The Making of a Population: Challenges, Implications, and Consequences
of the Quantification of Social Difference

Taylor M. Cruz

Keywords: classification; quantification; social difference; population health; sexuality

ABSTRACT

How do we make a difference? This paper traces the connections made between quantified knowledge, population health, and social justice by examining the efforts of population scientists to assess sexuality as a point of difference within population-based data systems, including on national health and social surveys, electronic medical records, and the Census. Population scientists emphasize the importance of measuring social difference in order to identify and remedy structural disadvantage. This evaluation requires the assessment of difference and the comparison of distinct groups across standardized outcome measures. In quantifying social difference, however, population scientists obscure or minimize several difficulties in creating comparable populations. I explore some of these challenges by highlighting three central tensions: the *separation* of difference from other aspects and categories of social experience, the *reduction* of difference through the use of one over several possible measures, and the *enactment* of difference as quantified knowledge loops back into society. As a theoretical inquiry into the form of social difference as it is conceptualized, operationalized, and materialized across the science-society nexus, this paper identifies the various commitments made during processes of scientific evaluation. By attending to the values and priorities that exist within and through practices of quantification, I aim to address the problem of measuring social difference as it pertains to the issues of social justice and health equity.

Keywords: classification; quantification; social difference; population health; sexuality

INTRODUCTION

There has been growing attention to scholarly work on population health, including the social determinants of health (Braveman, Egerter, and Williams 2011). One particularly successful research strategy in this line of work is the comparison of standardized outcome scores across social groups, which has drawn considerable attention to social and health disparities along the lines of race, gender, and class (Meyer, Yoon, and Kaufman 2013; Williams and Sternthal 2010). The social sciences have long identified these categories as crucial in studying social structure and its effects on individual outcomes. More recently, a fourth axis has been proposed: that of sexual orientation, such that we can now extend the triad to a quartet of gender, race, class, and sexuality. Population scientists have continued this research strategy of comparing outcomes across social groups in order to identify and address health and health care disparities along the axis of sexuality.

This paper examines the efforts of population scientists to measure sexuality as a point of difference within population-based data systems in order to stratify health outcomes and identify disparity. The assessment of this difference, its use for group comparison against standardized metrics, and the identification of differential outcomes are argued to be crucial components in identifying the collective effects of disparity, social hardship, and structural disadvantage for sexual minorities. The measurement of this difference is thus of paramount importance for population scientists seeking to make meaningful claims of structural disadvantage. It is only once evidence of structural disadvantage is created (e.g., through the identification of poorer group health outcomes or decreased access to care) that these actors can make the case for social justice, calling for social policy reform and other initiatives specifically targeting the well-being and welfare of sexual minorities.

These efforts revolve around the translation of social difference into standard population measures for the purposes of conducting science and working towards social justice. However, despite its central role within the overall project of population health research, the nature of social difference remains undertheorized within this work. The concept of “population” serves as a flexible technology that can be mapped onto a set of categories used to sort people. Within comparative disparity research, “population” manages social heterogeneity through the creation of complementary homogeneities. Because the very basis of a “population” is founded on “a shared characteristic,” different people are unified and constructed through similarity at the expense of considering difference within the category. This process of creating similarity out of social difference may have unintended consequences for understandings of social differences that may undermine the pursuit of health equity in unexpected ways. This paper seeks to open the black box of quantifying social difference in order to reveal the specific commitments and decisions made within measurement practices. By drawing upon theoretical insights from across the social sciences, I identify some of the challenges, implications, and consequences of quantifying people into populations.

THE CURRENT STATE OF AFFAIRS

In recent years, there has been significant interest in identifying and eliminating health disparities, which refer to differences among people in terms of poor health outcomes along the lines of social difference (U.S. Department of Health & Human Services 2011; Meyer, Yoon, and Kaufman 2013). Social scientists have considered differences in various outcomes by gender, race, and class, highlighting the relational nature of social experience and access to resources (Link and Phelan 1995; Williams and Sternthal 2010). It is through this process of evaluation, which consists of developing categories with which to sort people, producing

standardized outcomes to be assessed, and then comparing outcomes across these categories, that social scientists are able to make claims of structural disadvantage and then advocate for social change. This process of evaluation, including the sub-processes of categorization and comparison, deserves closer sociological attention and scrutiny (Lamont 2012). Here I consider some of the difficulties in mobilizing a particular classification that sorts people into standardized populations.

The subject of lesbian, gay, bisexual, and transgender health has also drawn increasing amounts of attention over the last several years from social scientists, government officials and policymakers, and community advocates.¹ Within this growing arena, most actors have focused on the centrality of measurement for documenting disparity. The Institute of Medicine's (2011) groundbreaking report on the state of lesbian, gay, bisexual, and transgender health highlights the importance of measuring sexual orientation for comparing the various social and health outcomes of sexual minorities against those of heterosexuals. In 2011, the Agency for Healthcare Research and Quality began including information on LGBT-related health and health care within its annual National Healthcare Disparities Report. These reports, however, primarily draw upon findings from other published studies and reports because of the lack of national, population-level data. In 2014, a new goal was added to Healthy People 2020 to improve the health and address the disparities faced by lesbian, gay, bisexual, and transgender people compared to their heterosexual counterparts by increasing the number of population-based data systems that measure these populations. More recently, the National Institute of Health designated sexual and gender minorities as a health disparity population for research purposes,

¹ In this paper I focus on the assessment of sexual minority status, and for this reason I do not address the difficulties in measuring transgender people. However, the separation of sexual orientation and gender identity in population health research (and social science more broadly) is one that should also be subjected to sociological scrutiny, as this separation is a rather recent phenomenon (see Valentine 2007 and Richardson 2007).

demonstrating strong support for future population research to advance the health of all Americans, including sexual minorities (Pérez-Stable 2016). Data collection and population health research are expected to play a key role in documenting disparity and working towards change.

