

Dissecting Race:  
An Examination of Anatomical Illustration and the Absence of Non-White Bodies

by

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## **Dedication**

To Steven

And our children, Lucas, Chelsea, Joshua, Quinn, Zoe, Tuesday, Gaelen,  
Tully, Tucker and Kipling.  
And my parents, Ralph and Judith.

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## **Abstract**

This thesis is an examination of representations of non-white bodies in the anatomical illustrations used in biomedical pedagogical literature. Particular attention has been paid in recent years to the lack of female representation in anatomical texts and atlases but very little has been said about the distinct lack of non-white bodies in the same pages. The anatomical atlases and texts that support biomedical pedagogy purport to use a representative ‘universalized’ human body that de-emphasizes variation for the purposes of teaching. A survey of anatomical literature indicates that the ‘universalized’ human is in all actuality consistently rendered as a Caucasian male. Using ideas drawn from visual representation theory, I will analyse the manner in which the Caucacentric ‘universal’ human was created and how it has been used and continues to be used in anatomical atlases and texts to position the Caucasian male as hierarchically superior to all Other bodies. A survey of the history of anatomical illustration will reveal the ideological narratives that led to the centering of the Caucasian male as the normative universal body and to the consequent subordination the non-white body. A look at contemporary anatomical literature will show that recent understandings of race as socially constructed rather than biologically-given have not changed the fact that illustrations of the ‘universal’ Caucasian male are still favoured overwhelmingly to the exclusion of all Other bodies. I will argue that the exclusion of non-white bodies in anatomical literature is an inherently racist practice. I will address concerns that suggest that the deliberate inclusion of non-white bodies in anatomical literature will only serve to conserve racial classifications and argue that to ignore the continual exclusion of non-white bodies is to be complicit in the antiquated colonial hegemonic discourses that led to the subordination of people of colour in the first place. Finally, I will call for the dismantling of the concept of the ‘universal body’ in pursuit of a more holistic, less racist rendering of humankind in the biomedical sciences which will hopefully help move bodies traditionally relegated to the margins to a more central location.

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One last word to my family, I am not a religious person by any stretch of the imagination but when I look at you I know a blessing when I see it.

## Chapter 1: Introduction

Medical epistemology has always been built from a fundamentally visual pedagogy. Nowhere is this phenomenon more obvious than in the display of the human form in the illustrations and diagrams that dominate anatomical atlases and biomedical textbooks. Anatomical illustrations work as explanatory apparatuses which dispense conceptual processes in easy to digest bites to help a learner negotiate the space between the object of study—the body—and the hidden functions that lurk beneath the skin. Drawn from the corpses of the dead, anatomical illustrations narrate a journey through the skin, muscle and bone to provide a readable epistemology of the living body.

Anatomical depictions of the body are meticulously crafted to be ‘universal’ bodies that look like, represent and speak for all bodies. Universal bodies are exemplars which serve a very specific pedagogical function, which is to explicate the complicated systems of the body and create a visual order of the interior of the body in a systematic presentation of the structures. In this manner, the illustrated universal body establishes a human anatomical norm through an arrangement and emphasis of a specific type of body and its parts. As an anatomical norm, the universal body image can then be used to demonstrate what the body should look like and how it should function. Within the normative project of anatomy the universal exemplar body has traditionally been used to answer scientific questions that developed in response to social apprehensions about gender, class, race and sexuality. The illustrated anatomical universal body is a powerful figure, one which speaks with the authority of the expert behind it, an authority that has been wielded with great effect to define, control and regulate all human bodies.

In this thesis it my intention to look closely at the creation and maintenance of the concept of the universal body in anatomical science and illustration. What will be revealed is that in anatomical illustration the universal body has, in both historical and contemporary settings, been implicitly rendered in the image of the Caucasian male. Historically, its universality was predicated on the notion that the Caucasian male displayed perfect proportionality and symmetry of form and as such it became the body of which all Other bodies came to be measured against. This belief led to a centuries-long campaign by anatomists and anthropologists of classifying, measuring and ranking all Other bodies in the search for difference and deviation from the Caucasian male norm.

The result of which was the eventual categorization of the human race in hierarchically organized groups which corresponded to aspects of ancestry, gender, and nationality. From this ranking emerged a powerful white supremacist discourse which influenced and occupied much of biomedical science for the better part of four hundred and fifty years, the ramifications of which continue to reverberate today.

In contemporary biomedical illustrations and pedagogy, the universal body is still consistently presented as an idealized yet supposedly ‘typical’ body of the Caucasian male which stands tall as the normative universal body for demonstrative purposes. The space created by what Joseph Pugliese describes as the ‘Caucacentric’ universal body is one where the non-white body, and also with great frequency the female body, does not exist except as an alteration of the foundational form.<sup>1</sup> Bodies that do not conform, we will see, to the white standard have found limited purchase amongst the pages of anatomical texts that define biological processes due, in large part, to the powerful narratives that have sustained the Caucasian male body as the rightful possessor of top spot in the hierarchal chain of being.

Racial divisions, which for hundreds of years enjoyed their scientifically-supported position as legitimate natural kinds, have in recent years become unmoored from the biological essentialism that provided much of their initial power. Many of the scientific models that sustained race have been exposed as ideologically subjective and scientifically suspect. This loosening of the biological essentialist ties that used to bind racial categories of meaning does not, however, mean that biological concepts of race have been completely abandoned. Contemporary connections between race and biology remain within science finding purchase in fields like population biology, pharmacological studies and genetic research.<sup>2</sup> So, while race is understood as having both scientific and cultural origins it still enjoys a certain level of credibility in both scientific and social

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<sup>1</sup> Joseph Pugliese, “‘Demonstrative Evidence’: A Genealogy of the Racial Iconography of Forensic Art and Illustration,” *Law and Critique* (2004): 287-320.

<sup>2</sup> See Population biology: Robin O. Andreasen, “The Meaning of ‘Race’: Folk Conceptions and the New Biology of Race,” *Journal of Philosophy* 102, no. 2 (February 2005): 94-106. Pharmacological studies: April J. Stull, et al, “The Contribution of Race and Diabetes Status to Metabolic Flexibility in Humans,” *Metabolism* 59, no. 9 (2010): 1358-1364. Genetic research: M. J. Fine, S. A. Ebrahim and S. B. Thomas, “The Role of Race and Genetics in Health Disparities Research,” *American Journal of Public Health* 95, no. 12 (2005): 2125-2128.

settings and ingrained perceptions about what race *means* continue to inform our social, political and scientific practices. Consequently, the structural, institutional and social hierarchies that were developed in its wake remain relatively intact. Notions that race is a product of white supremacist construction have gained widespread acceptance within the scientific paradigm, but acceptance of that construction does not mean that racial categories are automatically divested of their historically and institutionally established meanings.<sup>3</sup>

Historically, racial categories were employed to put bodies into productive use in the social, political and scientific economies of the Western world. Race began as a way to make sense of and bring order to a European worldview that was being challenged religiously, philosophically and socially by bodies from distant shores that did not conform to the expected visual aesthetic that was presented by the European body. Throughout much of European history social bodily norms and normative anatomy worked in a symbiotic relationship to define bodily life. As European colonialism spread across the globe, European classifications of the body followed, usurping indigenous cultural understandings effectively transforming many of those societies. Once race became established as a legitimate means of classification, those categories of meaning became an effective way to restrict the ways in which non-white bodies were allowed to participate within the institutions of Western life. The somatic aesthetics of difference that lent a visual referent to racial designations did not disappear with the passage of time, and as such the historical hierarchies that positioned racial divisions have never been completely dislodged. In consequence, racial classifications remain causally important, and many of the restrictions that bound those racial classifications hundreds of years ago still inform their contemporary place in the world.<sup>4</sup>

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<sup>3</sup> See Paul C. Taylor, *Race: A Philosophical Introduction* (Cambridge: Polity Press, 2013); Ron Mallon, "'Race': Normative, Not Metaphysical or Semantic." *Ethics* 116, no. 3 (2006): 525-551; and Michael Root, "How We Divide the World," in "Proceedings of the 1998 Biennial Meetings of the Philosophy of Science Association Part II: Symposia Papers," supplement, *Philosophy of Science* 67 (September 2000): S628-S639.

