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NOT A YES OR NO QUESTION: CRITICAL PERSPECTIVES ON SEX AND GENDER IN FORENSIC ANTHROPOLOGY

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NOT A YES OR NO QUESTION:
CRITICAL PERSPECTIVES ON SEX AND GENDER IN FORENSIC
ANTHROPOLOGY

by Greyson Jones

A Thesis Paper

Submitted to the Faculty of Graduate Studies
through the Department of Sociology, Anthropology, and Criminology
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the Degree of Master of Arts at the
University of Windsor

Windsor, Ontario, Canada

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CRITICAL PERSPECTIVES ON SEX AND GENDER IN FORENSIC
ANTHROPOLOGY**

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06/30/2014

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ABSTRACT

For the forensic anthropologist, the estimation of sex comprises the first step in the process of identification of human skeletal remains. This study employs the use of third-wave and post-structural feminist, and queer theories in order to analyze how processes of inequality interact with our understanding of human biologies, specifically surrounding the notions of sex and gender, and to assess the impacts of these inequalities on the methodologies and discourses in the discipline. Through the use of critical discourse analysis, I demonstrate how forensic anthropology *ideologically* conceptualizes sexual difference in four ways: 1) as reducible to only biology; 2) as a natural given identifiable by genotypic and phenotypic traits; 3) as classifiable into binary oppositions, where indeterminateness relates to a researcher's degree of certainty and not sex-gender fluidity; and 4) as static and unchanging.

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INTRODUCTION

It is revealing that the developments in the last 30 years that have come out of forensic anthropology are nearly entirely methodological. Almost every area of inquiry within the discipline has gotten better at measuring human biologies, however, less developed are models and theories, especially those that make central interactions between culture and biological systems (Albanese & Saunders, 2006; Goodman & Leatherman, 1998). This is particularly surprising at a time when the social sciences and humanities have undergone deep and prolonged debates around fundamental issues of theory, practice, and ethics (D. Martin, 1998). Applied to human biocultural studies, several (Blakey, 1987; Haraway, 1989) who have conducted research on the roots and continuities of physical anthropology, have illuminated a history of naturalizing processes, which rather than being based on good science, tends to maintain existing socioeconomic inequalities.

The work by Goodman and Leatherman (1998) demonstrates how, with the specialization and diversification of subdisciplines and perspectives, the chasm dividing biological and sociocultural anthropologies has deepened. Goodman and Leatherman note how sociocultural anthropologists generally have been absentminded to the biological consequences of changing environments and cultures, while biological anthropologists have not been attentive to how large-scale political-economic processes entangle with local-level ecologies to mold biologies. Sociocultural anthropologists have arguably been too introspective; biological anthropologists have not been reflexive enough. Thus, there is a need for synthetic approaches that incorporate the diversity of

knowledge and approaches in anthropology and that provide an effective framework for analysis of how processes of inequality and social change interact with human biologies.

With respect to human identification, the determination of sex is perceived as a straightforward process. The distinctiveness of “men” and “women” is strongly emphasized in current biomedical and popular literature. On all biological levels, males and females have been polarized, and Western society has accentuated this through strongly gendered material culture and behavioural norms (Sofaer, 2006). With respect to human identification contexts, a variety of biological measures of difference are used to distinguish between male and female bodies, using techniques perceived as objective and universal. A number of feminist critiques of science have discussed the way in which scientific knowledge has been constructed to reinforce the polarization of the male-female dichotomy and to play down the overlap between the sexes (Oudshoorn, 1994; Schiebinger, 2000; Spanier, 1995). As Epstein states:

Sex differences, like all differences in nature, lie on a continuum, and they become evident through statistical aggregation: there is no unambiguous dividing line between the two sexes, and every criterion of differentiation that might be invoked, from genitalia to hormones to chromosomes, fails to perform a strict demarcating function. (2004, p. 192)

This biological continuum is strikingly apparent in the discipline of forensic anthropology, where skeletal variation between males and females is assessed on a sliding scale from hyperfeminine to hypermasculine. The primary objective of this research is to employ a synthetic approach, which incorporates both biological and sociocultural theory, to analyze how processes of inequality interact with our understandings of human biologies, and the impacts of these inequalities on data

collection and analysis. This is done through the use of critical discourse analysis, applied to recent works that are relevant to discussions of sex and gender in forensic anthropology. To highlight the shortcomings in forensic anthropology's analysis of sex, I stress several important ideas derived from feminist-inspired scholarship and tease out forensic anthropology's comprehension of sex, as evidenced by discourse and practice. Ultimately, this work intends to flesh out the specifics of how the theoretical foundations of forensic anthropology are biased by overt or unintentional sexist concepts and stereotypes; and demonstrates how a forensic anthropology informed by feminist and queer theories can draw out much needed disciplinary changes.

FEMINIST-INSPIRED SCHOLARSHIP

Based on the principles of the scientific method, scientific interpretations are intended to be the most logical, plausible and objective explanations of the observable facts; and because biological anthropology conducts its research within the realm of science, it is often assumed that it is objective and bias-free. According to the work of Hager (1997), feminist theories exist for the purpose of making change in the world, and for understanding with subtlety, accuracy, and explanatory precision, the nature and extent and sources of inequitable sex and gender systems that feminism hopes to transform. The work by Wylie (1997) outlines how scientific models of inquiry are among the most powerful tools that exist for making these transformations. Wylie's work illustrates that one of the primary motivations for much science is precisely the commitment to ground action, including political action, in a sound empirical understanding of the human, social, biological, and natural circumstances that have interrelated effects on society. Thus, feminists have an undeniable interest in the sciences

and in scientific methods as, in principle, a crucial source of just the kind of understanding that is needed to proceed effectively in the pursuit of the goal of creating a gender-equitable world. Not only is science inequitable in whom it recruits and rewards as practitioners and in whom it serves, but the understanding of the world it produces reflects, in its content, the social status, identities and interests of its practitioners. The question arises: Are the tools of science themselves part of the issue, either in generating some of the biases or in allowing bias to be reproduced?

Traditionally, scientists have claimed a value-free status for their discipline. As has been pointed out by philosophers and historians of science (Daston & Galison, 2007; Kuhn & Schlegel, 1963); however, science is clearly influenced by values. What scientists mean by "value-free" is that personal desires must not influence the reasoning about and interpreting of observations; nevertheless, discernible sets of values operate at different levels within science (Doell, 1991; Harding, 1991). The fact is that scientists never have been uninfluenced by values; rather, they have been unaware of them. In her work, Harding (1991) argues that only by reflecting upon the influence of values on their thinking can scientists attain any degree of "objectivity" in science. Harding points out that, unfortunately, self-reflection is not encouraged in the atmosphere of domination and control characteristic of traditional science. She argues that at the level of data collection in individual scientific projects, the accepted methodologies tend to impose standards of verifiability and disconfirmation compatible with what is understood to be scientific "objectivity". Beyond this methodological level, however, scientists sometimes are prone to speculation, which may be fraught with the biases of social and scientific ideology (Harding, 1991).

Biology has always been central to women's oppression. Through centuries of writing about women, male scientists have claimed that "anatomy is destiny" (Doell, 1991). No sooner was one biological determinist position questioned and refuted than another arose to take its place. The work by Doell (1991) surrounding the need for feminism in academia, describes how historically, when brain size failed to account for the supposedly inferior intelligence of women, neurobiologists turned to differential lateralization in their search for an "explanation". Doell outlines how biological determinists attributed women's less aggressive behaviour to their hormonal status, ignoring the social pressures that women experience. But in recent years, feminist critics have wrought significant changes in some areas - for instance, in sociobiology, primatology, and evolutionary biology.

Both post-structuralism and feminism draw upon thoroughly diverse theoretical traditions. According to Mills (2003), "third wave" feminism is concerned with operating at a "bottom up" level, deconstructing gender relations and identities within particular communities of practice. Mills explains that third-wave feminism refers to the range of theory that incorporates constructivist rather than essentialist principles such as social constructionism and post-structuralist feminism. Mills (2003) suggests that third-wave feminism can be identified by the following six aspects: 1) the diversity and multiplicity of identities; 2) the performative rather than the essentialist or possessive nature of gender; 3) a focus on context-specific gender issues rather than more generalized questions; 4) the importance of co-construction, the process by which identities are negotiated and constructed through social interactions; 5) power constructed not as a possession, but as flowing omnidirectionally in a net or web-like fashion; and, 6) an

emphasis upon notions of resistance to, and a reinterpretation of, stereotyped subject positions.