Population scientists have thus called for the measurement of this difference across several distinct channels of administrative data collection, including on national health and social surveys, the Census, and electronic medical records (Cahill and Makadon 2014; Mayer et al. 2008; Mollon 2012). The Office of Management and Budget and the Census Bureau are currently considering the addition of questions of sexual orientation to the Census' data collection initiatives (Census Scientific Advisory Committee 2014, Park 2015). Aligned with these efforts, the Centers for Disease Control and Prevention added an assessment of sexual orientation to the National Health Interview Survey in 2013, thereby producing a large-scale, nationally representative dataset incorporating this difference (Dahlhamer et al. 2014). Through this measurement, final reports identify differences among various social groups as defined by sexuality in mental health outcomes, health-related behaviors such as drinking and smoking, and access to care (e.g., Ward et al. 2014). Data collection precedes the identification of disparity, social disadvantage, and poor health outcomes. Measurement of this difference is thus an issue of social, political, scientific, and national significance.

These developments concern the quantification of people across social difference into “populations.” In this paper I use the word “difference” to refer to sorting of people into social groups. As such, the use of difference in social science calls attention to classificatory distinctions made between groups of people, which are then translated into “populations” for population health research. A consideration of epidemiology, as one of the main disciplines that

provides a methodological foundation for the growing field of population health, and its understanding of population is therefore useful here.

Several textbooks of epidemiology incorporate the use of population in defining the field and study. One refers to epidemiology as “the study of the occurrence and distribution of health-related events, states, and processes *in specified populations*, including the study of the determinants influencing such processes, and the application of this knowledge to control relevant health problems” (Porta 2014:95; emphasis added). Aschengrau and Seage (2014) explain the connection between population and epidemiology further:

Populations are at the heart of all epidemiologic activities because epidemiologists are concerned with disease occurrence in groups of people rather than in individuals. The term *population* refers to a group of people with a common characteristic such as place of residence, gender, age, or use of certain medical services (6).

Epidemiologists construct “population” through the belief in a common, underlying characteristic unifying different people. Another textbook suggests that comparison, and thus the classification that precedes it, is central to the epidemiologic project: “Epidemiology is all about comparison – without some reference of what is usual, how can we identify excess?” (Webb, Bain, and Pirozzo 2005:6). Epidemiologic comparison, as a scientific activity that involves categories and standardized metrics, involves the sorting of people into social groups and the translation of social difference into populations.

However, this process of translating social difference into populations rarely receives much attention in the everyday conduct of population science (Shim 2014; Krieger 2012). Who and what constitutes a population? When is a “shared characteristic” enough to warrant claims of a separate population? What is the basis of this purported similarity, and might the construction of this similarity potentially obscure key differences within a category? What are the

implications of constructing a new axis of social difference for which all people are made to possess one value from a finite set of standardized options? This paper opens up these questions through a close examination of recent efforts to measure sexuality within population-based data systems.

For the remainder of the paper, I present three distinct tensions that question the straightforward measurement of social difference within population health research. The first, *separating* difference, refers to the prioritization of disentangling the effects of a particular category (e.g., status as a sexual minority) from the effects of other categories or aspects of social experience. The second, *reducing* difference, draws attention to the interplay between proposing multiple measures to capture all dimensions of a category (e.g., identity, attraction, and behavior) and selecting one simple measure for straightforward interpretation. The last tension, *enacting* difference, concerns the relationship between knowledge and society, such that the people think and act differently as quantified knowledge loops back into the social world. Across each tension, I draw on theoretical insights from across the social sciences to inform how researchers, health care organizations, government officials, and the general public can make better decisions about who to measure in which particular kinds of ways and with which particular kinds of consequences. A collective interrogation of the priorities undertaken to conduct a proper population science will help identify which values should shape the way that science is conducted, and to what end it relates to the goal of social change.

I. SEPARATING DIFFERENCE

The first tension concerns the movement between a heterogeneous social world and the scientific construction of a single standard with which to organize and make sense of people. In arguing for a new point of difference by which health outcomes can be compared, the social

difference is conceptualized as distinct from other differences and imagined to serve as its own proper construct. Because previous measures did not fully capture some dimension of social complexity, a new measure is added that assesses each person's relation to the construct as statistically independent from every other measure, social category, and experience. Once data are analyzed and interpretations are proposed, the effects of these other experiences are erased as they do not cut across each respondent within the population of interest. Difference is *separated* to a specific set of phenomena and is viewed as unrelated to already recognized points of difference. Difficulties arise, however, when different experiences, categories, or relationships to other people matter for the very basis and justification of this distinct and separated axis. Differences in understanding and relating to the purported existence of a uniform axis are de-emphasized, as these differences are made to comport to the scientific requirements of standardization and homogeneity.