<sup>4</sup> Anthony K. Appiah, "Race, Culture, Identity: Misunderstood Connections," in *Color Conscious: The Political Morality of Race*, ed. K. Anthony Appiah and Amy Guttmann (Princeton: Princeton University Press, 1996), 30-105.

Non-white bodies, which were hierarchically positioned underneath the Caucasian male still struggle in many contemporary settings to emerge from the margins in most institutional and structural aspects of human life. As a result, the non-white body is often occluded from representation in the scientific, political and social circles of power, by the deeply entrenched white supremacist narratives that drive institutional practices. Limited representation in institutional structures means that non-white bodies are often absent in scientific knowledge production and their very absence, in consequence, is used to shore up the primary position of the white body.

In this thesis I will scrutinize how the use of medical illustrations in medical texts supports and encourages a white supremacist discourse which continues to implement its significant grip on medical pedagogy. The anti-racist intention of this project is to show that the prioritizing of Caucacentric medical illustrations in contemporary medical textbooks and atlases continues to support a dynamic where the institutionalized racism so endemic to the discipline of the biomedical sciences which began in the late 17<sup>th</sup> century, and which found its heyday in the scientific racism of the 19<sup>th</sup> and early 20<sup>th</sup> centuries, is still allowed to flourish.

To begin, I will examine anatomical visual representation and its role in biomedical science as a producer of knowledge. First, I will consider what is invested into an anatomical illustration by discussing the conditions under which it is created. I will then borrow the concept of ‘working object’ from the work of Lorraine Datson and Peter Galison<sup>5</sup> to show how the universal exemplar body came to be the object of explanation, a normative body, for anatomical science. Once I have established how an anatomical illustration is crafted, I will utilize some of Kendall Walton’s theory of representation as outlined in his *Mimesis as Make-Believe* to examine the role anatomical illustrations play in the crafting of what Walton calls fictional truths. It is the combination of the concept of working object and fictional truth narratives which provides the foundation of my own vision of just what anatomical illustrations are and why they speak with the authority that they do.<sup>6</sup>

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<sup>5</sup> See Lorraine Datson and Peter Galison, *Objectivity* (New York: Zone Books, 2007).

<sup>6</sup> Kendall Walton, *Mimesis as Make-Believe: On the Foundations of Representational Arts* (Cambridge: Harvard University Press, 1990).

The third chapter will be devoted to a survey of the historical trends in the use of anatomical illustration as a way to appropriately situate the contemporary use of the Caucacentric human universal figure that dominates medico-scientific texts. A closer look at the way visual representation has been used in medical pedagogy will reveal just how crucial the use of anatomical illustration has been to the educational strategies employed in the Western medical paradigm for the training of medical practitioners. And by looking at the evolution of anatomical illustration in medical pedagogy alongside the early creations of race and racial categories we will see how the bid to design social hierarchies structured scientific debates about the ‘proper’ place for non-white bodies along the continuum. When looking at race in relation to anatomical illustration we will see the struggle anatomists and anthropologists had in the 18<sup>th</sup> century with the conundrum of different skin colour in the face of biblical explanations of the origin of humanity and the solutions they devised to try and solve it. And we will see how race and gender were used against one another to place distinct lines around the proper place of non-white and female bodies in society. What will become clear, as we move through the history, was that at no time was the Caucasian male ever in danger of being dislodged from its position as the authoritative normative universal body.

In the fourth chapter I will examine several examples of contemporary Caucacentric normative bodies from an array of different medico-scientific disciplines to demonstrate just how pervasive the use of the Caucasian male body still is as the stand-in representative for all humanity. I hope to show that in spite of belonging to a flawed scientific explanatory model, a white cultural unconsciousness surrounding race still influences biologically-based thinking. As a result, antiquated colonialist attitudes still colour, as it were, the body imagery used to teach important anatomical and physiological concepts in medico-scientific texts. Thus, bodies that display non-white phenotypes are, by consequence, relegated to the status of deviations from the norm in contemporary medical pedagogy and epistemology. And it is the very absence of non-white bodies in medical textbooks and atlas illustrations that speaks volumes about just how imbedded hierarchal race-thinking still is in medico-scientific pedagogy.

In the fifth and final chapter I will argue that the Caucacentric representational strategies employed in medical textbooks and atlases are inherently racist practices. I will



also show why I believe there is no contradiction in seeing race as a socially constructed phenomenon while at the same time demanding inclusion of non-white bodies in biomedical texts. The intention of this project is to highlight how the repeated exclusion of non-white bodies in anatomical texts forces those non-white bodies, who have historically been positioned beneath the white body, to remain in a subordinate position. In the end, I believe that in order to affect social change we do need to continue to look for new information and new paths to enlightenment but we must also set about disrupting the current hegemonic ways of seeing that the continual immersion in a white supremacist discourse encourages us to accept. By approaching this project from the perspective that to be white is to therefore be privileged, I hope to spur a recognition of our habits of dominance and show that by ignoring the centralizing of the white male body in medical textbooks and atlases we remain complicit in the systemic domination of non-white bodies.

## **Chapter 2: Anatomical Visual Representation Dissected**

In this chapter I will be considering anatomical illustration in terms of how it functions within anatomical science and why it is seen as an integral component of medical pedagogy. The science of anatomy is enormously complicated and anatomical functions, as well as the anatomy of the body itself, are hard to teach and hard to visualize. I write this chapter from the perspective of someone who has been a student of anatomy and who has spent a significant amount of time in the dissection laboratory. I have utilized anatomical illustration in my own learning, so I am aware of the power it has to shape one's viewpoint. My time in the dissection lab and poring over anatomical illustrations to understand the body has been helpful in the formation of my own ideas about what anatomical illustrations are and how they function within anatomical pedagogy. Since the primary role of anatomical illustration is pedagogical my concerns are focused on the people inside the discipline and revolve around how illustrations are conceived and used by the people who employ them as a format to pass on knowledge. In later chapters the ramifications for the larger audience will be considered, but in this chapter I am confining myself to how illustrations work pedagogically.

In this chapter I will begin by briefly drawing our attention to how the perspective of the anatomist influences the composition of anatomical illustrations. From there, in order to understand why illustrations became a crucial element in medical pedagogy we will look at the one of the primary goals of that pedagogy, the development of the expert eye. Then we will shift our focus to the methods early anatomists used to make their illustrations useful working objects for teaching purposes and how that process participated in the centralizing of the Caucasian male form. What anatomical illustrations say and how they say it to the people who ultimately become medical practitioners, in both historical and contemporary settings, is of particular importance in the later chapters of this thesis. So, once the business of explaining what anatomical illustrations are is out of the way, I will discuss how it is illustrations are able to convince students of anatomy that they can and do speak for not just some bodies but all bodies.

