases, they became a weak 'race', ill-suited for strenuous work.

A population's vitality was often threatened by infectious or endemic diseases, but as Jean-Paul Bado's chapter shows, this emphasis led early twentieth-century colonial physicians to overlook the presence of chronic or non-infectious diseases like cancer. In his consideration of primary liver cancer (PLC) in Africa, Bado shows how this oversight was connected to perceptions of difference: cancer was a disease of European modernity, and since African lifestyles were perceived as 'natural' or 'uncivilized', cancer was underdiagnosed in the first half of the twentieth century. As diagnostic technologies became available, the evidence no longer supported the earlier colonial ideology and the methodologies of comparing 'civilized' with 'bon sauvage' could be abandoned, but a significant number of doctors and researchers were slow to change. By the 1950s, researchers were assessing ecological factors present in many French regions, including the role of food or rations, endemic parasites, and bacterial and viral infections. Eventually they were able to rule out ecological factors, and settled on aflatoxin, a toxin produced by the storage methods of peanuts, maize and many other grains, as the cause.

Labour

Having a healthy labour force was a common demand from colonial settlers and a running administrative concern. Studying the health and suitability of potential workers, as Sarah Ehlers, Jean Mitchell and Antje Kühnast's chapters show, resulted in situations where implicitly or explicitly, researchers, medical personnel or administrators dealt with or explained the health issue by comparing population categories, such as 'race', other biological factors, and culture. Studies of (potential) labourers entailed the study of infectious diseases, like malaria (Mitchell) or sleeping sickness (Ehlers). Ehlers, using internal correspondence between doctors, researchers and bureaucrats, discusses how in British Uganda, research practices and interventions on sleeping sickness varied according to the patient's 'race'. She writes that for Africans, doctors would travel to the infected areas to assess the epidemic. The doctors would then detain the sick in sleeping sickness camps, where they could be studied and offered treatments. The colonial doctors were not only interested in the infected individuals but they also attempted to assess the patient inmates' social structure, such as the names and size of villages and their subsistence practices. For Europeans, sleeping sickness was presented not in broad reports, but as individual case studies, indicating that the disease was seen as a threat to individual settlers. In terms of treatment, given sufficient resources, the

same doctors would treat Europeans at home or in a European hospital and treat Africans in a sleeping sickness camp.

In the German phosphate company's administration of Nauru in the south Pacific, Kühnast demonstrates, the inadequate handling of epidemics among the Nauruans and the Chinese was not due to capitalist extraction of labour alone. The company's failure to curb epidemics was connected to perceptions of cultural, mental and physical differences – buttressed by researchers – that explained the incompatibility of certain human groups for particular kinds of work and lifestyles.

Nutrition

Nutritional sciences were part of the biopolitical strategies of nation states, but were also central concerns for international organizations, like the Health Organisation of the League of Nations (HOLN), and later the Food and Agriculture Organisation of the United Nations (FAO). Writing of the first half of the twentieth century, Letícia Galluzzi Bizzo demonstrates how the scientific conventions aimed to measure universal human nutrient requirements in the form of an index of daily caloric values. These were used in international organizations' administrative aspirations to monitor world food circumstances and reduce the social problems of hunger around the world. Already then, life scientists recognized the role of living conditions for human body variation, which included labour, diet and social inequalities. During the global depression, the health of a labour force became a pressing global problem. Two renowned experts with colonial experience, Wallace Aykroyd and Gerard van Veen André, were recruited whose publications would have enduring influence at the UN. Their methodologies generated population categories, like 'rice eaters', from central foods in a population's diet and the knowledge that rice based diets appeared to provide sustenance with fewer calories. A complex negotiation between UN subcommittees, advisory groups and inter-governmental conferences resulted in differential calorie allowances for non-Western people, extrapolated from the so-called 'Rice eaters' in the publications.