In this section I draw upon the theoretical development of intersectionality. Intersectionality refers to the multiple and simultaneous co-occurrence of various social experiences, such that a person's lived experience cannot be disentangled into separate components of gender, race, class, or other categorical differences. First coined academically by legal scholar Kimberlé Crenshaw (1989), intersectionality draws attention to how singular dimensions and the laws, institutions, and programs built around them do not fully account for people who find themselves at the intersection of other dimensions. In her classic example, black women are disenfranchised by legal protection for white women and black men because each of these developments has its own specific historical, legal, and political trajectory. Others have since continued to build upon and extend the original concept of intersectionality, drawing attention to various epistemological approaches and assumptions (McCall 2005; Nash 2008;

Choo and Ferree 2010). Taken as a whole, intersectionality centers the challenges in understanding social experience along a single dimension that is unmarked by other dimensions.

In a similar vein, other feminist work has considered the relationship between gender and sexuality. This scholarship has suggested several possibilities in relating the two constructs to one another (Richardson 2007). For example, some versions of second wave feminist theory suggest that sexuality is the means through which structural sexism is enacted, arguing for the primacy of gender in understanding social relations (MacKinnon 1982). On the other hand, Wittig's (1992) declaration that "lesbians are not women" suggests a primacy of sexuality. Because lesbians do not fulfill the heterosexual matrix as defined by men, Wittig suggests a complete break in the gendered experience of lesbians, noting a supposed abolishment of gender within a lesbian society. This set the groundwork for queer theory, a third version of gender and sexuality theorizing, which called for the separation of gender and sexuality in order for each to be deconstructed on its own terms (Sedgwick 1990). Thus while these constructs might be separated into distinct axes, the overall project of this line of inquiry would be to refute the stability of the entities in the first place. These different strains of social theory all seek to properly theorize the inter-related *form* of these entities, thereby transcending arguments that reduce gender, sexuality, and social experience to *content*.

These arguments regarding the structure and organization of social experience are directly applicable to the case at hand. Population health research seeking to understand social and health disparities along the lines of sexual orientation tends to carry categorical assumptions about the form of social difference and experience. For example, Healthy People 2020's final objective for its topic on LGBT health is to increase the availability of data via "a standardized set of questions that identify lesbian, gay, bisexual, and transgender populations." The

development of this goal suggests that a specific population is imagined to exist, standardized and isolated from other effects, such as those of gender, race, and class. An intersectional approach would challenge this possibility. Any claim of health disparity along the lines of sexuality would misrecognize the compounding effects of other differences. A concentrated burden of negative health outcomes, for example, may be present among sexual minorities of color and thus would be counted toward the collective LGB disparity, but would not be identified as the result of compounding effects. To speak of health disparities along the lines of sexual orientation is to privilege one form of difference over others.

This is also crucial in understanding the very form of an isolated population. In developing a standardized set of questions, researchers have sought to develop measures that will capture population members *across* other forms of difference. The Williams Institute, a public policy research center that studies LGBT issues, developed a document entitled “Best Practices for Asking Questions about Sexual Orientation on Surveys” that identifies and proposes these measures (SMART 2009). This document has a section on “racial/ethnic and cultural considerations,” in which researchers attempt to address the question of other forms of difference in the development of standardized measures. Yet these researchers tend to conceive of race as a cultural framework restricted to content, rather than a serious point of difference with regard to form. One of the main “best practices” to be found in this section suggests, for example:

Research examining sexual diversity within racial/ethnic minority groups might include additional response options for sexual orientation identity terms, such as two-spirit, same gender loving, homosexual, down low, or queer, that may turn out to be more relevant for non-white populations (SMART 2009:30).

Racial/ethnic difference here is seen as restricted to the context of identity, while other dimensions of sexual orientation (e.g., attraction and behavior; see the second tension on ‘reducing difference’ for more discussion on this) are taken as evidence that sexual minority

people of color do in fact exist. However, the logic and *form* of difference (heterosexual versus LGB) is not seen as seriously transformed or radically different across racial groups. During data analysis, for example, these “other” terms are easily collapsed to be placed on the same level as more traditional and standardized measures representing “gay, lesbian, or bisexual” participants. This process of making difference *within* social difference “equivalent” creates homogeneity out of recognized social heterogeneity. This practice of conforming heterogeneous experience to particular understandings is unable to account for its own normativity, and recognizes difference within difference only insofar as it aims to create similarity.

Ultimately, these practices suggest a specific form of *separated* difference to a particular aspect of social experience. While there may be differences in how participants identify in relation to a particular set of terms, population health research purports that there is an imagined single axis of difference that cuts across all other forms of difference. This separated axis must exist independently in order for there to be “health disparities by sexuality” because it requires a standard means of sorting people into consistent categories (Bowker and Star 2000). As Robson (1992) notes, “once particular concepts or properties of objects or relations have been defined and then counted, differing or distinguishing attributes are no longer visible” (688). This assertion extends to the sorting of people into populations as well: once there is a final count or the imagining of an “LGB population,” other social differences are obscured and given less salience. Intersectionality highlights the invisible work that takes place in creating a population that is presented as detached from the effects of other dimensions of experience.