Before the examination of anatomical illustration can begin, it is important to understand that historical and contemporary anatomical illustration can be examined from a variety of perspectives, ranging from stylistic preferences, gender, race or even the

accuracy of anatomical detail, but to be an effective investigation, anatomical illustration should be understood fundamentally as a normative project. Thus, we need to recognize that the normative agenda of anatomical science intersects with race, gender, style and accuracy of detail and it cannot be separated out. Anatomical illustrations are not just visual descriptions of particular anatomical structures, nor are they even simply a sum of many particular descriptions, rather they are designed to be universal normative explanations of the human body in general. Within those normative explanations anatomists attempt to articulate universal fundamental ideas about normal anatomy and its relationship to physiological function.<sup>7</sup>

The development of anatomical illustration as a craft has deep roots. Early anatomical images and atlases presented the body with a Linnaean emphasis on a static classifying and cataloguing of the human body as an immutable biological organism. As anatomical illustration was taken up by the science as a pedagogical tool and as understandings of the body expanded, the images began to incorporate a more dynamic concept of its processes and functions.<sup>8</sup> As we will see in the next chapter, it was during the Renaissance where anatomical science developed into a discipline in its own right and where the burgeoning field of anatomical illustration began in earnest. Anatomists in this time period, concerned about establishing anatomy as a legitimate science, demanded a level of accuracy in the depictions that revolutionized how anatomical illustrations were rendered and utilized.<sup>9</sup>

To render an image accurately the anatomist needs to build their understanding of the body from the type of firsthand experience and direct observation that can only be found in the dissection theatre. In this manner, the anatomical illustration becomes a visual record of observations with the explanatory power to clarify difficult concepts and correct structural issues observed in a succession of individual bodies for the viewer. As

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<sup>7</sup> Glenn Harcourt, "Andreas Vesalius and the Anatomy of Antique Sculpture," in "The Cultural Display of the Body," special issue *Representations* 17 (1987): 28-61.

<sup>8</sup> Janis McLarren Caldwell, "The Strange Death of the Animated Cadaver: Changing Conventions in Nineteenth-Century British Anatomical Illustration," *Literature and Medicine* 25, no. 2 (Fall 2006): 325-357.

<sup>9</sup> *Ibid.* See also Rachel Hajar, "Medical Illustration: Art in Medical Education," *Heart Views* 12, no. 2 (2011): 83-91 and Gül A. Russell, "Vesalius and the Emergence of Veridical Representation in Renaissance Anatomy," *Progress in Brain Research* 203 (2013): 3-32.

this visual language of illustration developed through the application of names to visualized structures or functions, an understanding of the body could form in the mind of the viewer. Anatomical images could then move from merely assisting in memory to confirming memory, which assisted in understanding.<sup>10</sup>

Historically the use of anatomical illustration has wielded significant power in medical pedagogy and it remains entrenched to this day as one of the most important epistemic tools of the trade in medical science. The rise of anatomical illustration as a tool for teaching, particularly in the form of anatomical atlases, has been acknowledged as one of the pivotal factors in the professionalization of medicine that began in the latter half of the 18<sup>th</sup> century.<sup>11</sup> The use of anatomical illustration as a pedagogical tool was seen as central to the explication and communication of information about the complex systems of the body. Without the employment of anatomical illustration, medical scientists would have been hard pressed to expand their reach so deeply into the social fabric of Western culture as quickly as they did in the 19<sup>th</sup> century, and their power and authority over the regulation of health and disease might have remained localized rather than collective. The expansion of the normative agenda of anatomical science from a limited local phenomenon to a more global one gave medical science the impetus to become one of the most powerful institutions in Western society.

## 2.1 Perspective

Before we can look at the pedagogical goals of medical science, it is important to understand what is packed into anatomical illustrations. The role of anatomical illustrations is a complicated one. Their job has always been to stand in the place of the body as a universal explanatory framework for all that goes on in the living space of the body. They also acted as the voice of the anatomist, as a showcase of the anatomist's

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<sup>10</sup> Caldwell, "Strange Death;" Hajar, "Medical Illustration;" Russell, "Vesalius."

<sup>11</sup> See Cindy Stelmackowich, "The Instructive Corpse: Dissection, Anatomical Specimens, and Illustration in Early Nineteenth-Century Medical Education," *Spontaneous Generations: A Journal for the History and Philosophy of Science* 6, no. 1 (2012): 50-64; Carin Berkowitz, "The Beauty of Anatomy: Visual Displays and Surgical Education in Early-Nineteenth-Century London," *Bulletin of the History of Medicine* 85, no. 2 (2001): 256; Ludmilla J. Jordanova, "Gender, Generation and Science: William Hunter's Obstetrical Atlas," in *William Hunter and the Eighteenth-Century Medical World*, ed. W.F. Bynum and R.S. Porter (Cambridge: Cambridge University Press, 1985), 385-386 and Cindy Stelmackowich, "Bodies of Knowledge: The Nineteenth-Century Anatomical Atlas in Spaces of Art and Science," *RACAR* 33, no. 1-2 (2008): 75-86.

skills confirming his or her role as an expert of the body, and expressed within that display, without words, the particular standpoint of the anatomist.<sup>12</sup> Anatomical illustration, most particularly in historical settings, provided a type of visible proof of the power anatomists had over the body, a power that meant they were the ideal choice for the role of regulators and caretakers of the body.<sup>13</sup> More importantly, anatomical illustrations had a larger purpose; they were designed to show that the body as a natural system which by extension meant that nature was knowable and that nature was manipulable.<sup>14</sup>

When anatomical illustration was taken up within the discipline of anatomical science, it became one of the fixtures of the discipline as a whole as it continued to develop. As a result, very often illustrations did not stay confined to the borders of the timeframe they hailed from. Thus, images drawn by a German anatomist in the late 18<sup>th</sup> century who was schooled with the images created by a 16<sup>th</sup> century anatomist were used for the teaching of a 19<sup>th</sup> century physician in England who taught anatomy to a class of early 20<sup>th</sup> century doctors. The compact and portable nature of illustration meant that anatomical images could move quickly from anatomist to student and the information encoded in the drawings could transfer knowledge to students who had been schooled in the scientific vocabulary and visual grammar of the discipline. In many ways it was due to this transportability of the illustration that the codification knowledge and organization of medicine as a disciplinary practice quickly became realized.

But the images rarely traveled alone; the priorities and the ethos that were present when they were created traveled with them to be absorbed by all those who viewed them. Indeed, in their work on epistemic imagery, Lüthy and Smets argue that in order to understand the epistemic power of an illustration one should view it in a manner that “reflects the actors'-the authors' and the artists' understanding of the epistemological value and the functionality of the images that they produced, and within which they and

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<sup>12</sup> Datson and Galison, *Objectivity*, 88. Stelmackowich, “Bodies of Knowledge,” Stelmackowich, “The Instructive Corpse,” and Jordanova, “Gender, Generation and Science.”

<sup>13</sup> Londa Schiebinger, “Skeletons in the Closet: The First Illustrations of the Female Skeleton in Eighteenth-Century Anatomy,” *Representations* 14 (1986): 42-82. Jonathan Sawday, *The Body Emblazoned: Dissection and the Human Body in Renaissance Culture* (London: Routledge, 1995): 224-229. Jordanova, “Gender, Generation and Science.”