Barbara Cooper focuses on a nutritional science research endeavour, the 'Mission Anthropologique' in French West Africa's colonies, which aimed at a general understanding of malnutrition, diets, food requirements, labour capacities and population specificities. The researchers took a particular interest in the situation in Niger in the late colonial period, where the problem of malnutrition had historically been acute. Cooper highlights the enduring significance of the military and highly masculine character of French colonial health services, and how this led to an imbalanced consideration of women and men in the survey. Her chapter reminds us that the reports and documentations of the world on paper portrayed a situation dramatically different from the realities on the ground, at least in those areas that were far removed from cities. Curiously, the Mission Anthropologique relied heavily on anthropometric surveys, in addition to a stunning variety of disciplines, and in practice it took the robust, well-fed soldier as the ideal norm for the whole population. The dramatic malnutrition that the researchers nevertheless observed was blamed on the indig-

enous populations, on their poor agricultural knowledge and, paradoxically, on their ignorance of traditional food practices that were rich and healthy even in the eyes of those Western scientists. Hence, they frequently resorted to deterministic explanations based upon 'race' and later 'culture' to account for debilitating malnutrition in the absence of sufficient resources to adequately address the problem.

Reproduction

Attempting to understand how populations, or portions of populations, grew or declined was also a central colonial anxiety and scientific preoccupation. In addition to labour migration, particularly in the first decades of the twentieth century, researchers' explanations for unusual reproductive patterns were often framed in terms of the biological and cultural differences of particular populations. The scientific questions of population growth or decline were frequently connected to colonial endeavours to regulate aspects of what they deemed part of reproduction such as marriage practices (e.g. Widmer 2014), birth attendants (e.g. Thomas 2003; Boddy 2007) or sexuality (e.g. Stoler 2002). Connected to these themes, especially in populations that were in dramatic decline, explanations for infant mortality figured prominently. The poor nutritional status of infants, as Cooper's chapter demonstrates, was understood through research on cultural differences in mothering and mothers' feeding practices (this was also the case in other regions of the world, e.g. Jolly 1998; McElhinny 2005). In the AOF, Cooper argues, the emphasis on cultural differences meant that the political economic reasons that caused hunger and malnutrition could be overlooked.

Trying to understand differences in infant mortality was dependent on population-wide information. However, in many colonial situations this information was in short supply. Only in the case of Nauruans, examined by Kühnast, did research conditions seem to be perfect: researchers believed they could easily track the thousand Nauruans living in the territory. But as Samuel Coghe describes in his chapter, because of the lack of census and vital statistics, colonial physicians in Portuguese Angola had to count people themselves as an important aspect of their jobs as physicians. It was the *indigenas* whose populations were of concern due to 'depopulation' and whose difference was believed to be based on their biology and relationship to 'civilization'. The physician's presumptions about fertility and mortality patterns mirrored differences between Africans and Europeans as their healthcare interventions, such as they were, were exclusively directed at the *indígenas* ('natives'). Indeed, the settler populations were not studied in the same way. Coghe examines how these physicians, who became colonial demographers by necessity, viewed, interpreted and used their data. By addressing the particularly close connection between medicine and demography in interwar Angola, his chapter demonstrates the links between governance, health and the categorization of difference within populations as part and parcel of colonial practices.

Intra-Population Differences

Beyond the obvious hierarchical relationships between colonizer and subject population forged in social, political and material inequalities, certain chapters also ask what other kinds of categories and levels of differentiation were highlighted as more or less relevant in the administration and research on health in colonial contexts. Researchers relied on differences within populations in the same territory as variables in their explanations for colonial problems. Importing indentured labour could, for example, bring different colonial subjects into contact with one another. This would have administrative implications for officials in managing different population segments, as well as research opportunities for experts to weigh in on how to manage population differences between, for example, 'traditional' people and imported labourers. In the colonial southwestern Pacific, for example, the depopulation of indigenous Islanders was a scientific and administrative problem. Traditional culture was operationalized as a variable in research methods and explanations for poor health. In Fiji, British administrators applied different logics of state control over Indian indentured labour on plantations, and indigenous Fijians living in traditional villages (Thomas 1990). In the New Hebrides, as Widmer (2012) writes and Mitchell reiterates here, health researchers in the 1920s cautioned the British against 'hybridization' between indentured labourers and New Hebrideans if Indian labourers were imported. Indeed, the Tonkinese (from the gulf of Tonkin in French Indochina, now Vietnam) plantation labourers, indentured by the French, lived in labour camps often quite separate from indigenous villages in the New Hebrides. Cooper writes that colonial nutrition sciences in the AOF classified bodies according to their relation with traditional culture, leading to gendered kinds of interventions. For example, nutritional deficiencies, in particular regarding children, were blamed on women's traditional feeding styles and weaning practices, both part of their 'culture', rather than economic inequality. In Portuguese Angola, as Coghe writes, medical demographers blamed cultural factors for some aspects of population decline, while also using some racial categorizations to delineate populations of Bantu and 'Bushmen'.