II. REDUCING DIFFERENCE

The second tension considers the trade-off between complexity and simplicity in operationalizing difference. If social experience, including the categories we use to sort through

and make sense of it, has multiple dimensions and possibilities for basic definitional terms, then using several different measures would undoubtedly be appropriate. At the same time, measuring complexity this way requires an equally complex set of interpretive skills to make sense of the resulting data. Population scientists generally suggest the use of one identifying measure within population-based data systems, but challenges arise in justifying this practice as different measures count different people as part of the population of interest. How can different measures that all try to get at a solid definition of a single construct be reconciled with each other? How can social difference be meaningfully *reduced* to a particular set of terms? These measurement decisions are of paramount importance, as measurement standards are difficult to change once adopted and institutionalized.

For the second and third tension, I draw upon insights from science and technology studies, particularly from actor-network theory and other work on quantification. Actor-network theory seeks to make sense of how humans, objects, negotiation strategies, ideas, documents, and the like fit together to constitute “the social.” By focusing on “science in the making” (Latour 1987), scholars examine the settling of scientific controversies, the construction of facts, and the development of stable, durable knowledge. Early versions of this line of work champion this process of settling controversies such that knowledge, ideas, and frames of reference become codified into objects, social relations, and other interactions that take place outside of the initial arena of their making (Callon 1986; Latour 1987). In other words, certain positions or ideas become solidified and materialized as nature itself. Social relations precede understandings of the world and reality, rather than follow from them (Latour 1987; Latour and Woolgar 1986).

Later versions of this work extend the argument that epistemology sustains ontology, or that different means of knowing facilitate different realities. Mol (1999) calls for greater

attention to what she refers to as “ontological politics.” The political element here concerns the prioritization of certain possibilities over others: which reality should be created and brought into being at the expense of alternatives, and with which material entities should these connections be made? In her monograph *The Body Multiple*, Mol (2002) traces out different forms of atherosclerosis. These are not different symbolic representations or sociocultural understandings of a single disease form, but rather involve multiple bodies around a particular disease. For example, a patient learns about the disease after having difficulty climbing stairs and feeling pain in her feet. A primary care provider tests for the disease in a different way than the lab technician, and a surgeon and an anesthesiologist engage with different parts of the body in interacting with the disease. Each of these engagements consists of a different coordination of objects, instruments, people, body parts, and ideas. Which means of knowledge and engagement (and by extension, which version of disease) should be placed at the forefront, and what are the consequences of enacting reality in that particular kind of way? Although the body is multiple, it is not plural. How are different epistemologies-ontologies coordinated together, or prioritized over one another?

These arguments concerning the production of nature from social relations have direct implications for the quantification of people into populations. Just as Mol (2002) uncovers multiple bodies around a particular disease, population scientists must address multiple populations around a single axis of difference. Single constructs, such as sexuality, have multiple dimensions given their complexity in actual social experience. SMART outlines three in its “Best Practices” brief: identity, attraction, and behavior.² Each of these can be taken up as the ultimate criterion in deciding whether one is sexual minority or heterosexual. And yet, these three

² There are other dimensions as well, however, such as assessing status based on co-habitation or marital status and respondent and partner sex. See Liu, Reczek, and Brown 2013 and Mayer et al. 2008 for examples of this.

dimensions do not map neatly onto a single population such that different measures triangulate and reinforce one another as capturing a single reality (Savin-Williams 2006; Savin-Williams and Ream 2007). Rather, each measure can identify and create a separate and distinct population, such that we can begin to address people who are “sexual minority” with respect to sexual behavior but heterosexual with respect to identity, or who experience same-sex attraction but do not partake in sexual behavior. There are thus multiple populations, all of which can be said to represent sexual minority status ontologically.

This phenomenon seriously undermines the search for a single lesbian, gay, and bisexual population. Populations, as large categories defined on the basis of a shared characteristic, cannot all equally lay claim to the same form of “structural stigma” and social disadvantage if there are potentially different unifying characteristics that refer to different people with different social experiences. If there are multiple “other” populations, that is, groups that are not part of the normative social group, then how does this fit into the question of disparity, discrimination, and structural stigma? Because comparative population measures are relational, people are sorted into a finite set of categories. If a survey privileges the importance of sexual identity, for example, and does not assess other dimensions, then a potentially non-heterosexual person (i.e., someone identified as ‘sexual minority’ based on attraction or behavior) would be categorized as heterosexual. Any outcomes of social hardship, including poor physical or mental health and decreased access to care, would not be captured as part of the sexual minority group and thus would weaken the concentration of social hardship for sexual minorities.