This study primarily draws from third-wave, post-structuralist feminist theories, and the concept of intersectionality. Intersectionality is the study of intersections between forms or systems of oppression, domination or discrimination. The theory suggests and attempts to investigate how various biological, social and cultural categories such as gender, race, class, ability, sexual orientation, caste, and other points of identity interact on multiple and quite often simultaneous levels, contributing to and perpetuating systematic injustice and social inequality (Knudsen, 2006). Intersectionality posits that the classical conceptualizations of oppression within society, such as racism, sexism, homophobia, transphobia, and belief-based bigotry (such as nationalism), do not act independently of one another. Rather, these modes of oppression act in compounding ways, creating a system of oppression that reflects the intersection of multiple forms of discrimination.

For biological anthropology, from which the majority of forensic anthropology stems, we see that the engagement with feminist theorizing has reached a standstill. For example, a few biological anthropologists promisingly utilized feminist ideas to effectively critique long-established man-the-hunter models (Dahlberg, 1981; Slocum, 1975). However, biological anthropology maintains what appears to be a stubborn commitment to sociobiological perspectives, which has worked to unhinge early feminists' perspectives. The notion that biology is destiny is maintained as subtext in biological anthropological studies.

Several scholars have recently provided input regarding the necessity for a “queering” of skeletal analysis (Geller, 2005; Sofaer, 2006). Queer theory is a field of post-structuralist critical theory that was established out of the fields of queer studies and women's studies. Queer theory examines the "mismatches" between sex, gender and desire. Queer theory has been associated exceedingly with bisexual, lesbian and gay subjects, but the analytic framework also involves topics such as cross-dressing, intersex, gender ambiguity and gender-corrective surgery. Queer theory's attempted deconstruction of stable (and correlated) sexes, genders and sexualities develops out of the specifically lesbian and gay reworking of the post-structuralist situating of identity as a map of multiple and unstable positions. Queer theory investigates the constitutive discourses of homosexuality for the purpose of placing "queer" in its historical context, and assesses contemporary arguments both for and against this latest terminology. In calling for a queering of skeletal analysis, we are urging for a separate and individual focus on ways that each biological sex, gender, and sexuality are expressed in the skeletal body; and also a focus on how these identities act in a compounding and overlapping nature which affects the expression of sexual dimorphism over the life course. In this paper, my aim is to frame a critical analysis of recent work in the discipline of forensic anthropology surrounding the assignment of sex in the assessment of skeletal remains using third-wave feminism, post-structuralism, and queer theory.

SEX AND GENDER

The distinction between sex and gender has been of great significance in the social sciences and in the first instance allowed feminists to argue that “biological facts” did not explain or justify inequalities and the division of labour between men and women.

It has allowed researchers to think about masculinity and femininity, not as biological givens, but as historical and cultural constructions rooted in society (Gowland & Thompson, 2013). Resulting from this division, sex became the domain of the scientists, while gender belonged to the social sciences. As a consequence, the “natural” condition of the human body was left undisputed.

This science-social theory divide in sex/gender studies becomes apparent when one examines the biomedical literature and the field of forensic anthropology, and more generally, human identification, where sex and gender are often confused and conflated (Agarwal, 2012; Geller, 2005, 2008; Gowland & Thompson, 2013; Hollimon, 2011). Generally this is based on a lack of comprehension of the theoretical basis of the use of the word “gender” within much of the scientific literature, where its usage appears to be confused with an inclination for political correctness. Within the discipline of biological anthropology, the concept of gender did not feature significantly until the late 1990s and onward (Sofaer, 2006), and even then, early research was primarily structured around dichotomous biological sex. This framework is now shifting and throughout recent years several researchers have scrutinized the embodiment of gendered practice (Geller, 2005; Gowland & Thompson, 2013; Sofaer, 2006). The concept of gender is, however, still almost entirely absent (or confused) in a number of other biological disciplines relating to human identification, especially forensic anthropology.

Recently, research within the social sciences has noted some of the theoretical issues with the sex-gender binary. Delphy (1993, p. 2) states, in a critique of sex and gender, that “We have continued to think of gender in terms of sex: to see it as a social dichotomy determined by a natural dichotomy. We now see gender as the content with

sex as the container”. The discrimination between sex and gender and the rendering of sex as a biological, immutable truth that demands no further investigation has been contested (Geller, 2008). Currently, sex is perceived by numerous academics as much of a construction as gender (Butler, 1990, 2011), and some have suggested a return to using the term “sex”. Additionally, some have reversed the sex-gender binary to contend that sex is a product of gender rather than vice versa. Hence the body has been described as produced within social discourse rather than existing outside it (Laqueur, 1990; Oudshoorn, 1994; Schiebinger, 2000). As Fournier discusses (2002, p. 57), “From this perspective, the sexed body is produced through various gendered mechanisms, or regulatory practices which normalize and mark bodies as male and female”.

Throughout the course of history, scientists have had many means by which they accounted for differences between women and men. Citing Hippocrates, many early writers “scientifically” accounted for sex differences as a distinction between complexions; that is, the balance of the qualities hot, cold, moist and dry (Schiebinger, 2000). Due to the fact that men were understood to have greater heat than women, they were judged to be superior. Edward Clarke's *Sex in Education* (1884) used the concept of vital force to argue in opposition to education of women, for if the nervous system has a fixed amount of energy, any energy spent in the development of a woman's brain would be diverted from her reproductive organs and, henceforth, would be harmful to her health (Bem, 1993, p. 10). However, the idea that female and male bodies are fundamentally different is relatively recent. This notion is referred to as *sexual dimorphism*, which can be described as the phenotypic difference between males and females.

Laqueur (1990) discussed the historical transience and cultural specificity of the human body, particularly with regard to sex, in detail in his influential book *Making Sex: Body and Gender from the Greeks to Freud*. He establishes that it was not until the eighteenth century that anatomists began to differentiate and polarize male and female bodies (see also Schiebinger, 2004). Laqueur argues that, until the eighteenth century, a one-sex model prevailed in which anatomical artists tended to use males or females interchangeably to represent the human body. Subsequent to this period, however, organs that had previously shared a name were linguistically distinguished: “sex before the seventeenth century was a sociological and not an ontological category” (Laqueur, 1990, p. 8). Schiebinger argues along the same lines in relation to the human skeleton (2000, 2004). These authors do not claim that there were no perceived biological differences between males and females prior to this time, but that the broader social context influences our understanding of these differences. Especially notable, is that there were no scientific advances in knowledge of the human form at the time of this shift from one- to two-sex models, calling attention to the cultural influence on anatomical interpretation. Sexual difference and the biological facts that characterize it are fabricated through a gendered understanding of the world. Schiebinger’s work (2004, p. 43), which suggests that the focus on anatomical differentiation between the sexes from the eighteenth century onwards, was a means by which to “prescribe very different roles for men and women in the social hierarchy”.

Sex differences will always and inevitably be historically contingent on existing gendered understandings of the world (Hollimon, 2011). Furthermore, Butler (1990) stresses that when describing differences, the observer will always impose his or her own

culturally situated understandings and values. Some believe that to suggest that the body is constructed through language and culture is to suggest that it has no materiality.

However this is not a claim that language is responsible for bringing the sexes and the body into existence, alternately that social context and its linguistic manifestation prompt the understandings we produce with regards to the human body (Spanier, 1995).

Language represents an important point for our conceptualization of the body, however skin and bones are not infinitely malleable, and the corporeal raw materials must be considered as well.

An array of scholars, including Jackson and Scott, argue for the retention of the sex-gender binary, stating that “we need to challenge assumptions that bind anatomy into gender and sexuality” (2002, p. 20). Sofaer (2006) also argues for the importance of maintaining rather than collapsing the sex-gender distinction in biological interpretations of the body. She believes that to do otherwise would create the risk of “falling back into biological determinism, or of cutting ourselves off completely from the possibility of accessing the full range of potential ways that differences between bodies may be socially regulated and understood” (Sofaer, 2006, p. 99). The biological anthropological literature strays away from some of the interpretive sociologies in that it generally maintains the sex-gender distinction. This is likely due to the fact that it is a discipline that tangibly works with the physical reality of bodies, and male-female discrimination is represented as an important component of this work. Within the “harder” end of the human identification sciences (e.g. forensic anthropology, pathology, biomedicine), there has been little or no acknowledgment of sex and gender, let alone any critical perspective on this (Gowland & Thompson, 2013). “Doing gender” does not fall exclusively within the

realm of the social sciences. A comprehension of the role of society in shaping the bodies of males and females differently from the cellular to the macro level, as well as an attention towards the influence of political context in the construction of scientific knowledge, can only serve to improve the quality of research. Furthermore, biological anthropology, whether conducted within the forensic sphere or not, provides a crucial window into the variability of gendered physiologies in relation to a vast array of different cultural practices and beliefs about sex and the body that can inform contemporary discussions and disciplines.