Animals, Insects and Environments

Colonial administrators and life scientists also had some shared concerns in understanding the relationships that particular 'races' or segments of populations had with environments, animals, climates and 'nature' (e.g. Haraway 1989; Macleod 2000; Arnold 2006; Deb Roy 2013). In this respect, additional sets of categorizations beyond colonizer/colonized were highlighted. Recognizing that the disease etiologies often connected humans to broader ecologies, the researchers applied categories of difference to the human populations to understand differential rates of illnesses (Lipphardt 2016). Mitchell documents how entomologists, concerned with eliminating malaria in the southwestern Pacific, were intensely interested in human relationships with mosquitos. During the Second World War, researchers measured flights of mosquitos in order to know how far apart soldiers' camps would have to

be from 'natives', who were considered to have different vulnerabilities to malaria than the American troops. In trying to solve the malaria problem, made acute by the Pacific theatre of the war, Mitchell argues, human-insect relations were racialized. There were similar strategies in changing relationships with the landscape and the tsetse fly, as Ehlers explores, in the prevention and containment measures enacted during the sleeping sickness campaigns in the British Protectorate of Uganda. With this, the volume is less concerned with how ecology was part of racial thought in the first part of the twentieth century (which has been well documented by, for example, Anderson 2003), but rather with how colonial interventions on landscapes were connected to the administration of diverse populations and their health.

Colonial and Scientific Critiques

Scientific knowledge about human variation was not limited to circuits between Europe and its locations of colonial control. Scientific methods could also be turned around and used to critique the colonial population categories themselves.[4] The Indo-European social scientist at the centre of Hans Pols' chapter, Joseph Koks, provides a wonderfully satirical account of the absurdities of colonial and scientific classifications. Pols shows how administrative and daily-life classifications differed in the Dutch East Indies, and reminds us that what became documented in colonial administrative practises was by no means congruent with common sense. Koks complained that anthropological conventions of defining populations by 'race' distinguished between 'Europeans', 'Indo-Europeans' and 'natives', while administrative practises only distinguished between 'Europeans' and 'natives'. In effect, as he argued in a painstaking account of his complex social reality, these classifications denied that 'Indo-Europeans' had crucially contributed to the accomplishments that were all ascribed to the Europeans. To be 'Indo-European' was to be poor, in the social reality of Batavia. But, if counted according to the (physical) anthropological definition, and if the role of social class was ignored in the categorization, he claimed that ninety per cent of all Europeans in the colony were to be ascribed to the Indo-European category. While Koks employed race thinking to expose the social prejudices that prevented the recognition of the achievements of 'Indo-Europeans', he also, rather presciently, critiqued physical anthropologists' overdetermined use of race concepts to explain broad social issues: 'Imagine a Chinese or African anthropologist, who explains the crisis [the Great Depression] by referring to the nature of the white race!'

This collection of chapters covers a wide range of administrative and scientific concerns in differing human populations and imperial situations. It offers, on the one hand, a dynamic context to think about relationships between scientific categories used to identify and classify human populations. These chapters also show how differences within populations and between populations have to be understood as historical relationships in concert with their scientific treatment as disciplinary objects or tools for understanding health or making scientific claims about human variation.

Conclusion

What is the postcolonial present that we are writing the history of, with respect to the life sciences, administration of health and notions of human difference? The social forms of colonial routines and the historically shaped relationships between populations forged in colonial times have remarkably long half-lives. How different are the contemporary short tours of expert consultants to gather information from the colonial patrols of decades ago? The avalanche of reports, commissions of inquiry, memos aimed at developing (or improving) the health of people in the global south did not stop with the formal end of colonialism but continue to be instruments of governmentality, if not improved health conditions. The colonial connections between categorization, classification and governance now find their way to being relevant 'indicators' (Merry 2011) in 'global health'. This is but one aspect of the continuing postcolonial need to keep the colonial legacies in central analytical focus, Anderson (2014) reminds us, when analysing 'global' aspects of the circulations of biomedical knowledge and practice.