At the same time, there is a trade-off between using multiple nuanced measures and a single categorical measure. The Census is currently attempting to measure the sexual minority population, but will likely only use one measure (Park 2015). Similarly, others have suggested

the use of only one measure for data collection processes in clinical settings for electronic medical records (Cahill and Makadon 2014; Fenway Health 2015; Imborek, Wilcox, and Nisly 2015; Haffer et al. 2015). Both initiatives have prioritized sexual identity as the one measure used to assess sexual difference. To ask about several different dimensions would not only make the data collection process longer, bringing on issues of respondent fatigue, but would also make data analysis much more complicated for the reasons identified above. How should these different measures be reconciled with one another? Is it appropriate to collapse different measures to create one robust, exhaustive population? Sexuality is also assumed to be static and unchanging over the life-course, when identity, attraction, and behavior each have the potential vary over time. Who, what, and when are people part of this population? How do we account for multiplicity and heterogeneity? These questions concern the issues Mol (1999) identifies as ontological-political. Measuring a population matters not only in terms of being able to lay claim to social injustice and hardship, but also because even basic questions of who counts as part of a population have no straightforward answers. Why is identity prioritized over attraction or behavior, and are there any other means of assessment that are not currently considered within the realm of scientific possibility?

Once certain measures are put forward as the optimal way to study a phenomenon, they easily become standardized. As scholars in science and technology studies have noted, standards have a significant amount of inertia and do not lend themselves well to change (Bowker and Star 2000; Timmermans and Epstein 2010). Feminist scholars have similarly critiqued the use of existing sex/gender categories in social research, arguing that researchers that start with the use of binary understandings of gender simply continue to see what is believed to be there (Lorber 1993). Once the controversy settles and a single measure is used, future research and counting

efforts will continue to use this measure. This will ensure comparability to track changes over time and assess effectiveness after certain interventions or social programs, but it will also continue to prioritize one means of assessment over other alternatives. In other words, over time the complexities in measuring get erased or forgotten. Science becomes made, and facts get constructed along certain lines over others. The prioritization of standard measures to track change does little to address the real issue of classifying who is part of which population within a relational set of categories.

III. ENACTING DIFFERENCE

The final tension addresses the relationship between knowledge and society. After disentangling the axis from the effects of other heterogeneous social experience, and after reducing the assessment process down into a simplified measure, science and society converge once more as knowledge circulates among the people being studied. Because knowledge itself is part and parcel of the very society that it attempts to describe, it then plays a role in reconstituting and materializing social phenomena. In other words, difference is *enacted*, or brought into being in particular ways through the process of definition, assessment, and measurement itself, as well as through the active incorporation of quantified knowledge into people's means of making sense of themselves and others. By serving as legitimate and socially valid knowledge readily available to various social actors, population measurement and its resulting quantified knowledge plays an active role in altering the social landscape it attempts to capture and describe.

This argument of the performativity of social science suggests that methods not only capture and study reality, but shape what we know of it and what it is. Law (2009) points out how knowledge production involves the investment in certain tools, instruments, and constructs

that shape the production process itself. This argument is similar to the one outlined in the preceding section, such that certain dimensions are prioritized and privileged over others in order to make claims of standardized comparability. In other words, studying social phenomena means understanding how scientists and other knowledge producers themselves work together with objects, surveys, administrative records, and people to help constitute the phenomena of inquiry (Latour 2005). Social science methods do not simply study pre-existing social phenomena, but play a part in bringing it into being. Methods help constitute the object of study.

Other scholarship has attended to the authority afforded to quantified, scientific ways of knowing for the conduct of social life. Porter's (1995) work on quantification identifies how numbers are seen as particularly powerful by lending objectivity when the power of authority is questioned. Quantification as a means of knowing fosters an authority of its own that is socially understood as free of bias or interest. While the production of numbers requires a tremendous amount of political will, coordination, and use of selective resources, these arrangements are easily made invisible when they are used to lend credibility to different initiatives. Espeland and Steven's (2008) work on quantification highlights how numbers can bestow legitimacy to certain groups through the guise of expertise. Official counts, such as the Census, or the identification of disparity, such as through population health research, can help foster and institutionalize a group of people (Desrosières 1991). Quantitative social science itself thus plays a role in constituting social phenomena, as this research serves as a legitimizing force for people, social relations, and the configuration of objects that make up the world.

These tensions also address the issues of reflexivity and reactivity, referring to the modification of human behavior, identities, and views by virtue of being studied. This is the crux of the difference between the social and natural sciences. Human beings are aware of being

studied by other humans, and have the capacity for change. This is an iterative process that involves engagement, reflection, and modification. As Boltanski (2011) notes:

Human beings are not content to act or react to the actions of others. They review their own actions and those of others in order to make judgements on them... This reflexive capacity means that they also react to the representations given of their properties or actions, including when the latter derive from sociology (3).

For Boltanski (2011), this question of reflexivity relates to how human beings should be studied when they have the capacity to situate themselves in relation to codified social scientific knowledge. Once social scientific reports are developed and have enough time to become incorporated into public policy measures and social programs, the people being studied and represented come into a specific self-awareness that then reconfigures and reconstitutes “the social.” This argument is similar to Igo’s (2007) historical treatment of the rise of public polling and the production of statistical knowledge. As large-scale survey research methods effectively began to tell Americans “who they were” as a collective whole, these survey developments helped reconfigure society and the public along new lines. Once knowledge is produced by social scientists, it is readily available to the public. How people engage with quantified knowledge about themselves is crucial because of the capacity for reflection and change.