<sup>14</sup> Datson and Galison, *Objectivity*.

their disciples ended up thinking” lest the philosophic history that comes with images be lost in interpretation.<sup>15</sup> Lüthy and Smets state:

It is important to realize that it is always in the years that a new type of epistemic image is being introduced that the awareness of its status, function and role within a given theory are explicitly discussed... [when] the new type is accepted and becomes embedded in a shared scientific paradigm, it will inevitably become--not unlike language--an integral part of the scientific practice, and the awareness of its specific philosophical premises will disappear.<sup>16</sup>

So, it is not enough to examine a historical anatomical illustration as just a ‘picture’ of the body. Instead, we need to consider not only the illustrations but the standpoint of the anatomists behind them. The standpoint of an anatomist was initially a product of the collective empiricism that informed the particular regime of learning the anatomist underwent to perfect their craft. Once the development of their expertise was well established, many anatomists sought ways to pass on the knowledge they had accumulated over the course of their career. Embedded in their lessons to new students of the science of anatomy were the historical legacies that had been passed down from one generation of anatomist to the next in combination with the personal biases and preferences of each particular anatomist.

Anatomical illustrations, to borrow from Dupré and Lüthy’s work on historical artifacts, are “silent messengers,”<sup>17</sup> described so because they are objects that function as the “carriers of knowledge”<sup>18</sup> which have no voice themselves but whose signifying power is found in the fact that they need “to be spoken about.”<sup>19</sup> Anatomical illustrations are not text, but they can be textual in the sense that they act as an instantiates of particular anatomical concepts and instigate specific narratives to give voice to those concepts. Anatomical illustrations allow the anatomist to transform invisible phenomena into what I like to call ‘witnessable objects,’ but witnessable from a specific perspective, that of the ‘expert eye’ of the anatomist describing and ascribing the space. Thus, those

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<sup>15</sup> Christoph Lüthy and Alexis Smets, “Words, Lines, Diagrams, Images: Towards a History of Scientific Imagery,” *Early Science and Medicine* 14, no. 1/3 (2009): 439.

<sup>16</sup> *Ibid*, 438.

<sup>17</sup> Sven Dupré and Christoph Lüthy, eds. *Silent Messengers: the Circulation of Material Objects of Knowledge in the Early Modern Low Countries* (Berlin: LIT, 2011), 1.

<sup>18</sup> *Ibid*, 12.

<sup>19</sup> *Ibid*, 1.

who come after the anatomist witness the illustration through the anatomist's perspective. So again, what is important to remember about the creation of these witnessable objects, particularly when discussing anatomical images, is that they were not created in a vacuum. Rather, the anatomists behind any given anatomical illustration had a specific purpose in mind for the images they created, which were informed by their culturally located assumptions. This purpose had as much to do with furthering the discourse of their discipline as it did with explicating a hidden interior function and showcasing their status as expert knowers of the functions of the body.

From the time of Andreas Vesalius in the mid-16<sup>th</sup> century until well into the 20<sup>th</sup> century, the project that occupied much of anatomical science was that of a description and explication of normative human anatomy. As I have noted, the cumulative nature of anatomical science meant that each successive generation of anatomical scientists built upon the conventions and established knowledge of the previous generation. Consequently, the focus on normative anatomy was a powerful part of the epistemic legacy passed from anatomist to anatomist. As each anatomist added their illustrated versions of human anatomy to the normative project, anatomical science became increasingly systematized. And it was through anatomical illustrations where students learning anatomy could comprehensively access the anatomical data that had been built cumulatively across the discipline. As illustrated information accumulated, it continually refined and reinforced the definition of the normal body. Thus, an explicit human anatomical norm backed up by the reiterated observations of numerous expert anatomists through numerous expert dissections became credibly established, and students of medicine were taught to 'see' the body according to the normative understandings of their predecessors.<sup>20</sup>

In the next section we will explore the concept of 'learning to see' and its importance to the development of the expert eye. As we move through the development of the expert eye, it is important to remember the cumulative nature of medical pedagogy and the role perspective plays in it. Because anatomical illustration was saturated with the perspective of the anatomists that came before, illustrations shaped the perception of the student by influencing what was observed and how it was observed. Thus, learning to see as an

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<sup>20</sup> Harcourt, "Andreas Vesalius and the Anatomy of Antique Sculpture."

anatomist meant learning to see in a specific manner within a set of normative parameters.

## 2.2 Learning to See: The Development of the Expert Eye

The necessity of seeing and understanding the normative body was one of the pillars of anatomical science pedagogy. For medical science to even begin to control the processes of the human body and ensure its optimal performance, the scientist needed to know how to identify proper function and form by learning how to identify ‘normal’ anatomy and ‘normal’ processes, because it was the recognition of the normal that allowed for the rooting out of the pathological. Learning ‘to see’ with a clinical gaze was one of the most crucial elements in the training of medical scientists which, along with its companion element ‘learn by doing,’ taught the medical scientist how to “analyze, integrate, evaluate and to apply scientific knowledge and information” to the questions surrounding the body.<sup>21</sup>

To understand anatomy, “to become conversant with the origin, structure and organization of the body,” scientists are taught to examine and envision the body on both a macro and micro level in as much detail as possible to create a mental image of the appropriate disposition of the body and its structures.<sup>22</sup> This clinical gaze, contends Cindy Stelmackowich, has long been understood as something that needs “to be critically active and integrated: one has to see and comprehend at the same time.”<sup>23</sup> The art of ‘seeing’ with that critically active gaze means that one had to learn “how to ‘see’ in order to learn how to ‘know,’”<sup>24</sup> a skill that came from repeated exposure to not only the body itself but in many cases to imagery that was designed to enhance the learning process.<sup>25</sup>

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<sup>21</sup> Gwee, Matthew, Dujeeva Samarasekera and Tan Chay-Hoon, “Role of Basic Sciences in 21st Century Medical Education: An Asian Perspective,” *Medical Science Educator: The Journal of the International Association of the Medical Science Educators* 20, no. 3 (2010): Section 12. For another discussion on the importance of learning to ‘see’ in medical pedagogy see Hajar, “Medical Illustration,” 83-91.

<sup>22</sup> John Cotter and Christopher Cohan, “The Timing, Format and Role of Anatomical Sciences in Medical Education,” *Medical Science Educator: The Journal of the International Association of the Medical Science Educators* 20, no. 3 (2010): Section 1.

<sup>23</sup> Stelmackowich, 2012. “The Instructive Corpse,” 55.

<sup>24</sup> Ibid.

<sup>25</sup> For another discussion on the development of a clinical gaze or the art of seeing see Lorraine Datson and Peter Galison, “The Image of Objectivity,” in “Seeing Science,” special issue *Representations* 40 (Autumn 1992): 87, and Datson and Galison, *Objectivity*, 26, 44, as well as Michel Foucault, *The Birth of*



In this manner, the physician's clinical gaze could be trained to be dynamic and grasping argues Michel Foucault, and engaged in the "endless task of absorbing experience in its entirety, and of mastering it."<sup>26</sup>

Early attempts to enhance and develop the critically engaged clinical gaze in Western science before the widespread use of anatomical illustration started in the Classical Greek era. What can loosely be termed the 'medical science' of the Classical Greek era began a tradition of recording observations as a way to preserve the knowledge gained by what was seen and experienced by the physician in the course of their practice, as a reference for themselves and other physicians. Collecting knowledge meant that understanding could not only be passed on, but built upon as well, as practices and techniques from one physician could lend a hand to another and a uniformity of training could be imposed to ensure that apprenticing physicians could learn their *techné* correctly. One of the earliest, and arguably most influential, compilations of medical knowledge of this type in the Western canon was the *Hippocratic Corpus*, a collection of approximately 60 treatises from a variety of authors over several different decades and centuries that recorded medical observations in an attempt to codify medical knowledge, practice and techniques.<sup>27</sup>

Learning to see was an important tenet in Western medical pedagogy even in the time of Hippocrates. In *The Science of Medicine*, one of the treatises in the *Corpus*, the concept of vision, of seeing, is layered with multiple meaning:

If the nature of a disease cannot be perceived by the eye, its diagnosis will involve more trouble and certainly more time than if it can. What escapes our vision we must grasp by mental sight, and the physician, being unable to see the nature of the disease nor to be told of it, must have recourse to reasoning from the symptoms with which he is presented... Medicine aims to cure that which is perceived, treatment being based on judgement rather than on ill-considered opinion, on energy rather than indifference. The nature of the body is such that a sickness which is clearly seen can be cured.<sup>28</sup>

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*the Clinic: An Archaeology of Medical Perception*, trans. A. M. Sheridan Smith (New York: Vintage Books, Random House, 1973).