SHORTFALLS OF DICHOTOMOUS CATEGORIZATION IN BIOMEDICINE

Rarely have any in the biological sciences proposed questions regarding the habit of dividing human beings into two categories: females and males. When a child is born we ask almost automatically, “Is it a boy or a girl?” The question implies significant messages about both biological and cultural difference; the two categories are portrayed as natural and the differences between them obvious. However, much of human variation does not fit so orderly into binary categories, and is better described as a continuum with indistinct boundaries.

Both language and traditional social practice suggest that there are clear boundaries between biological females and males. However, if the boundaries are not problematic, it is curious that so much energy is expended to reinforce them and to render invisible large numbers of people, including homosexuals, bisexuals, eunuchs, hermaphrodites, transvestites, transsexuals, transgendered and intersexed individuals, and others who assume social and sexual roles different from those that their cultures legitimize (Bing & Bergvall, 1996). Social scientists have accepted for quite some time

the notion that gender roles are learned and arbitrary and that conventional feminine and masculine behaviour varies from culture to culture. Undeterred by the evidence provided by Butler (1990, 2011), Bem (1993), Nicholson (1994) and many others, the claim that not only gender but the category of sex itself is also socially constructed is often met with disbelief or skepticism.

In the time since the publication of Laqueur's book, several additional academics have called for the historicization and conceptual complication of sex and its determination. The critical lens has turned more fully on sex determination practices within contemporary North America. Butler reminds us that:

. . . it is crucial to understand sex as assigned rather than assumed, and to recognize that there are a variety of ways through which "assignment" works culturally, and that these [ways] are systematically obscured by the presumption that sexual difference is a condition of every and all culture. (Breen, Blumenfeld, & Butler, 2001, p. 10)

An excellent example of how cultural conceptions encroach on our own twenty-first-century assignment of sex is the controversy surrounding those individuals born with ambiguous genitalia. Julia Epstein (1990, p. 104) quotes a 1964 medical textbook and states, "There is no standard legal or medical definition of sex." Biological sex results from variations in chromosome combinations (such as XX, XY, XO, XXX, and XXY), internal gonad structure, external gonad structure, hormonal dominance, secondary sexual characteristics, apparent sex, psychological sex, and sex of rearing. In the majority of human births, the combination of these factors lead to clearly sexed males and females, but they can also result in many different intersexed individuals.

Sex and gender polarizations are widespread, but also culturally-specific. This is an issue that reframes the need to draw from intersectional feminist theories. The way

different societies define homosexuality and intersexed individuals suggests that “compulsory heterosexuality” – which constitutes heterosexuality as normative, desirable, and hegemonic, is not universal (Binnie, 1997) . Many cultures recognize supernumerary genders, categories that describe roles other than feminine and masculine; the most widely cited are the Native American berdache, and the hijra of India (K. Martin & Voorhies, 1975; Nanda, 1994; Ortner & Whitehead, 1981). In fact, as of 2014, India’s Supreme Court now recognizes the country’s large transgender community, or “hijra”, as a legal third gender and now extends anti-discrimination protection to the community ("A new era for transgender Indians," 2014). How can the discipline of forensic anthropology ascribe identities based on biological difference without cultural context?

Thus it becomes evident that there exists a strongly embedded Western perception of sex and gender as being composed of only two sexes; even language refuses other possibilities. To clarify, comparing bodies does allow for identification and assessment of biological differences. However, the process of categorization and attachment of specific (and narrow) meanings pertaining to *normal* masculinity and femininity requires reflection – not just for intersex and transgender individuals, but for everyone.

BASICS OF FORENSIC ANTHROPOLOGY AND THE ASSESSMENT OF SEX FROM HUMAN SKELETAL REMAINS

The skeletal frame of the human body provides structure, support, and protection for the soft tissue, and as such is supplied with oxygen and nutrients necessary for its effective functioning. In addition to structural support, bones and the marrow within are responsible for providing the body with red and white blood cells, and also serve as energy and mineral store. Once fully grown, the skeleton has long been erroneously

conceptualized as a rigid, fixed, and unchanging structure. In actuality, the skeleton is a “dynamic plastic tissue”, able to grow and respond to the physiological requirements of the individual and external stimuli throughout the life course (Agarwal, 2012).

Bone is a composite material, with around one third of its dry weight deriving from collagen (Gowland & Thompson, 2013). The remaining two thirds are formed of inorganic material. One cannot approach the skeleton as if it were a single structure. The adult skeleton is composed of 206 bones (generally), though the structure as a whole tends to be divided into different regions in order to assist analysis. Traditional divisions include the separation of the cranial and post-cranial regions (the skull and everything suspended below the skull) or the axial and appendicular skeleton (the skull, spine, and girdles, and those skeletal elements suspended from this core axis).

Within forensic contexts, analysts create what is referred to as a biological profile from preserved skeletal remains and/or radiographs. This profile comprises a description of the key biological features of an individual, including sex, age-at-death, stature, ancestry (see later discussion), and evidence of pathology or trauma. The ability to establish an individual’s identity from their skeletal remains is dependent on preservation and completeness (Bennett, 1987).

In analysis of the human skeleton, sex is the first biological characteristic determined. This is due to the fact that methods of estimation other characteristics including age-at-death and stature, are dependent on sex. Additionally, in a forensic context, knowing the sex of a deceased individual aids in narrowing the list of potential identifications. Sex is estimated through an examination of the sexually dimorphic features of skeletal size and shape. The pelvis has been cited as the most sexually

dimorphic element due to functional differences and thus is considered the most useful component of the skeleton for assessing sex (Buikstra & Ubelaker, 1994; Walker, 2005). In general, the female pelvis is said to be broad, with a larger pelvic inlet to facilitate pregnancy and childbirth, while the males is narrow. Due to the fact that this is the only region of the skeleton where there is such a functional difference, the pelvis proves the most important area for determining biological sex. Accuracy of sex determination methods is variable and is largely dependent on the degree of preservation or fragmentation of the hip bone (Gowland & Thompson, 2013).

The skull is also considered useful in accurately estimating sex. As with the hip bone, the accuracy of sex determination methods based on the skull is dependent on the state of preservation as well as the degree and range of sexual dimorphism. The features of the skull are characterized as “masculine” and “feminine”, for the most part, according to degrees of “robusticity” or “gracility”. Overlap occurs between the sexes, and more often than not, individuals will exhibit a mosaic of characteristically “masculine” and “feminine” features (Gowland & Thompson, 2013). In other words, there is overlap in ranges of any given characteristic or measurement of sexually dimorphic regions of the skeletal body, and any one individual can express various characteristics that are a mosaic of “masculine” and “feminine” features. Much like estimates of sex based on the hip bone, most often sex determinations of the skull are based on subjective visual assessments of the features. Consequently, inter-observer discrepancies are common (Albanese, 2003b). Osteometric techniques based on statistical analysis are being used more frequently, but the vast majority of anthropologists continue to use visual assessment (Walker, 2008).

The skeletons of males are generally described as considered more robust than those of females, although once again, there is overlap between the sexes (Buikstra & Ubelaker, 1994). Overall size differences are often utilized to examine sex differences. Most of the skeleton has been assessed for its ability to differentiate reliably between the sexes and these studies have been met with varying degrees of success. Sex determination is enhanced greatly when the entire skeleton is available for analysis (Bass, 2005). However, it is important to note that all of the skeletal features used to determine sex fall along a continuum from male to female rather than in two discrete categories.

The work by Fausto-Sterling (2005, p. 1498) explores the concepts of sex and gender in bone development – “an area often accepted as an irrefutable site of sex differences” – and asks the following questions. First, to what extent can we understand bone formation as an effect of culture rather than a passive unfolding of biology? Second, can we use dynamic (developmental) systems to ask better research questions and to formulate better public-health responses to bone disease? Fausto-Sterling (2005, p. 1516) argues that the “sex-gender or nature-nurture accounts of difference fail to appreciate the degree to which culture is a partner in producing body systems commonly referred to as biology – something apart from the social”. She stresses the need to ask old questions in new ways so that we can think systematically about the interweaving of bodies and culture. Although Fausto-Sterling is directly addressing issues in studies of public health, I think her work provides insight for the discipline in forensic anthropology. The goal here is not only to provide a feminist critique of the discipline, but rather to provide a concerted effort to change the discipline for the better by focusing on the elimination of

sexist ideologies and the introduction of better methods for assessing human skeletal variation.