In the case of quantifying sexuality for population science, the issue of legitimacy is a crucial one that warrants considerable attention. Historically, there has been little to no recognition of social groups as defined by sexuality: for this reason, the measurement process will shape how people think of themselves in relation to these assessments. Following the arguments made concerning the previous two tensions, this can manifest such that people (1) view their sexuality as distinct from other markers and categories that shape their social experience, and (2) understand their sexuality through a particular single dimension. Here we see how quantified knowledge loops back into itself: official statistics measure people, who react to

being measured to conform to more authoritative ways of knowing. Some suggest that the belief in the existence of a sexual minority group is itself constituted through the pioneering surveys of Alfred Kinsey and the subsequent uptake of his statistics by gay activists (see Espeland and Stevens 2008:412-4). Quantified knowledge plays a critical role in the reconfiguration of social relations, as these numbers have a life of their own in the social world.

But the quantification of sexual difference will not only change how existing sexual minorities (i.e., those that are already considered “gay,” “lesbian,” or “bisexual”) think of themselves, but may also facilitate the development of non-normative sexuality among people who would otherwise not have such an experience. By normalizing what has been traditionally stigmatized, people who would otherwise identify themselves as heterosexual may develop a different self-understanding. Upon participating in a survey or reading a final social scientific report, reflective people who would otherwise never consider their own sexuality must now reconsider themselves along new terms. By virtue of having never given this social aspect much consideration, they most likely would have been originally classified as heterosexual. But the specific priming with readily available categories (e.g., “straight,” “gay,” or “bisexual”) may lead people to question specific experiences that might otherwise have never received much attention. Attraction that was previously awarded little importance under the dominant framework of heterosexuality may now receive greater attention as people consider how important these “other” attractions are in terms of who they are as a person. People may also be more willing to engage in same-sex activity now that non-heterosexuality is legitimized through quantified, publicly available social scientific knowledge.

How should population scientists account for the social effect of their own measurement practices? As Gates (2011) notes, many more people already report same-sex behavior (8%) or

attraction (11%) than those that report identifying as lesbian, gay, or bisexual (3.5%). But these figures should be interpreted as conservative estimates, as social science may help produce more sexual minorities over time. By affording legitimacy to an experience that has been socially stigmatized and historically not recognized, the social difference being studied will be brought into being because of the direct work of population science. Knowledge, science, and society converge through the central concept and measurement of “population” and the transformative effects quantified knowledge has on social heterogeneity itself.

DISCUSSION AND ANALYSIS

This paper attends to three tensions that remain largely unaddressed in population health research by drawing upon theoretical developments from across the social sciences.

Intersectionality and feminist theory highlight the inability to account for a single and separate social existence, given that social experiences occur through multiplicity rather than isolated difference. Insights from science and technology studies identify ontological-political dilemmas in utilizing competing methods of assessment: these different definitional criteria create unique populations composed of different people. Sociological work on the relationship between quantified knowledge and society suggests that science itself legitimizes and institutionalizes the phenomena being studied, including social groups of people. As population science continues, social difference continues to be separated, reduced, and enacted. Science and society intersect at the point of conceptualization, operationalization, and materialization of social difference.

Population scientists and other measurement advocates should be lauded for drawing attention to the needs of sexual minority people. But this moment also offers an opportunity to reflect critically on *how* people are to best be measured and assessed, and the precise problem of defining a population. Classification (and the quantification that accompanies it within

population science) is not solely a technical decision, but a social and political process. Given that we can ultimately categorize ourselves into an infinite number of ways, when and how does social classification take place? When and how *should* it take place? When are boundaries drawn and claims of similarity-difference made, and with which kinds of consequences? Indeed, these are questions that extend far beyond the case at hand.

While population scientists and measurement advocates have emphasized the importance of measuring social difference, social studies of classification and quantification provide some insights into how they might consider the challenges, implications, and consequences of carrying out this work. By drawing upon scholarship from across the social sciences, I have outlined a few tentative starting points for this research agenda. How are different forms of difference reconciled with one another? How do official administrative categories relate to people's means of understanding each other and acting in the social world? How do decisions get made about measurement practices when there are multiple groups of people at stake? Empirical work that examines these kinds of socio-technical connections will need to attend to the importance of *valuation* at least as much as social scientists currently emphasize its counterpart of *evaluation*. The issue of politics is not only to be found in the decision to measure social difference, but also resides within the measurement practices themselves as they relate to larger social processes of classification. These concerns must not be ignored by population scientists, particularly if they seek to carry out this work in pursuit of social justice and health equity.

CONCLUSION

As I have suggested throughout the paper, the social world is complex and heterogeneous, with social actors understanding themselves and acting in different ways. But science itself can also be heterogeneous, with different methods, techniques, and practices to

capture this complexity. This is the sense of possibility to be found not only in the “social”, but also in the “science” of social science. Social scientific knowledge can indeed “make a difference” and change the social world. This process of difference-making, however, requires careful scrutiny and closer examination from social scientists, theorists, policymakers, and the public alike. It is only through a process of collective engagement that we may then begin to decide which commitments and values should be prioritized over others in creating and translating social knowledge to bring about justice. It is my hope that this paper can serve as a call to begin working in this direction.