<sup>26</sup> Michel Foucault, *The Birth of the Clinic*, xiv.

<sup>27</sup> For a concise look at the practice of codifying medical knowledge, see Ann Ellis Hanson, "Medical Writers," *The Encyclopedia of Ancient History*, last modified October 26<sup>th</sup>, 2012, <http://onlinelibrary.wiley.com.ezproxy.library.dal.ca/doi/10.1002/9781444338386.wbeah08109/pdf>.

<sup>28</sup> G. E. R. Lloyd, ed. "The Science of Medicine (11)," in *Hippocratic Writings*, trans J. Chadwick, W. N. Mann, I. M. Lonie and E. T. Withington (London: Penguin, 1978), 145-146.

Vision, perception, judgement, mental sight, reasoning--all tools of medicine that medical training seeks to teach physicians to cultivate, because to see is to understand not just the nature of the body but the nature of disease as well. And yet the inability to see for oneself was all too common a problem in medical practice in antiquity and well into the Middle Ages, inhibiting medical progress and leaving medical understanding mired in superstition and magic for centuries. For many hundreds of years, and across many cultures, dissection of the human body to see what was inside was either forbidden or limited to certain people, at certain times and for certain purposes. Not being able to see the interior of the body meant that physicians often had to rely on a mixture of sensorial interpretation, religious explanations and folk wisdom to provide answers to questions about illness, injury and the body. Because diseases were often specific to certain geographies, climates, sexes or internal bodily structures, physicians (and students) could go an entire career not *seeing* a particular pathological process only to be confronted and subsequently confounded by it.

To combat these limitations, the recording of observations, like the writings found in the *Hippocratic Corpus*, were used as a way to pass on descriptions of disease processes, illness and injury as a way to ‘show’ other physicians things they may have never seen for themselves. Proscriptions against anatomical dissection meant that for hundreds of years physicians remained largely reliant on understandings of human anatomy garnered from comparative dissections of animals and from the recordings of battle field physicians who treated injured and dying soldiers with grievous penetrating wounds.<sup>29</sup> These textual descriptions helped physicians orient themselves when dealing with a sick and injured body, providing a much needed, but sometimes inaccurate, map of the terrain.

It was not until the 12<sup>th</sup> century that medical illustrations of anatomy began to be considered an important element in medical treatises. As texts began to include illustrations, and as anatomical science blossomed, it was the illustrations that began to serve as the visual didactic connection for students and practicing physicians of what had, until then, been only described orally and textually. The human figures, designed from animal dissections and the occasional clandestine human dissection, were often depicted

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<sup>29</sup> Hanson, “Medical Writers.”

“in a squatting, frog-like position”<sup>30</sup> with primitive drawings of anatomical systems that were singled out for description (Fig. 1). Although these illustrated texts had begun to routinely surface, the lack of access to cadavers for dissection meant the crude depictions were of limited value since the information they contained was often speculative. And since mass printing was many years away most texts were available only as single copies and were used specifically by the physicians to teach their students.<sup>31</sup>

By the middle of the 16<sup>th</sup> century proscriptions against human dissection loosened in many European locales. Access to cadavers remained limited, nonetheless, forcing many anatomists to resort to unsavory tactics to obtain bodies for dissection.<sup>32</sup> The limited access to cadavers prompted many anatomists to record their dissections in illustrations so that their discoveries could be shared with other anatomists and with students. Early in the 16<sup>th</sup> century anatomical illustrations were by and large still fairly rudimentary, but as the century progressed and anatomists began to build more experience in the dissection theatre, the quality of the illustrations improved dramatically. Limits on cadavers also meant that the needs of the anatomists outweighed those of the medical students and consequently students rarely had an opportunity to see the interior of the body making illustrations one of the only ways they had to view anatomical structures and systems.

In the late 16<sup>th</sup> century the efficacy of medical illustration as an instrument of pedagogy was recognized by anatomists and “soon became a dominant tool of knowledge”<sup>33</sup> which was believed to be “an objective way of seeing that would itself yield knowledge, rather than simply representing knowledge.”<sup>34</sup> Illustrations of an anatomical nature, even the crudely wrought early depictions, were hardly doodles on a page, rather they were complex designs that showcased not only specific versions of the bodies on the dissecting table but the experience of the anatomist whose trained eye, and

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<sup>30</sup> Mimi Cazort, Monique Kornell and K. B. Roberts, *The Ingenious Machine of Nature: Four Centuries of Art and Anatomy* (Ottawa: The National Gallery of Canada, 1996), 74.

<sup>31</sup> Illustrated anatomical atlases did not begin to appear until Berengario's *Carpī commentaria cum amplissimis additionibus super anatomia Mundini* in 1521.

<sup>32</sup> See Ruth Richardson, *Death, Dissection and the Destitute* (Chicago: University of Chicago Press, 2001) and Sawday, *The Body Emblazoned* for a detailed investigation into the tactics used by anatomists to obtain cadavers for dissection.

<sup>33</sup> Stelmackowich, “Bodies of Knowledge,” 78.

<sup>34</sup> *Ibid*, 79.

skill as a dissector, helped determine and organize the anatomical concept on display in a manner that was both accessible and aesthetically appealing.<sup>35</sup> In other words, the illustration was not just a picture of the body, it was also a distillation of the knowledge of the anatomist who committed it to paper, allowing the anatomist to accurately reveal structures and concepts that had remained hidden from everyone but those who had cultivated through extensive experience the “disciplinary eye.”<sup>36</sup>

Anatomical illustration, in a way, became a flexing of the scientist’s mental muscles to demonstrate not only their expert knowledge but to show the power and the authority that that knowledge lent to its possessor. This belief in the position of the anatomist as a possessor of special knowledge and the voice of authority can be seen clearly in this passage by 19<sup>th</sup> century German anatomist and physiologist Frederic Tiedemann in his *Plates of the Arteries of the Human Body*, who outlines his knowledge and experience with no amount of modesty:

That I might, if possible, render my knowledge of the arteries fuller and more accurate than any one’s, I have laboured with indefatigable zeal for sixteen years in investigating their origin and distribution; I have with my own hand dissected upwards of five hundred bodies, and examined with no small degree of diligence subjects of both sexes, and of all ages.<sup>37</sup>

The result of this new turn to illustration was it that allowed the student an opportunity to see through the ‘expert eye.’ By looking through the expert eye the student could then see past the limited textual descriptions and even see past the decay, disease or injury of the body in front of them, giving them a direct line of sight, on paper and mentally, to what was deemed by the normative dictates of the discipline the proper patterns of configuration. The perspective of the anatomist, as we know from the previous section, was heavily invested in the cumulative normative agenda of the discipline of anatomical science influencing how they themselves saw the body on the dissection table. That perspective was in turn built into the illustrations the anatomist designed, teaching to the student how they should see the body and what they should look for. In other words, the illustrations taught the student to see the body through a specific

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<sup>35</sup> Ibid. See also Hodges, *Guild Handbook of Scientific Illustration*, 492-3 and Jordanova, “Gender, Generation and Science,” 385-386.