The work by Albanese (2003b) does what is suggested by Fausto-Sterling, by addressing the question of sex determination with a new approach. That is, by arguing for a non-typological approach to sex determination in a forensic context. The author argues that many traditional sex determination methods can be particularly susceptible to problems because the methods are dependent on absolute size differences in means of males and females for any given measurement. This simple, rigid, dichotomous construction of sex contributes to an erroneous assumption that human variation fits into neatly, non-overlapping biological categories (male OR female, i.e. not male). Albanese's work (2003b; Albanese & Saunders, 2006) outlines that the hazard of any typological approach, whether it is race-based or sex-based, is that the unknown individual is compared to an ideal type that does not actually exist anywhere in time or space. What are considered "male" characteristics and what are considered "female" characteristics are derived from the constructions of gender in the anthropologist's society. The predominant perspective provided in the major osteology/forensic anthropology textbooks (Bass, 2005; Reichs, 1986; Sorg, 2005; Ubelaker, 2006) is very Euroamerican and androcentric: males are more robust with larger brains, whereas females are gracile and have skeletons that have been shaped by evolutionary forces to have children.

So how have the developments in feminist and queer theories informed or complicated forensic anthropologists' estimates of sex? Generally, physical anthropology has used methods for sex determination as a starting place in attempts to understand different cultural ideologies surrounding gender. However, the majority of the discipline

persists in being committed to the perception of sex as a biological classification that is not distinct from gender (Grauer & Stuart-Macadam, 1998). Hence, forensic anthropologists rarely view gender as a sociocultural construct that may or may not be contingent upon anatomical differences or physiological processes. When a distinction between sex and gender is drawn, the discipline fails to engage with feminist and queer theory. Specifically, very little consideration has been given to third-wave feminist or queer theories. To most physical anthropologists, including those who can be labeled as forensic specialists, sex persists as biological fact and a binary, and a two-sex model has always been the predominant framework. Not many have called attention to the concepts of cultural construction and historical contingency. More than a decade has passed since Beaudry and Claassen stated:

That we have to come up with M or F for that skeleton, that's a cultural decision....There, is nothing inherent in the skeleton or separate from the archaeologist [and physical anthropologist]. There are numerous traits, which are used in a statistical manner. One can say that 60% of the traits are female, 40% are male and I'm going to label this body female. The reliance on an implicit or explicit set of criteria is a cultured act. Both terms are cultural. (Beaudry & Claassen, 1992, pp. 152-153)

The refusal to see “sex” as a culturally constructed category is indicative of not only ethnocentric ideologies but also scientism (Geller, 2005). In ways by which to demarcate and “know” the body, forensic anthropologists affirm contemporary Western comprehensions and the allegedly “objective” methods of the natural sciences. It is concerning that neither forensic, nor physical anthropology has engaged with feminist perspectives beyond early second-wave discussions (Geller, 2008), as these have been roundly critiqued and problematized. In particular, third-wave feminist and queer theories

undermine the categories of sex and gender, characterizing them as fluid and changeable. In bringing light to the social constructedness of “sex” and “gender” how could the integration of queer theory complicate understandings about the skeletal body – as a conceptual and physical entity?

TYOLOGICAL APPROACHES AND THEORETICAL CONCERNS REGARDING THE DEVELOPMENT OF METHODS FOR SEX ESTIMATION

For about a century, there has been an ongoing debate in physical anthropology regarding the relevance of race when investigating human variation (Albanese, 2003a). Specifically for forensic anthropology, racial categories have been used extensively for investigating human variation and for establishing parameters for the applicability of forensic identification methods using several key reference collections (Loth & Iscan, 1987; Ousley & Jantz, 1996). Albanese (2003a) explains that the term reference collection is used to describe a human skeletal collection that was amassed for general research and anatomical instruction. Examples include the Hamann-Todd Collection, the Terry Collection, the Cobb Collection, and the Grant Collection, which were derived from cadavers that were used for anatomical instruction. These major reference collections have been described as not representative of the populations in the USA, because of the source of the collections (Ousley & Jantz, 1996). Some have suggested that these collections may no longer be useful for the development of forensic identification methods because of the source and because of the age of the collections (Ousley & Jantz, 1998). The majority of individuals in all of the aforementioned major anatomical collections have birth years in the 19th century and the collections may not reflect some of the major secular changes in the U.S.A. in the 20th century (Ousley &

Jantz, 1998). Secular change is a term that refers to changes in the average pattern of growth or development in a population over several generations. The work by Albanese (2003a) investigates the nature of the bias present in these collections, and the effects of the bias on the pattern of variation expressed in the collections.

The collection and curation of new forensic databases during the last two decades has been a primary focus of the discipline of forensic anthropology for the purpose of improving on the inferior probability assessments of biological profile techniques and eliminating the issues of bias in the older collections (Dirkmaat, Cabo, Ousley, & Symes, 2008). Dirkmaat and colleagues (2008) have stressed how there has been an essential need to assemble new comparative samples that are more *representative* of “modern populations” in order to make these improvements (Dirkmaat, et al., 2008, p. 36). The best example of these efforts has been the establishment of the Forensic Anthropology Center at the University of Tennessee, Knoxville, which includes the William M. Bass Donated Skeletal Collection (UTK, Klales et al., 2012), and the Forensic Data Bank (FDB, discussed Passalacqua et al., 2013). Individuals from the UTK collections comprise a substantial component of the FDB (Dirkmaat, et al., 2008).

The race concept has had and continues to have an influence on the collection process and the demographic structure of both old and new reference collections. Racial categorization is a social reality in many countries. At the same time there is a great deal of evidence that the race concept does not apply to humans, and that racial categories are not useful groups for investigating human biological variation (Albanese & Saunders, 2006; Armelagos & Goodman, 1998). Recent work by Spradley and colleagues (Spradley, Jantz, Robinson, & Peccerelli, 2008), however, has demonstrated that when

faced with remains of individuals of Hispanic *ancestry*, if the pelvis is not available, the accuracy of metric sex determination declines considerably. Spradley and colleagues explain that the term “Hispanic” is a social construct with “no precise genetic meaning” (2008, p.21, similar to any other racial category). In other words, ancestry is based on linguistic definitions and is complicated by “hybrid populations that could be thought of as arriving from previously hybridized populations” (Spradley, et al., 2008, p. 27). This issue is indicative of the deeply rooted problem in forensic anthropology that is *population specificity* - i.e. racial typology.

To estimate maleness and femaleness as relative to a specific sample, forensic anthropologists utilize a population-specific, or typological approach. Such a perspective is considered useful for outlining comparisons between populations through space and time. Hence, in theory, we can explore how ancestry, health status, or socioeconomics impact those diagnostics we currently use to estimate sex from human skeletal remains. However, it seems the focus of typological approaches are more about fitting people into neat boxes, based on race and based on sex. What about difference apart from the binary? What about social complexity that is not reducible to division? Accepting a typological approach (read: racial approach) may actually complicate some important idiosyncrasies within the larger group (Geller, 2008). Bringing due attention to diversity and not simply duality within a population highlights the argument that we cannot homogenize or dichotomize males and females without any consideration for cultural context. Perhaps a shift in scale will allow us to address the social significance of particularities beyond the patterned. This returns our discussion to a third-wave feminist, post-structural, and queer theoretical framework, and the importance of intersectionality.

A good example of the importance of the consideration for post-structural, and intersectional approaches to understanding and assigning identity surrounding ethnicity, nationality, sex and gender, can be seen in the aforementioned case of the Indian hijra. Although this category of individual is often referred to as a “third gender” (as mentioned previously), academics of late have expressed dissatisfaction with the label (Herdt, 1996; Towle & Morgan, 2002). While the idea of a “third gender” destabilizes binary and dualistic thought, there is now an appreciation for the fact that the term is not ethnographically accurate or adequate. As discussed in the work of Geller (2008), Nanda’s (1994) discerning consideration of the hijra asserts the complexities of such a category, or rather the weakness of categorization more generally. According to the work by Nanda, hijras include transvestites, emasculated or incomplete men, followers of the mother goddess, ritual specialists at marriages and male births, prostitutes, and non-menstruating or infertile women. Thus, it is not unreasonable to conclude that the category of hijra includes individuals whose genitalia and reproductive functions are in question – at least for those who operate within a Western biomedical frame (Geller, 2008; Nanda, 1994), demonstrating how gender cannot be reduced simply to biological sex, nor to a male-female binary, without consideration for cultural context. These individuals are important, regardless of the fact that they may represent a minority of the larger population. Similar to the conception of intersex individuals in the contemporary West, the hijra community brings about a reflection on the culturally situated understanding of sex. Forensic anthropologists, like the majority of the broader discipline of physical anthropology, are inclined to assume that such ambiguity is related to gender (Armstrong, 1998). However, the hijra illuminates that sex is just as much a matter of

contention. It is acknowledged that the male/female dichotomy is a construct of our own sociocultural location. The hijra effectively informs anthropological inquiry that variability is as applicable to sex as it is to gender. The hijra also provides a crucial lesson about sexual fluidity, regarding conceptual change over time and of biological sex. As a direct result of social, political, and cultural shifts connected to family size, British colonialism, and Westernization, the hijra's role and cultural significance has transformed with time (Nanda, 1994). That is, this example serves to destabilize the notion of sex and gender identity as static through time.