WORKS CITED

- Aschengrau, Ann and George R. Seage III. 2014. *Essentials of Epidemiology in Public Health*. Burlington, MA: Jones & Bartlett Learning.
- Boltanski, Luc. 2011. *On Critique: A Sociology of Emancipation*. Malden, MA: Polity Press.
- Bowker, Geoffrey C. and Susan Leigh Star. 2000. *Sorting Things Out: Classification and Its Consequences*. Cambridge, MA: MIT Press.
- Braveman, Paula, Susan Egerter, and David R. Williams. 2011. "The Social Determinants of Health: Coming of Age." *Annual Review of Public Health* 32:381–98.
- Cahill, Sean and Harvey Makadon. 2013. "Sexual Orientation and Gender Identity Data Collection in Clinical Settings and in Electronic Health Records: A Key to Ending LGBT Health Disparities." *LGBT Health* 1(1):34–41.
- Callon, Michel. 1986. "Some Elements in the Sociology of Translation: Domestication of the Scallops and the Fishermen of St. Brieuc Bay." Pp. 196–223 in *Power, Action, and Belief: A New Sociology of Knowledge*, edited by John Law. London: Routledge & Kegan Paul.
- Census Scientific Advisory Committee. 2014. "Recommendations from Spring 2014 Meeting Census Bureau Responses." Retrieved January 01, 2016 (http://www2.census.gov/cac/sac/meetings/2014-09/20140918_csac_recommendations.pdf).
- Choo, Hae Yeon and Myra Marx Ferree. 2010. "Practicing Intersectionality in Sociological Research: A Critical Analysis of Inclusions, Interactions, and Institutions in the Study of Inequalities." *Sociological Theory* 28(2):129–49.
- Crenshaw, Kimberle. 1989. "Demarginalizing the Intersection of Race and Sex: A Black Feminist Critique of Antidiscrimination Doctrine, Feminist Theory, and Antiracist Politics." *University of Chicago Legal Forum* 139–67.

- Dahlhamer, James M., Adena M. Galinsky, Sarah S. Joestl, and Brian W. Ward. 2014. "Sexual Orientation in the 2013 National Health Interview Survey: A Quality Assessment." *Vital and Health Statistics* 2(169).
- Desrosières, Alain. 1991. "How to Make Things Which Hold Together: Social Science, Statistics, and the State." Pp. 195–218 in *Discourses on Society: The Shaping of the Social Science Disciplines*, edited by Peter Wagner, Björn Wittrock, and Richard Whitley. Norwell, MA: Kluwer Academic Publishers.
- Espeland, Wendy Nelson and Mitchell L. Stevens. 2008. "A Sociology of Quantification." *European Journal of Sociology* 49:401–36.
- Fenway Health. 2015. *Collecting Sexual Orientation and Gender Identity Data in Electronic Health Records: Taking the Next Steps*. Boston, MA: The Fenway Institute. Retrieved (<http://www.lgbthealtheducation.org/wp-content/uploads/Collecting-SOGI-Data-in-EHRs-COM2111.pdf>).
- Gates, Gary J. 2011. *How Many People Are Lesbian, Gay, Bisexual, and Transgender?* Los Angeles: The Williams Institute. Retrieved (<http://williamsinstitute.law.ucla.edu/wp-content/uploads/Gates-How-Many-People-LGBT-Apr-2011.pdf>).
- Haffer, Chris, Kimberly Proctor, Chipper Dean, and Paul Guernino. 2015. "If You Build It, They Will Come: Accessing and Utilizing HHS LGBTI Data and Information Products." Portland, OR: Gay and Lesbian Medical Association.
- Healthy People 2020. n.d. "Lesbian, Gay, Bisexual, and Transgender Health." Retrieved January 01, 2016 (<http://www.healthypeople.gov/2020/topics-objectives/topic/lesbian-gay-bisexual-and-transgender-health>).

- Igo, Sarah E. 2007. *The Averaged American: Surveys, Citizens, and the Making of a Mass Public*. Cambridge, MA: Harvard University Press.
- Imborek, Katie, Shelby Wilcox, and Nicole Nisly. 2015. "An EPIC Idea: Making the EHR More Inclusive of Sexual Gender Minorities." Portland, OR: Gay and Lesbian Medical Association.
- Institute of Medicine. 2011. *The Health of Lesbian, Gay, Bisexual, and Transgender People: Building a Foundation for Better Understanding*. National Academies Press.
- Krieger, N. 2012. "Who and What Is a 'Population'? Historical Debates, Current Controversies, and Implications for Understanding 'Population Health' and Rectifying Health Inequities." *The Milbank Quarterly* 90(4):634–81.
- Lamont, Michèle. 2012. "Toward a Comparative Sociology of Valuation and Evaluation." *Annual Review of Sociology* 38:201–21.
- Latour, Bruno. 1987. *Science in Action: How to Follow Scientists and Engineers through Society*. Cambridge, MA: Harvard University Press.
- Latour, Bruno. 2005. *Reassembling the Social: An Introduction to Actor-Network-Theory*. New York: Oxford University Press.
- Latour, Bruno and Steve Woolgar. 1986. *Laboratory Life: The Construction of Scientific Facts*. Princeton, NJ: Princeton University Press.
- Law, John. 2009. "Seeing like a Survey." *Cultural Sociology* 3(2):239–56.
- Link, Bruce G. and Jo Phelan. 1995. "Social Conditions as Fundamental Causes of Disease." *Journal of Health and Social Behavior Spec No*:80–94.