<sup>36</sup> Datson, and Galison, *Objectivity*, 48. Also see Stelmackowich, “Bodies of Knowledge” 79.

<sup>37</sup> Frederic Tiedemann, *Plates of the Arteries of the Human Body* (Edinburgh, 1835), 5.

normative focus. As such, by the time the student was confronted with an actual body, the dictates of their discipline, which were enforced through exposure to a myriad of anatomical images, were well formed and they saw the body as the anatomist intended.

The necessity of developing a ‘seeing eye’ through anatomical illustration is understood as a give-and-take relationship between the expert and the student. The expert, after years of training and investigating, distilled down in a depiction the most accurate rendering of the salient *facts* about the object of scrutiny for consumption and interpretation by the student. The student, in turn, took in the depiction and learned how to see those *facts* by adapting their vision to accept the information being disseminated in the depiction so that he or she might interpret the depiction correctly. The cumulative nature of medical pedagogy ensured that as the student developed their own ‘expert eye’ through exposure to the cadaver and illustrations what they learned to see and know about the body conformed comfortably to the normative disciplinary agenda.

The important point to take away here is that learning to see was considered one of the most crucial elements in the acquisition of medical knowledge. Anatomical illustrations, as a result, were absolutely indispensable to the medical project, shoring up claims of authority over the body which helped lead to the eventual professionalization of medicine.<sup>38</sup> If anatomy was ‘the true eye of medicine’ then anatomical illustration fast became the window into that world.<sup>39</sup> Access to the anatomy laboratory was limited well into the late 1800s for most medical scientists and students alike, and anatomical illustration was often their only conduit into the interior of the body. If the crucial skill of learning to *see* could not be developed at the dissecting table, then the student of medicine could at least make steps toward seeing the body through anatomical illustrations designed to provide that window.

A brief survey of anatomical history would suggest that importance of anatomical illustration as an integral element in the development of the ‘expert eye’ in the pedagogy of anatomical science remained entrenched across the generations. William Hunter,

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<sup>38</sup> Stelmackowich, “Bodies of Knowledge,” 83-84.

<sup>39</sup> William Schubach, *The Paradox of Rembrandt’s ‘Anatomy of Dr. Tulp’* (London: Wellcome Institute for the History of Medicine, 1982), 13. The actual phrase used in Schubach’s paper is “Anatome verus medicinae oculus.”

famous for his 1774 atlas *The Anatomy of the Human Gravid Uterus Exhibited in Figures*, states:

The art of engraving supplies us, upon many occasions, with what has been the great desideratum of the lovers of science, an (sic) universal language. Nay, it conveys clearer ideas of most natural objects, than words can express; makes stronger impressions upon the mind; and to every person conversant with the subject, gives an immediate comprehension of what it represents.<sup>40</sup>

Echoing this sentiment, Joseph Maclise, author of *Surgical Anatomy* in 1859 was even more pointed in his defence of the importance of anatomical illustration to the science of medicine when he claimed:

It is wholly impossible for anyone to describe form in words without the aid of figures. Even the mathematical strength of Euclid would avail nothing, if shorn of his diagrams. The professorial robe is impotent without its diagrams. Anatomy being a science existing by demonstration, (for as much as form in its actuality is the language of nature,) must be discoursed of by the instrumentality of figure. An anatomical illustration enters the understanding straight-forward in a direct passage, and is almost independent of the aid of written language. A picture of form is a proposition which solves itself. It is an axiom encompassed in a framework of self evident truth. The best substitute for Nature herself, upon which to teach the knowledge of her, is an exact representation of her form.<sup>41</sup>

By the 20<sup>th</sup> century the sentiment surrounding illustration and its importance in developing the ‘expert eye’ still remained a central tenet in medical pedagogy. The need for illustration to elucidate complex anatomical information and train the student eye is summed up in the 1941 *Atlas of Electroencephalography*, in which the authors state:

This book has been written in the hope that it will help the reader to see at a glance what it has taken others many hours to find, that it will help to train his eye so that he can arrive at diagnoses from subjective criteria... a “seeing eye” which comes from complete familiarity with the material is the most valuable instrument which an electroencephalographer can possess; no one can be truly competent until he has acquired it.<sup>42</sup>

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<sup>40</sup>William Hunter, *Anatomia uteri humani gravidi tabulis illustrata* [The Anatomy of the Human Gravid Uterus Exhibited in Figures] (Birmingham: John Baskerville, 1774), 1.

<sup>41</sup>Maclise, Joseph. 1859. *Surgical Anatomy* (Philadelphia: Blanchard and Lea, 1859), accessed December 2, 2014, [http://www.gutenberg.org/files/24440/24440-pdf.pdf?session\\_id=0bad059423da5cee70290bab0bb5a2ed8d12d1e6](http://www.gutenberg.org/files/24440/24440-pdf.pdf?session_id=0bad059423da5cee70290bab0bb5a2ed8d12d1e6)

<sup>42</sup>Frederic Gibbs and Erna Gibbs, *Atlas of Electroencephalography* (Cambridge: Addison-Wesley Publishing Company, Inc., 1941), Preface.

The development of the ‘expert eye’ and anatomical expertise, while an individual endeavour, was indebted to the cumulative experiences of the anatomists who came before. As expertise built and was then disseminated through illustration the discipline of anatomy became increasingly more robust. The more dense the cumulative experience became the more refined the ‘expert eye’ became in each generation of scientists. But the role of anatomical illustration was not limited to being a repository for the accumulated knowledge of anatomists. As we will see in the next section, anatomical illustrations embody more than just perspective they were also an effective tool in the quest to define the normative body. Anatomical illustration was also a working object within the discipline of anatomy one that was designed to provide a representation of a body that was manipulable so specific functions could be explicated. So, next we will look at what anatomical illustrations are and what it means to be a working object so that we can understand how they were utilized by both the anatomist and the student in medical pedagogy to see the normative body and cultivate their expertise.

### **2.3 The Working Object**

In order for a student of anatomy to ‘learn to see’ normative anatomy, anatomical science relied on illustrations that presented the human body as intentionally standardized universal representations. Why universal representations were seen as necessary for the collective empiricism of anatomical science and how those representations were designed to be useful is an important step in the process of understanding how the Caucasian male body became the authoritative body of medical pedagogy. To begin this process of understanding, I want to turn to one of the more interesting pieces of work to emerge in the past few years in the investigation of the role of scientific illustration in the workings of ‘normal science,’ Lorraine Datson and Peter Galison’s *Objectivity*.<sup>43</sup> To examine the powerful role anatomical illustration has taken on in the professionalization of the biomedical sciences and in the enshrining of the word ‘normal’ as a legitimate and measurable state of the human body I would like to utilize one part of their work for my own purposes, the concept of the ‘working object.’

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<sup>43</sup> Datson and Galison, *Objectivity*. I will also be borrowing from the earlier paper written in a lead up to *Objectivity* by the same authors, “The Image of Objectivity.”