Gendered influences on the skeleton are cumulative, such that the aging skeleton is molded by experiences over the life course. Borrowing from life course approaches used in the study of chronic diseases, Anne Fausto-Sterling (2005) demonstrates the cumulative nature of influences on bone health and illuminates how prior events during life can alter the trajectory of bone development in later points of the lifecycle.

Traditional morphological analyses reaffirm how several biological indicators of sex are fluid and ever-changing. Walker (1995, 2005, 2008) suggests that there exist gender biases within the process of sex determination, or "sexism in sexing". Walker's research suggests that the source of the problem seems rooted in a cultural stereotype of "typical" female morphology than in an appreciation for the complex biological reality of human sexual dimorphism. His work has demonstrated that age, population, and/or environment may affect the specific skeletal elements utilized for sex determination, such as the crania and greater sciatic notch region of the hip bone. For instance, both males and females display increasing "masculinization" of the greater sciatic notch as they grow

older (Walker, 2005). Additionally, females develop more robust crania as they age, as was evidenced by the post-menopausal individuals studied (Walker, 1995).

Another confounding issue surrounds the impacts of sex hormones on bone physiology. Recent work (Reutrakul et al., 1998) has demonstrated that long term hormone replacement therapy in transsexual women (oestrogen treatment for male-to-female transsexual patients) and post-menopausal women result in an increase in bone mineral density in the femora and overall, (and feminization in the case of transsexual hormone replacement therapy). In addition it has been found that testosterone replacement therapy in transsexual men and hypogonadal men increases bone mineral density of the spine and hip (Van Caenegem et al., 2012). These findings further complicate the assignment of sex (and subsequently gender) in forensic circumstances, and suggest that the discipline of forensic anthropology could benefit from pursuing the exploration of the effects of aging, hormones, and hormone replacement therapy on the expression of sexual dimorphism in the human skeleton.

These observations demonstrate that the emphasis on using such typological approaches ignores the biological materiality of intersectional identities in context. Simply asking the question of male or female is not enough to answer questions of identity, and the methods that exist for doing so have not adequately addressed all of the compounding factors that affect the expression of sexual dimorphism in the human skeleton. If difference and identity are not addressed thoroughly, there is a possibility that the anthropologist could misconstrue reconstructions of individuals' lives and never access a deeper understanding of how the biological subtleties of individuals are culturally relevant and have developed throughout the life course.

METHODOLOGICAL APPROACH

The main component of this study will employ critical discourse analysis of literature and research within the disciplines of forensic anthropology. Few feminists would oppose the statement that discourse is often gendered, and that it comprises one of the primary means through which patriarchy and oppressive norms and social practices are produced and reproduced. Indeed, as feminists we are becoming increasingly made aware of the fundamentally political nature of discourse. When discourse is used to communicate, we tend to “naturalize” and perpetuate oppressive understandings of gender and “gender role behaviour” - that is, we present them as timeless, rational and natural (Speer, 2005). These understandings become deeply embedded in our commonsense worldviews, and become understood as normative and expectable.

The question, “How does language reflect, construct and maintain male dominance?” represents a major branch of language and gender research. Feminists such as Shulamith Firestone, Catherine MacKinnon, Alison Jaggar, and Mary Daly have highlighted how social systems oppress women's freedom of choice and action; feminists interested in exploring how dominance is achieved through language examine and investigate how interruptions, topic control, use of generic pronouns and nouns, polite forms and formal and informal speech all constitute evidence that language not only reflects power relationships, but aids in maintaining them (Bing & Bergvall, 1996).

Bias in the language does not necessarily entail bias in language use, sexist discourses may or may not draw on sexist language items (Litosseliti, 2006). Words often have multiples meanings and ways of being understood, and language users' intentions are obscure and unpredictable. Couched within words are preconceived notions and

understandings about gender. That is, behind language are many taken-for-granted assumptions about women/men, girls/boys, gender relations, roles and expectations. Much feminist research in recent decades has increasingly focused on post-structuralist social constructionist approaches to discourse, including critical discourse analysis. As Wodak argues, “many proposals and basic assumptions of feminist linguistics relate to and overlap with principles of critical linguistics and critical discourse analysis” (1997, p. 167). Critical discourse analysis is concerned with complex questions surrounding the power activated by people whenever they produce meaning, about social inequality and struggle, and about institutionalized dominance. It has an explicit intent in making transparent the “hidden agenda” of discourse - which, for instance, may be responsible for producing and maintaining gender inequalities.

Discursive practices contribute to the creation and reproduction of unequal power relations between social groups (e.g., between social classes, women and men, ethnic minorities and the majority, etc.). Norman Fairclough (1992) explains that these effects are understood as *ideological* effects within the context of critical discourse analysis. The object of critical discourse analysis is inclusive of both the discursive practices which construct representations of the world, social subjects and social relations, including power relations, and also the role that these discursive practices play in perpetuating the interests of particular social groups. Language use, in every instance, is a communicative event consisting of three dimensions: it is a text; it is a discursive practice which involves the production and consumption of texts; and it is a social practice. The critical discourse analysis should focus, then, on (1) the linguistic features of the text, (2) processes relating to the production and consumption of the text, and (3) the wider social practice to which

the communicative event belongs (Phillips & Jorgensen, 2002). Discourse encompasses not only written and spoken language but also visual images.

The method for this study employs informal, qualitative critical discourse analysis within a feminist post-structural framework. That is, the critical discourse analysis perspective is focused in the area of identities – i.e. gender, age, ethnicity, race, sexuality, and so on. Feminist post-structural discourse analysis draws on a combination of analytical concepts and assumptions, shared by social constructionist feminism, post-structuralist feminism, as well as critical discourse analysis. The analysis focuses on how gender ideology and gendered relations of power are produced and reproduced, negotiated, and contested in representations of social practices, in social relationships between people, and in people's social and personal identities in text and talk (Baxter, 2003). The emphasis is on critically examining the ways in which people do gender, or construct particular gendered relations and identities through discourse.

The purpose of performing this analysis is to examine how categories of identity are actively constructed through scientific discourses in the discipline of forensic anthropology. Specific focus is given to femininities and masculinities – how gendered identities are produced and constructed through discourse; as well as on the intersectional nature of identity and the compounding impacts of biological materiality. The aim for this study is to identify and pull out themes in the current discipline of forensic anthropology that involve gendered discourses, including: discourses of gender difference, which may produce a “male as norm” discourse or a “mutual incomprehension of the sexes” discourse; and also, discourses surrounding “compulsory heterosexuality,” or “heteronormativity” (Litosseliti, 2006).

For this study, the three most recent articles (as of March, 2014) published in the area of sex determination from the *American Journal of Physical Anthropology* were selected. This journal is a peer-reviewed scientific journal and the official journal of the American Association of Physical Anthropologists. This journal was selected particularly for its overarching influence on the discipline of forensic anthropology. In 2009, the journal was selected by the Special Libraries Association as one of the top 10 most influential journals of the century in the fields of biology and medicine. According to the Journal Citation Reports, its 2012 impact factor is 2.824, ranking it 6th out of 79 in the category "Anthropology" and 23rd out of 45 in the category "Evolutionary Biology". Additionally, the journal has earned the most citations in the category "Anthropology" each year for over a decade. The three most recent articles were selected to provide an exploratory demonstration of the disciplines perspectives on sex and gender, as these articles represent everything published in the area of sex determination in this specific journal over a two year span. The articles selected include: *Sex determination of human skeletal populations using latent profile analysis*, written by Passalacqua, Zhang, and Pierce (published 2013); *Geometric morphometrics and sexual dimorphism of the greater sciatic notch in adults from two skeletal collections: the accuracy and reliability of sex classification*, written by Velemínska and colleagues (published in 2013); and finally, *A revised method of sexing the human innominate using Phenice's nonmetric traits and statistical methods*, written by Klales, Ousley, and Vollner (published in 2012). The reason these articles were selected for critical discourse analysis is in relation to the fact that they represent the most up-to-date and most widely consumed discussions on the area of sex estimation in forensic anthropology.

There are a number of principles that constitute this particular practice of discourse analysis, which define a synthetic approach, overlapping aspects of the methodologies of critical discourse analysis and feminist post-structural discourse analysis. These are: self-reflexivity; a deconstructionist approach; and selecting a specific feminist focus. Baxter (2003) explains that practitioners should aim to make their theoretical positions clear, and make explicit the epistemological assumptions that are to be applied to any act of discourse analysis. Both feminist and post-structural theories argue that any interpretation of data must explicitly acknowledge that it is constructed, provisional, perspectival, and context-driven.