- Liu, Hui, Corinne Reczek, and Dustin Brown. 2013. "Same-Sex Cohabitors and Health: The Role of Race-Ethnicity, Gender, and Socioeconomic Status." *Journal of Health and Social Behavior* 54(1):25–45.
- Lorber, Judith. 1993. "Believing Is Seeing: Biology as Ideology." *Gender & Society* 7(4):568–81.
- MacKinnon, Catharine A. 1982. "Feminism, Marxism, Method, and the State: An Agenda for Theory." *Signs: Journal of Women in Culture and Society* 7(3):515–44.
- Mayer, Kenneth H. et al. 2008. "Sexual and Gender Minority Health: What We Know and What Needs to Be Done." *American Journal of Public Health* 98(6):989–95.
- McCall, Leslie. 2005. "The Complexity of Intersectionality." *Signs: Journal of Women in Culture and Society* 30:1771–1800.
- Meyer, Pamela A., Paula W. Yoon, and Rachel B. Kaufmann. 2013. "Introduction: CDC Health Disparities and Inequalities Report - United States, 2013." *MMWR Supplements* 3–5.
Retrieved January 01, 2016
(<http://www.cdc.gov/mmwr/preview/mmwrhtml/su6203a2.htm>).
- Mol, Annemarie. 1999. "Ontological Politics. A Word and Some Questions." *The Sociological Review* 47(S1):74–89.
- Mol, Annemarie. 2002. *The Body Multiple: Ontology in Medical Practice*. Durham, NC: Duke University Press.
- Mollon, Lea. 2012. "The Forgotten Minorities: Health Disparities of the Lesbian, Gay, Bisexual, and Transgendered Communities." *Journal of Health Care for the Poor and Underserved* 23(1):1–6.
- Nash, Jennifer C. 2008. "Re-thinking Intersectionality." *Feminist Review* 89:1–15.

- Park, Jennifer E. 2015. "Counting the LGBT Population in Federal Statistical Systems."
Chicago, IL: American Sociological Association.
- Pérez-Stable, Eliseo J. 2016. "Sexual and Gender Minorities Formally Designated as a Health Disparity Population for Research Purposes." Retrieved December 9, 2016
(https://www.nimhd.nih.gov/about/directors-corner/message.html?utm_medium=email&utm_source=govdelivery).
- Porta, Miquel S. 2008. *A Dictionary of Epidemiology*. New York: Oxford University Press.
- Porter, Theodore M. 1995. *Trust in Numbers: The Pursuit of Objectivity in Science and Public Life*. Princeton, NJ: Princeton University Press.
- Richardson, Diane. 2007. "Patterned Fluidities: (Re)Imagining the Relationship between Gender and Sexuality." *Sociology* 41:457–74.
- Robson, Keith. 1992. "Accounting Numbers as 'Inscription': Action at a Distance and the Development of Accounting." *Accounting, Organizations and Society* 17(7):685–708.
- Savin-Williams, Ritch C. 2006. "Who's Gay? Does It Matter?" *Current Directions in Psychological Science* 15(1):40–44.
- Savin-Williams, Ritch C. and Geoffrey L. Ream. 2007. "Prevalence and Stability of Sexual Orientation Components during Adolescence and Young Adulthood." *Archives of Sexual Behavior* 36:385–94.
- Sedgwick, Eve Kosofsky. 1990. *Epistemology of the Closet*. Berkeley: University of California Press.
- Sexual Minority Assessment Research Team. 2009. *Best Practices for Asking Questions about Sexual Orientation on Surveys*. Retrieved (<http://williamsinstitute.law.ucla.edu/wp-content/uploads/SMART-FINAL-Nov-2009.pdf>).

- Shim, Janet. 2014. *Heart-Sick: The Politics of Risk, Inequality, and Heart Disease*. New York: New York University Press.
- Timmermans, Stefan and Steven Epstein. 2010. "A World of Standards but Not a Standard World: Toward a Sociology of Standards and Standardization." *Annual Review of Sociology* 36:69–89.
- United States Department of Health and Human Services. 2011. *HHS Action Plan to Reduce Racial and Ethnic Health Disparities*. Washington, D.C.: U.S. Department of Health and Human Services. Retrieved (http://www.minorityhealth.hhs.gov/npa/files/Plans/HHS/HHS_Plan_complete.pdf).
- Valentine, David. 2007. *Imagining Transgender: An Ethnography of a Category*. Durham, NC: Duke University Press.
- Ward, Brian W., James M. Dahlhamer, Adena M. Galinsky, and Sarah S. Joestl. 2014. "Sexual Orientation and Health Among U.S. Adults: National Health Interview Survey, 2013." *National Health Statistics Reports* 77. Retrieved (<http://www.ncbi.nlm.nih.gov/pubmed/25025690>).
- Webb, Penny, Chris Bain, and Sandi Pirozzo. 2005. *Essential Epidemiology: An Introduction for Students and Health Professionals*. New York: Cambridge University Press.
- Williams, David R. and Michelle Sternthal. 2010. "Understanding Racial/ethnic Disparities in Health: Sociological Contributions." *Journal of Health and Social Behavior* 51:S15–27.
- Wittig, Monique. 1992. *The Straight Mind and Other Essays*. Boston: Beacon Press.