In their exposition on the concept of scientific objectivity, Datson and Galison have found that the rise of the scientific image, particularly in atlas format, was one of the key elements in the move by scientists to codify scientific knowledge, professionalize their practices and cement their authority. Datson and Galison suggest that when science began to make a shift to collective empiricism, “common objects of inquiry” were necessary to make the knowledge uncovered intelligible by the members of each different discipline.<sup>44</sup> In this manner, eventually the different disciplines of science could regularize their practices and even communicate effectively with other disciplines removed from their own. Thus, it became possible for a physiologist like Thomas Schwann, who had an interest in botany, to dip into literature about plant cells and develop a cell theory for animals which would lead to the foundations of modern histology.<sup>45</sup>

Daston and Galison contend that “not only do images make the atlas; atlas images make the science,” by contributing to a collective empiricism which serves to allow a scientific discipline to expand its reach out in the world.<sup>46</sup> Scientific imagery is a space where what is seen by the observer and what is already known can be reconciled and consolidated into understandable pieces of information. This is information that is filtered not only through the individual’s understanding, but also, as we recall Lüthy and Smets, through the understanding and desires of a particular scientific community. As a result, entrenched in the scientific image are a myriad of choices about what knowledge needs to be showcased, how that knowledge needs to be depicted, and what type of explanatory narrative needs to accompany the depiction. Narrative in a scientific image can function on many levels, giving different types of information. In a normative anatomical project the information embedded in the illustration can be about the normal function of an organ, the normal morphology of the organ and the tissues around it and it can also be an affirmation of the appropriate disposition of the entire system the tissues are connected to even if they are not visible. But anatomical narrative, as we will see in later chapters, can

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<sup>44</sup> Datson and Galison, *Objectivity*, 22.

<sup>45</sup> O. C. Aszmann, “The Life and Work of Theodore Schwann,” *Journal of Reconstructive Microsurgery*, 16, no. 4 (2000): 291-295.

<sup>46</sup> Datson and Galison, *Objectivity*.



also be fashioned to tell particular stories about the role of bodies in a host of cultural and social contexts like, for example, in public health and hygiene or motherhood.

Although Datson and Galison focus on different types of scientific imagery, I am confining my use of their ideas to the anatomical image. I am primarily interested in the portion of their thesis that examines images as common objects of inquiry. Under this rubric, through the use of illustration, the body and its component parts are reduced to the status of “working object” upon which scientific symbols and codes of meaning can be inscribed.<sup>47</sup> Datson and Galison argue that because the accounting of all individual instances in nature in the study of a particular subject was impractical, it became important for the progression of scientific pedagogy that representational objects be selected as stand-ins for all the individual instances within a category of meaning. Simply put, Datson and Galison contend that “idiosyncratic objects pose...a great threat to communal, cumulative science, for nature seldom repeats itself, variability and individuality being the rule rather than the exception” thus a working object is an intentionally standardized representation of the concept requiring description and explanation.<sup>48</sup> To this end they note:

Working objects can be atlas images, type specimens, or laboratory processes—any manageable, communal representatives of the sector of nature under investigation. No science can do without such standardized working objects, for unrefined natural objects are too quirkily particular to cooperate in generalization and comparisons.<sup>49</sup>

Anatomical illustrations, particularly in the atlas format, were used to help viewers “habituate the eye” by serving to “drill the eye of the beginner and refresh the eye of the old hand”<sup>50</sup> in order to hone and sharpen the clinical gaze through repetition, thereby creating a “vivid, indelible memory”<sup>51</sup> of what the object in question should look like. The anatomical working object was a normative universal body (Fig. 2) one that stood in for individual humans upon which important lessons could be imposed and disseminated. These are illustrations that provide not only a visual representation of the

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<sup>47</sup> Ibid, 19.

<sup>48</sup> Datson and Galison, “The Image of Objectivity,” 85.

<sup>49</sup> Ibid.

<sup>50</sup> Ibid.

<sup>51</sup> Ibid. 86.

body but also contain textual information about function and morphology. In a nutshell, the normative universal body was a manipulable, communicable representative, an exemplar of the kindhood *human*, and it was tasked with the job of making invisible concepts and functions related to the body visible for learning and, ultimately, knowledge production. For the idea of a normative universal body to be conceptually viable it required the expertise of many anatomists to contribute to the project, and it required all those experts to believe that the creation of a universal exemplar was not only feasible but reasonable as well. This belief that there was a type of body that could fulfill the role of the illustrated universal body was made possible by the ideologies that undergirded much of the anatomical science being practiced across Europe after the Middle Ages.

To be a working object the anatomical image must be seen as exhibiting a universality,<sup>52</sup> which fulfills a “standardizing purpose”, and is judged to be, by the educated eye selecting it, as an ideal, characteristic, typical, or average example of the human form.<sup>53</sup> What is interesting to note here is that none of these words mean quite the same thing yet nonetheless they became quickly conflated under the standardizing agenda of the medical pedagogues who sought to employ anatomical illustrations as a way to control what was seen and therefore known about the body. To create a ‘universal’ body was no simple task and anatomical illustrations as a result were the product of a highly layered process of rendering—technical schematics designed to suppress any signs of variation lest any ‘abnormality,’ ‘anomaly,’ or ‘deviation’ from the norm distract the eye from the primary didactic purpose of the illustration. As a universal form, the normative body image was expected to exhibit idealized regularity but this was a regularity that needed to be perfectly proportioned and symmetrically balanced.

As a working object, the normative body needed to be a manipulable object, one which allowed the anatomist to add or subtract elements from the body so that conceptual information could be clearly read. But above all the normative universal body needed to be relatable, it needed to have enough detail so as to look like a recognizable human but be neutral enough, typical enough that it did not look like a specific individual. Relatable neutrality was a key element in an anatomical illustration, being able to identify with the

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<sup>52</sup> Berkowitz, “The Beauty of Anatomy” 257.

<sup>53</sup> Datson and Galison, “The Image of Objectivity,” 87. See also Datson and Galison, *Objectivity*, 66.

body in the illustration meant the lesson being taught could be connected to a physical lived body, giving dimension where the two-dimensional rendering of the illustration could not. This ethos, the sense that a regularity of form was crucial to the success of an anatomical image, dominated the craft of anatomical image-making from the time of Vesalius until well into the 19<sup>th</sup> century.<sup>54</sup> No one particular individual was to be used as the normative universal body, since the individual could never serve as the pattern for all.<sup>55</sup> The illustrated normative body was a cumulative body, one that the anatomist was able to “intuit from cumulative experience” in the dissection laboratory through exposure to many bodies for comparison.<sup>56</sup>

The result of this important didactic shift to a ‘typical’ normative body, which began in earnest in European medical schools the early 1500s, was that anatomical illustrations were expected to “determine the essential” then bring visual order to the complex and messy systems of the body by leaving out the distractions and emphasizing the relevant.<sup>57</sup> In her work on contemporary anatomical illustration, Elaine Hodges notes that the illustrator and the anatomist need to “establish a visual hierarchy, in which subjects of primary importance clearly dominate the illustration and secondary or potentially confusing elements [are] deemphasized or removed entirely” all in a way that allows the illustration to express to the viewer the conceptual information that is crucial to understanding.<sup>58</sup> It is not enough, states Hodges, for anatomical illustrations to reduce very complex physiological systems and concepts into easily grasped and see-at-a-glance relations, they have to also do it in relatable “aesthetically pleasing visual designs.”<sup>59</sup> As odd as it may seem, the aesthetics of an anatomical illustration were a crucial element in the acceptance of the illustrations as a useful pedagogical tool. Anatomy and dissection was a particularly gruesome process in the centuries prior to the 20<sup>th</sup> century and the illustrations helped make the more horrifying aspects of the anatomy palatable for visual consumption.

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<sup>54</sup> Dutton and Galison, *Objectivity*. 66-70.

<sup>55</sup> *Ibid*, 69-70.

<sup>56</sup> *Ibid*, 69.