As described by Baxter (2003) feminist post-structural discourse analysis involves 1) the need to be overtly aware of the intertextuality of the research process and the phenomenon that any act of research comprises a series of authorial choices and strategies; 2) it does not have an emancipatory agenda, but a “transformative quest”; 3) it focuses on complexity rather than polarization of subjects of study; and 4) it has an interest in deconstruction: working out how binary power relations (e.g., males/females, public/private, objective/subjective) constitute identities, subject positions and interactions within discourses and texts, and challenging such binaries.

I cannot possibly claim that the following critique of forensic anthropology is objective or neutral. I have no more claim to truth than the subjects of the study. Rather, this analysis is an exploratory demonstration that is socio-politically located from a feminist and queer theoretical perspective. Basically, this critique is created out of the desire to provoke and facilitate new discussions and discourses that are theoretically rooted in feminism and delve deeper into understandings of sex and gender and how

identity is expressed in the human body, in hopes that the discipline can build on this foundation and seek out new directions for study.

Fairclough (2001) explains that the process of performing critical discourse analysis starts by applying ten main questions which can be divided into three sections: vocabulary, grammar, and textual structures. Fairclough (2001) claims that formal features of texts have experiential, relational, expressive, or connective value, or some combination of these. By examining the experiential values, critical discourse analysis demonstrates how the text producer's experience of the natural or social world. A person's views of the world can be identified by assessing formal features with experiential value. Relational values may help identify the perceived social relationship between the producer of the text and its recipient. The third dimension, expressive value, provides an insight into how the producer relates to the reality it's discussing (Fairclough, 2001). The following questions comprise the foundations of critical discourse analysis:

1. What experiential values do words have?
2. What relational values do words have?
3. What expressive values do words have?
4. What metaphors are used?
5. What experiential values do grammatical features have?
6. What relational values do grammatical features have?
7. What expressive values do grammatical features have?
8. How are (simple) sentences linked together?
9. What interactional conventions are used?
10. What larger-scale structures does the text have?

This study involves the application of these ten questions to each work, within a feminist post-structural framework. For this paper then, I present the *final product* of critical discourse analysis, which Fairclough (1992) explains is composed of three stages: 1) description; 2) interpretation; and 3) explanation with primary focus being on *ideology*. The exercise of power is increasingly achieved through ideology, and more particularly through the ideological workings of language. Ideological power, or rather, the power to project one's practices as natural and "common sense," contributes significantly to economic and political power, and is of particular significance here because it is exercised in discourse.

DESCRIPTION AND INTERPRETATION

The first article, *A revised method of sexing the human innominate using Phenice's nonmetric traits and statistical methods* (Klales, Ousley, & Vollner, 2012), investigates all three of the original characteristics described by Phenice (1969) for sex determination using the hip bone: the ventral arc, the subpubic contour, and the medial aspect of the ischiopubic ramus. The authors of this work, Klales, Ousley, and Vollner, state that their study was conducted in attempt to rectify the shortcomings of the original study by Phenice (1969), and to provide a comprehensive description of each trait and the morphological expression and developmental differences between males and females. Generally, for morphological based methods for sex determination, these shortcomings are listed as (by Klales et al., 2012, p. 104, originally quoted from Bruzek, 2002): "1) a high degree of observer subjectivity; 2) a lack of consistency in evaluation of traits; and 3) a strong dependence on the results of previous experiences of the observer". Klales and colleagues claim that the purpose of their study "is to improve on Phenice's (1969)

technique for sex estimation through ordinal scoring of traits, to analyze the scores using statistical classification, and to compare scores to quantify intra- and interobserver agreement, thereby providing a method of sex estimation with estimates of reliability and validity” (2012, p. 106).

Describing the work of Phenice, Klales and colleagues describe that females often exhibit: “1) an elevated ridge of bone on the ventral surface of the pubis known as the ventral arc; 2) a lateral curvature of the subpubic concavity; and 3) an elevated ridge of bone on the medial aspect of the ischio-pubic ramus, *while males typically do not exhibit these traits*” (2012, p. 105, my emphasis). Right from this statement it is evident that there is an emphasis on the difference (or deviation) of females. Never mind that Phenice and more recent scholars stress that there is no “perfect male” or “perfect female” form, and that there is intergradated forms expressed between the two extremes (Klales, et al., 2012; Phenice, 1969). Despite Klales and colleague’s claim that their use of five grades of classification, as opposed to the three used in the original work by Phenice (1969) (which are male, female, and ambiguous), would be more objective in encompassing a wider range of variation, their statistical procedure can only estimate an unknown individual as male or female, based on calculated probability scores. Regardless, this procedure actually serves as a reinforcement to the presupposition that are now and there have only ever been two, mutually-exclusive categories for “biological sex”.

Klales and colleagues state that there were two skeletal reference collections from which the sample populations for this study were drawn from: the Hanmann-Todd Human Osteological Collection (labeled HTH), and the W.M. Bass Donated Skeletal Collection (labeled UTK). Klales and colleagues (2012, p. 110) claim that “the UTK

validation sample represents a modern sample of individuals born, in many cases, 100 years later than the HTH individuals”. This becomes a notable issue due to the fact that the results of this study indicate that “intermediate expression” (falling somewhere between the extremes of hyper-feminine and hyper-masculine) was seen most in the UTK sample, which they describe as “predominantly a female condition”. The fact that the samples represent different periods of time, yet there is no discussion of societal context or circumstance that have had an apparent effect on the expression of sexual dimorphism in the human skeleton is clearly a missing link in this area of study. Again, here it is evident that there is no consideration of an estimation of sex that is neither male, nor female, even though the authors argue that their method of categorization represents the “spectrum” of variation in skeletal sexual dimorphism. Klales and colleagues describe the difference between males and females as being associated with parturition (child-birth), thus individuals become reduced to only their reproductive ability.

The authors mention that the HTH sample is composed of black and white individuals, of known “ancestry”. They go on to state that the UTK sample is comprised of white, Hispanic, Asian, Mexican, and Japanese *populations*. There is no discussion, however, of social context surrounding the identification of “ancestry” or how that plays a role in these considerations of sexual dimorphism, other than the statement that “the effects of ancestry were not found to be significant” (Klales, et al., 2012, p. 111).

Klales and colleagues (2012), much like many before them, describe female characteristics to have “a generally more *gracile* form when compared with males” (p. 105), or “narrower than the male form” (p. 106). These statements clearly depict the male form as the standard from which the female form deviates. Additionally regarding the

choice of vocabulary, these statements could be understood by the reader as supportive of the presupposed stereotypical image of women as small, delicate, and slender.

Interestingly, they go on to state that “lengthening of the pubic bone during the adolescent growth phase in females may account for the narrower surface found in females; however, little research has currently been done as to why these sex differences occur” (p. 106). This statement could possibly be understood by the reader to convey that the authors acknowledge that (*gender*-based) environmental/sociocultural factors *may* influence the expression of sexual dimorphism expressed in the human skeleton, or more specifically in the skeletal collections from which their research sample was drawn, however there is no commentary surrounding any aspect of social identity.

The language use chosen by Klales and colleagues presents an interesting point for discussion. The authors, in describing the three morphological features of the hip bone that characterize the “typical” female expression, refer to the “female condition”:

The ventral arc is the female *condition* consisting of “a slightly elevated ridge of bone which extends from the pubic crest and arcs inferiorly across the ventral surface of the lateral most extension of the subpubic concavity where it blends with the medial border of the ischio-pubic ramus”. (Klales, et al., 2012, p. 105)

The use of the word “condition” implies what is seemingly a pathologization of the female form, especially as it is not used to refer to the male form, which is more passively “found” (an event, as opposed to a state of circumstance, or attribution as discussed in Fairclough, 2011): “. . . a ridge of bone along the ventral side of the pubis can also be *found* in males” (Klales, et al., 2012, p. 105). A breakdown of the experiential, relational and expressive values, as discussed by Fairclough (2001), that were identified in this work can be found in table 1.

In summary, there were several ideological implications identified in the work of Klales and colleagues (2012): 1) males and females are positioned in binary opposition; 2) females are viewed of a product of only their reproductive abilities; 3) sex is perceived as static, and unchanging – there is no consideration for age related changes; and 4) sex is assumed to be a stable, given biological fact – their methods force individuals into classification schemes without consideration for compounding effects of identity over the life course.