In recent years there has been a marked increase in the speed and scope of technologies to analyse the genetic material of individuals and populations. This has purportedly had far reaching implications for individual and population health, not least of which is how global health problems and solutions are framed. Accordingly, social scientists have been increasingly interested in engaging with these developments and what they mean for health and what it means to be human. Social scientists' concern for the social implications of genetic technologies interrogate the deterministic dimensions implied in divisions between nature and culture, or nature and nurture, to think rather in terms like 'biosocial', 'local biologies' or 'naturecultures' (e.g. Lock and Kaufert 2001; Haraway 2003; Ingold and Palsson 2013). This volume can be seen as providing a historical context for these scholarly engagements with scientists' work on categorizing human populations. What these chapters contribute is a heightened sensitivity towards the very local and contingent nature of scientific *and* administrative categories, of their emergence, usage and circulation and colonial context (cf. Reardon 2005; Kowal, Radin and Reardon 2013; Wade et al. 2014). These insights are relevant, for example, for how we might view the categories of difference applied in the contemporary construction and usage of any genomic database used in the service of genetic explanations for global health issues. Furthermore, the same sensitivity should be in place when it comes to considering deterministic claims and outcomes of any classification, be they biological, genetic, social or cultural. The chapters in this volume demonstrate that a wide range of perceptions of populations' characteristics as 'innate' or malleable was possible in the minds and practices of those who were to decide upon the lives of many. It is important to consider these differentiations – fixed or changeable – in order to understand why certain actions were taken with sometimes seemingly contradictory justifications. Would actors have agreed on the malleability of the characteristics they ascribed to a certain group? On what level, if at all, would they have claimed that such characteristics were (not) changeable? Or would they have assumed malleability only within a certain time frame? If not in an individual's life span, then maybe

for their children? Within a few generations? Or only after dozens of generations, with evolutionary change? What would the assumed mechanism of change be? Self-discipline? Education? Exposure? Or by natural selection? These questions are still potent when it comes to the question of how and why populations and individuals differ, and how distinctive they will supposedly remain in the future. The stakes were (and are) high: this knowledge pertained, after all, to lofty questions of what it meant to be human and what our relationship with other organisms on the planet should and can be.

Finally, we would like to take up Anderson's challenge once again. Was there something colonial about Western medicine and about categorizing human variation everywhere? The chapters in this volume suggest that attempts to research human variation represented efforts to make human difference productive for improving and governing human health. Differences were put to work to understand and administer populations' vitality, food requirements, reproduction and labour. A population's chronic or infectious diseases, seen as connected to agricultural and environmental specificities, were impossible to understand and administer without recourse to categories of human difference.

Cutting through many of the chapters is the colonial recognition that poverty or social inequality was a cause of poor health: an acknowledgement that continues to be heard in social policy and research in the present day. Yet, as Galluzzi Bizzo puts it, researchers and administrators found ways of 'postponing equality'. This, then, points to the fact that even if poor health was understood to be a consequence of inequality, in the end those involved shied away from finding adequate answers to the most pressing problems of humanity. This volume combines the history of medicine and the history of the life sciences, by focusing on the colonial aspects of both, and particularly on their shared use of the biological and social categories of human variation, during the first half of the twentieth century. The chapters clearly demonstrate how the historical emergence of biomedicine as a global social practice, together with scientific accounts of human variation, went hand in hand with the social and material life of accountancy and governance in colonial rule.

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Notes

Authors are listed in alphabetical order, reflecting equal contributions.

1. See also Solomos and Back (1994) and Back and Solomos (2009).
2. For population research and management in colonial contexts, see for example Hartmann and Unger (2014), Bashford (2014) and Deb Roy (2015).
3. But also apart from explicit critiques, what Tilley calls 'endogenous idioms of group difference and rank' deserves attention: the categories the colonized subjects would call upon, most notably in their efforts to resist colonial rule (see Tilley 2014: 779).

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