Table 1

Experiential, Relational, and Expressive Values Identified in Klales et al., 2012

Values	Notes
Experiential	Binary male/female classification scheme Female “condition” – pathologizes female form Female form as condition, while characteristics are passively found/seen in (event as opposed to attribution) in the male form. Differences between males and females as “absolutely associated to parturition” – reduces women to reproductive ability Males as “norm” Females = “generally more gracile”; “narrower than male form”
Relational	Use of scientific terminology to assume objective stance (e.g. parturition as opposed to child birth) No reference to the self, or use of pronouns– authors are removed/authority
Expressive	Imperative modality – anthropologists “must” and “should” Intertextual (quotation) reference to Phenice’s work and particularly the shortcomings in this work – statistical procedure assumed to be more objective/neutral

The second article *Sex determination of human skeletal populations using latent profile analysis*, written by Passalacqua, Zhang, and Pierce (2013), utilizes the latent profile statistical approach to estimate sex. This study, in which sex is a latent variable (male and female are the *two* latent classes), uses eight standard metric skeletal measurements as indicator variables. This study draws its sample from two different sources: an undocumented sex sample from Medieval Asturias, Spain and a “modern”

documented sex sample from the Forensic Data Bank (FDB). Age was not considered except to ensure all individuals could be classified as adults.

The authors state that in their preliminary analysis of the FDB sample, it was demonstrated that “males *tend* to have larger values on each of the indicators than females” (Passalacqua, et al., 2013, p. 539). Based on the critical discourse analysis breakdown and the utilization of the word “tend”, this statement could easily be inferred by the reader to be an over-generalization which supports the preconceived ideological conception that males are large, robust, and strong; while females are delicate, slender, and gracile – although this is not directly stated in the text. The authors used this generality as a basis for creating an “empirical rule to label each profile as either male or female” (p. 539). Their results demonstrate a general classification accuracy of ~85% using the Latent Profile Analysis method and there is no discussion of overlap between the sexes. A breakdown of the experiential, relational and expressive values, as discussed by Fairclough (2001), that were identified in this work can be found in table 2.

Table 2

Experiential, Relational, and Expressive Values Identified in Passalacqua et al., 2013

Values	Notes
Experiential	Binary male/female classification scheme All sentences were passive – attempt at a neutral standpoint “Empirical rule label each profile as male or female” – based on observation rather than data/logic
Relational	Pronouns – we/us Results described as “trustworthy” – places author in position of authority of knowledge production Relational mode – potential – may, tend used to maintain an objective stance (neither negative or positive)
Expressive	N/A

In summary, there are several ideological implications that have been identified in the work of Passalacqua and colleagues (2013): 1) males are depicted as large, strong,

and robust, and females as small, delicate and, gracile; 2) males and females are classified into binary opposition; and 3) sex is static and unchanging – as there is no consideration for age related changes.

Finally, the last article for this analysis is *Geometric morphometrics and sexual dimorphism of the greater sciatic notch in adults from two skeletal collections: the accuracy and reliability of sex classification*, was also published in 2013. In this work Velemínska and colleagues tested the robustness of using measurements of the greater sciatic notch region of the pelvis for sex estimation (Velemínská et al., 2013). This study was performed on samples from two different skeletal assemblages: a “Euroamerican population” from the Maxwell Museum at the University of New Mexico, and a “Hispanic population” from Universidad Nacional Autonoma de Mexico, Mexico City.

Velemínska and colleagues describe the (passive) *existence* of greater sciatic notch shape differences between males and females as caused by “a sex linked adaptation of the pelvis for locomotion and reproduction in the context of a larger brain size and encephalization of the fetus during evolution” (2013, p. 558). In other words, women are a product of *only* their reproductive functions.

One of the main research question asked by Velemínska and colleagues surrounds whether or not the use of the specified region of the pelvis for sex determination should be considered a population specific method or if it is more broadly applicable. The authors here are reflecting on the aforementioned work by Spradley and colleagues (2008) regarding the difficulty of applying Euroamerican-centric sex estimation techniques to “Hispanic populations”. The results of this study indicated that the greater sciatic notch measurements were more accurately able to estimate sex on the

Euroamerican population sampled than they did on the Hispanic population sampled.

What is interesting here is the authors' discussion surrounding these results. According to Velemínska and colleagues:

Both populations used in this study, Hispanic and Euroamerican, live geographically close to each other but at the same time are biologically different. In the United States, the Hispanic population represents the second largest population group; the majority of Hispanics in the United States originate from Mexico, and individuals originating from Mexico, Central America, and Latin America derive genes primarily from Spanish and Native American Sources. (Velemínská, et al., 2013, p. 563)

This statement clearly negates the argument put forth by Spradley and colleagues (2008, mentioned earlier), by suggesting that *racial* differences are genotypic facts, that is something other than a sociopolitical construct. Interestingly, Velemínska and colleagues state that “sampling effects may play a very important role” (2013, p. 563). There was considerable sex bias demonstrated in their work, that is, males were more likely to be incorrectly classified than females. The authors state that results of this study are in concordance with the previously mentioned work by Walker (2005), who pointed out that both males and females dying at younger ages (before age 50) tend to have more feminine morphology than older people, because 86% of misclassified males were younger than 50 years old at the time of death. Velemínska and colleagues note that the average age for females in their sample was 53, and the average age for males was 70, however age was not taken into account in the analysis. This reframes the inadequacies of the current state of forensic anthropology, and points to the importance of the consideration of aging, hormones, bone health, and more generally the fluid and changing nature of biological sex, and sociocultural context in human skeletal variation. A

breakdown of the experiential, relational and expressive values, as discussed by Fairclough (2001), that were identified in this work can be found in table 3.

Table 3

Experiential, Relational, and Expressive Values Identified in Veleminska et al., 2013

Values	Notes
Experiential	Passive existence of sex linked traits related to reproduction Populations defined as biologically different - contested Classification schemes <ul style="list-style-type: none"> - male or female – male as norm - Racial typology
Relational	No use of pronouns – assumed to be neutral and objective Relational mode – potential – use of “may” <ul style="list-style-type: none"> - “sampling effects may play a very important role” - “it is possible that some differences remain” “Population” in place of race – euphemistic expression
Expressive	N/A

In summary, there are several ideological implications that have been identified in the work of Veleminska and colleagues (2013): 1) males and females are classified into binary oppositions; 2) females are viewed as a product of only their reproductive abilities; 3) sex is perceived as static and unchanging – some discussion on age related changes, but no consideration in sampling; and 4) sex is assumed to be a stable, given biological fact – the typological methodology used forces individuals into classification schemes, i.e. anomalies and differences are reduced to race.

This critique has illuminated how forensic anthropologists collect data on skeletal material in order to argue that bodies cannot be classified simply into male or female. In general, robusticity tends to characterize males and gracility females. General guidelines to the standards for data collection of human skeletal material (Bass, 2005; Buikstra & Ubelaker, 1994) advise the use of five categories from which to choose when recording morphological data from adult hip bones and the cranium, on the following scale: *typical*

male, *probable* male, sex unknown, *probable* female, and *typical* female. In the estimation of sex, forensic anthropologists record features on the body in terms of a range of options and on the basis of the category in which the majority fall. The authors of the works analyzed contend that this reflects a continuum of variation in sex that ranges from hyper-masculine to hyper-feminine, and thus sex is a spectrum rather than a binary division. While there is a wide range of phenotypic variation in skeletal expression of sexually dimorphic traits even within the simple chromosomal combinations of XX or XY, such an argument erroneously conveys the principles that lie behind the process of sex estimation in forensic anthropology, which are more to do with degrees of certainty in estimation than to accurately depict the variation in expression of human sexual dimorphism. Overall, in these works, males and females fall into two distinct groups in binary opposition.

There have been several arguments that take a critical perspective to the stability of sex, and stress that sex is not fixed at birth and rather focus on the ways that people are able to manipulate and alter perceptions of their bodies. They are based on increasing awareness of changes in understandings of sex in the history of medicine on one hand (Laqueur, 1990), and the complexity of sex and gender identity particularly in terms of transsexuals, transgender individuals, transvestites, and historical and ethnographic accounts on the other (Herdt, 1996).

It is important to underscore that sexual difference refers to an analyst's degree of certainty with respect to categorization and not the presence of sexual variability or ambiguity, as was evidenced in the labels used for classification - i.e. *probable/typical* male/female, and unknown (Buikstra & Ubelaker, 1994), and by the tendency for the

statistical procedure tested in each of the studies to classify as either male OR female, rather than demonstrating the complexity and mosaic qualities of human skeletal morphology. Moreover, immature individuals are categorized as “unknown”, as their skeletal systems have not yet developed the traits diagnostic of sexual difference. Again, age-related changes may have also confounded sex estimates in these studies, and many others. As mentioned earlier, the work of Walker (1995), for instance, has recognized that older individuals’ sex may be misidentified as male, due to the fact that post-menopausal changes result in robust crania in older females. It is sufficient to state that sexual ambiguity isn't considered in terms of cultural constructs or investigators’ cultural biases (Geller, 2008).

EXPLANATION AND DISCUSSION

As demonstrated by the discourses employed in these popular texts pertaining to skeletal analysis, forensic anthropology *ideologically* conceptualizes of human sexual difference in four ways: 1) as most convincing when predicated upon biology (i.e. pelvic differences, reproductive ability and genitalia); 2) as a natural given identifiable by genotypic and phenotypic traits; 3) as classifiable into binary oppositions, where indeterminateness refers to a researcher’s degree of certainty and not sex-gender fluidity; and 4) as static and unchanging.

My argument here is that, in order to recognize and assign difference, it is not required that sex is generalized as unchanging and dichotomous (Fausto-Sterling, 2005; Geller, 2005; Sofaer, 2006). However, also at issue is the lack of acknowledgement for the ways in which interpretations about human biology, and specifically human skeletal variation, are androcentric, and/or heteronormative.

Specifically referring back to forensic anthropology as a discipline in particular, several significant developments have occurred in the last twenty years: 1) the pervasive use of improved quantitative methods drawn from modern comparative samples; 2) the re-emphasis on forensic context through the implementation of forensic recovery methods; and 3) forensic skeletal trauma analysis (Dirkmaat, et al., 2008). Dirkmaat and colleagues have argued that, at present, the only issues preventing routine and widespread victim identification solely based on DNA comparisons are the costs and time required. The question is not whether this will happen, but when. Thus, if forensic anthropology is to remain valuable, it is essential to move away from mere identification to a larger range of problems. Dirkmaat and colleagues (2008) argue that the discipline must be more solidly entrenched in the natural sciences. However, I believe the discipline could benefit from incorporation of a sociocultural perspective as well.

A proper investigation of a particular scientific field must begin by outlining a conceptual framework based on its study subject, and the dimension and scope from which it is approached. Every aspect of forensic anthropology, from the determination of the estimated biological profile to taphonomic or trauma analysis, are geared towards reconstructing the effects of different processes on the life or post-life of a single individual (Dirkmaat, et al., 2008). The purely anthropological component of forensic anthropology examines the populational parameters to answer questions about a specific individual, rather than the opposite. Though common questions and methods obviously persist, attention to the processes surrounding and subsequent to death, and on individual predictions of skeletal biological profile, bring forth legitimate and particular research questions and require specifically configured methodological approaches that extend

outside of other anthropological disciplines. In its final form, forensic anthropology can be defined as the scientific discipline that investigates the life, the death, and the post-life history of a specific individual, as exhibited primarily in their skeletal remains and the physical and forensic context in which they are recovered (Dirkmaat, et al., 2008). In order to carry out forensic anthropological inquiry in present times, I believe it is necessary to explore further into how culture marks bodies, and how human skeletal variation is not simply a passive unfolding of biology.

Forensic anthropology is currently situated appropriately to employ such a biocultural perspective to the study of human skeletal variation, in order to better understand the life and death of the individual. Here I bring the attention of the forensic anthropologist to the issues of *identity* and *representation*. Identity is an essential mechanism for organizing societies, conditioning socialization and exploring embodied subjectivities (Geller, 2008). Recent feminist-inspired scholarship, which can be classified as third wave/post-structural, has centered much intellectual debate on the issues of identity and difference. Notably, queer identified scholars, feminists of color, and feminists from developing nations have been contributive to bringing light to these concerns (Abu-Lughod, 1990; Behar & Gordon, 1995; Strasser, Kronsteiner, & del Valle, 1993). To reframe, third wave feminists conceptualize of identity as the intersection of age, race, ethnicity, sexual preference, religion, class, sex, and gender, etc. Specifically referring to the case of sex and gender, these parameters are regarded as significant aspects of the construction of an identity, as opposed to defining identity in and of itself. There have been many who have discussed the conceptual dimensions of identity. However there is undoubtedly a recoverable material dimension to identity. As a result,

we must strive towards weaving together theory and data if we want to materialize identity in the skeletal body (Geller, 2005, 2008; Sofaer, 2006).

Regarding this effort, Goodenough's (1966, p. 241) work on identity proves to be of use (as discussed in Geller, 2008). He has stressed that symbols and actions serve as "badges of identity". These badges are often the result of circumstances that leave irreversible and observable marks on the skeletal body. Identity markers can be tied to cultural constructions of gender, social age, occupation (and class), group membership, or social rank. Additionally, cultural circumstances may also attribute meaningful identities around bodies' biological differences – menstruation, menopause, intersex, transgender, (dis)ability (Geller, 2008). Illuminated through these examples, identity is often the complicated and layered outcome of intersecting variables, and it may shift throughout the course of an individual's life. So why does the discipline currently focus on identification without identity?

Realistically, forensic anthropology is situated to provide a critical lens on oversimplified binaries and ideological presumptions that biology is destiny, as well as the assumption that sex or gender is always the most important organizing characteristic. Analysis of skeletal variation as interdependent upon several variables can progress the discipline to more substantial and culturally contingent perceptions of "personhood and identity" (Geller, 2005). As an example, further exploration into whether gender is a sociocultural construct independent of or contingent upon anatomical differences, genetic binaries, or physiological processes. Or, further exploration into how socially dependent differences – age (i.e. young, old, dead), societal position (i.e. class), group affiliation (e.g. ethnicity, occupation), and community or family role – configure the biologically

different characteristics that forensic anthropologists identify as standards of criteria for the estimation of sex, or how they interpret this assignment of sex. Consequently, these analyses could shed light on other cultures' conceptualization of gendered identities at different phases throughout the life course. Or, more broadly, these analyses can provoke inquiry and discussion about (sexual) biological difference as the combination of varied effects of developmental stage, local biology, environment, and/or socioeconomic circumstances. As such, it is evident that attention must be paid to the compounding effects of biocultural interactions.

FUTURE DIRECTIONS AND CONCLUSION

As was evidenced by the works analyzed here, the composition of the reference samples used to develop biological profiling methods has a great impact on the applicability of the methods that are developed (Albanese, 2003b; Passalacqua, et al., 2013; Spradley, et al., 2008; Velemínská, et al., 2013). Albanese (2003b) explains that this issue is based on a lack of representativeness in sample selection. With the introduction of the previously mentioned “modern” skeletal collections (i.e. the W.M. Bass Collection – UTK, and the Forensic Data Bank, FDB), it becomes easier to overcome this primary issue. Dirkmaat and colleagues (2008) explain that these collections have been curated with extensive information, such as: age, sex, ancestry, stature, weight, place of birth, medical history, occupation, and other demographic information. This advantageously positions the forensic anthropologist to conduct studies of skeletal variation within a biocultural framework, and to account for intersectional representation in sample selection, and in research questions. By making use of the feminist and queer-theory foundation provided here, and by others (Geller, 2005, 2008;

Sofaer, 2006), this type of data can be used for conducting studies on the intersectional interactions of biology (e.g. sexual dimorphism, bone health, trauma, etc.) and culture (identities - age, gender, ethnicity, occupation, class, etc.).

Along the same lines as Albanese and Saunders (2006), this analysis points toward the need for a departure from the typological approach. To clarify, at the present time, as was demonstrated by the works assessed here, such a perspective is problematic, and simply doesn't work. Without any consideration for the intersectionality and diversity of identity, and how identity is materialized in the skeletal body, population-specific methods only serve to confound forensic analysis and to reinforce the ideological homogenization of socio-politically racialized populations. People don't fit into neat little boxes.

It is important to stress here that new reference collections alone will not solve all of the issues in the discipline that have been discussed here, rather that new theoretical directions can be used to attempt to reduce bias and provide representation in context. We need new ways of thinking about human variation that will have an impact on our methods (sampling, statistical analysis, etc.).

Overall, the assessment of sex discussed in the works analyzed here is problematic for several reasons: 1) it is assumed that sex is binary; 2) it is assumed sex is stable; 3) it is assumed that sex is a given fact, rather than a social construction; 4) it is ideologically presupposed that being female is a deviation or pathological condition; 5) sex is reducible to reproductive processes; 6) it is lacking any consideration for cultural context; and 7) age related changes are not taken into consideration. The analysis conducted here has illuminated how the discourses of the discipline reinforce these

ideological assumptions about the nature of sex, and consequently shape understandings of gender. Specifically with regards to the assessment of sex and gender in forensic contexts, further exploration into how social location (class, occupation, nationality), age, health, and gender identity are reflected in the expression of sexual dimorphism in the human skeleton could move the discipline towards a richer understanding of why it is that the determination of sex even matters when recreating the life of an individual. In other words, how sociopolitical constructs of sex and gender serve as a device for social stratification.

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VITA AUCTORIS

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