<sup>57</sup> *Ibid*, 66.

<sup>58</sup> Elaine Hodges, *The Guild Handbook of Scientific Illustration* (Hoboken: John Wiley, 2003), 493.

<sup>59</sup> *Ibid*.

Aesthetics aside, the establishment of a visual hierarchy and the depicting of visual order came at a price, as it demanded that that which was being illustrated be 'natural' yet at the same time be the most representative of its kind or system. Datson and Galison, in agreement with Hodges, note that working objects, like anatomical illustrations, "teach how to see the essential and overlook the incidental," but they must also show "which objects are typical and which are anomalous, [and] what the range and limits of variability in nature are."<sup>60</sup> The result was a uniformity of form prized for its conforming natural 'normalness.' Nature, however, is rarely uniform, placing the anatomist in the position of being arbiter of what normal was and what it was supposed to look like.

But the problem with the search for a natural normalness is that, to borrow from E. H. Gombrich's work on naturalism in painting, "there is no neutral naturalism," because nature cannot just be simply captured in art. What was depicted was a reflection of what the artist believed they were seeing and the conventions the artist worked under, suggested Gombrich, and always left traces on the representation.<sup>61</sup> Consequently, each anatomical illustration which was created to give a vocabulary to what was being seen on the dissecting table also gave voice to what was 'known' about the body by that anatomist and allowed the anatomist to place particular emphasis on what was valued about it.<sup>62</sup> As such, the 'natural' normalness of these working objects were more often than not subjectively idealized representations of the bodies on the dissecting table, a depiction of what bodies should be rather than what they were and fraught with the ideologies of the anatomists and their particular agendas.<sup>63</sup>

What also needs to be considered is that in the hands of the anatomists, human bodies are objects that are defined through the intricate methods that are used to represent

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<sup>60</sup> Datson and Galison, *Objectivity*, 26.

<sup>61</sup> Eva T.H. Brann, *The World of Imagination: Sum and Substance* (Pennsylvania: Rowman & Littlefield Publishers, 1993), 657.

<sup>62</sup> E.H. Gombrich, *Art and Illusion* (Princeton: Princeton University Press, 1969), 87. See also Mary G. Winkler, "Tragic Figures: thoughts on Visual Arts and Anatomy." *The Journal of Medical Humanities* 10, no. 1 (1989): 5-12 for a discussion of visual art and anatomy.

<sup>63</sup> See Stelmackowich, "Bodies of Knowledge," Stelmackowich, "The Instructive Corpse," and Jordanova, "Gender, Generation and Science," Londa Schiebinger, "Skeletons in the Closet. As well as Londa Schiebinger, "The Anatomy of Difference: Race and Sex in Eighteenth-Century Science," *Eighteenth Century Studies* 23, no. 4 (1990): 387-405 and Arthur Saint-Aubin, "A Grammar of Black Masculinity: A Body of Science." *Journal of Men's Studies* 10, no. 3 (2002): 247-265.

them as reducible, quantifiable and understandable. Bodies, in spite of their ever changing organic nature, are spaces that were fixed in illustrations as representative of specific concepts and ideas. And yet, bodies *are* organic and material, understood to be products of nature, real and objective, replete with variations making them part of the kind but inherently unique. It is because bodies were individual and prone to variation that they were spaces thought to require universalization and expert interpretation.<sup>64</sup> Consequently, they became spaces onto which scientists inscribed universalized meanings of purpose and function, so that the variation and uniqueness that marked the individual could be erased and the individual body could be re-aligned with all the other bodies around it. So, the purpose of anatomical illustration was to create a normative body and talk about the human body as a single, universal entity. Indeed, biologically-based sciences relied upon a vision of a solitary, generic human body in order to generate explanatory narratives about function, normalcy, pathology, and management. Thus, the power of empirical observation, manifested through anatomical illustration, laid principally in its capacity to render information about the body's anatomical features, processes, functions, structures and systems visible and understandable but also manipulable.

Different from text, anatomical illustrations of the body offered a distinctive kind of explaining, one in which the illustration itself was seen as a proxy for the object it represented, making, in some ways, the observation and investigation of the original body or bodies it was constituted from unnecessary.<sup>65</sup> This is a crucial point; the body itself, the initial object of scrutiny, was sometimes understood in anatomical pedagogy as less useful to the 'learning of the lesson' than the illustrations designed to explicate it. Anatomist John Bell argued that "simple, intelligible and plain" anatomical illustrations provided to students in advance would aid the student "to enter the dissecting room with confidence."<sup>66</sup> Bell felt that to understand the body one had to participate in dissection but acknowledged that the cadaver was too often disorderly and confusing for a student

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<sup>64</sup> Jennifer Terry and Jacqueline Urla, "Introduction: Mapping Embodied Deviance," In *Deviant Bodies: Critical Perspectives on Difference in Science and Popular Culture*, ed. Jennifer Terry and Jacqueline Urla (Bloomington: Indiana University Press, 1995), 3-7.

<sup>65</sup> See Kusukawa, Sachiko, "Role of Images in the Development of Renaissance Natural History," *Archives of Natural History* 38, no. 2 (2011): 190-191.

<sup>66</sup> John Bell, *Engravings Explaining the Anatomy of the Human Body* (Edinburgh: J. Patterson, 1794), xxi.

who had not yet developed the all-important ‘expert eye’ and as such believe students were better served by learning from illustrations first before being confronted with the cadaver’s messy reality.

Anatomical illustrations could work then as textual figures that sustained, encompassed, recorded, or extrapolated a particular normative point of view about the body for the student, a point of view that incorporated both explicit and implicit pieces of knowledge that were deemed by the anatomist as relevant and important to know. The body proper, as a cadaver, could not express a particular point of view; the inertia that seized the body at the moment of death meant the body could no longer participate or do things, the body could only have things done to it. The body became functionally fixed in the anatomy laboratory as no longer a person but rather as an object for dissection. It was the illustrations which positioned the cadaver as a spokesperson for the lived body. Anatomical illustrations spoke of, for and as the cadavers they were modelled after but did so with the voice of the anatomist and the philosophical premises that informed his or her thinking.

The intention of historical anatomical illustrations was to showcase the ‘typical’ or ‘normal’ version of the part being depicted so that students and physicians would know what the parts *should* look like when they examined a patient.<sup>67</sup> To this end, virtually all anatomists and illustrators of medical texts and atlases, who were predominantly men, were careful to select and depict the same specific body type—the European male. Because the European male body was the body that was considered ‘normal’ by European scientists it was considered a natural choice to provide a normative and uniform view of the various systems that comprised the ‘human body.’<sup>68</sup> This selection of the white male was done deliberately by the European men dominating science who had consistently placed themselves as the most superior form of human and, indeed, the most superior of all animals in the natural world. By consistently positioning

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<sup>67</sup> See Berkowitz, “Beauty of Anatomy,” 260-261, Stelmackowich, “Bodies of Knowledge,” and Stelmackowich, “The Instructive Corpse.”

<sup>68</sup> Estella A. Ciobanu, “En-gendering Exemplarity in Early Modern Anatomical Illustration and the Fine Arts: Dis- and Dys-Identifications of the Anatomical/Pictorial Model as Male,” *Journal of Research in Gender Studies* 4, no. 2 (2014): 817-833. See also Schiebinger, “The Anatomy of Difference,” 387-405 and Nancy Leys Stepan, “Race and Gender: The Role of Analogy in Science,” in *The ‘Racial’ Economy of Science: Toward A Democratic Future*, ed. Sandra Harding (Bloomington: Indiana University Press, 1993), 359-376.

the European male body as the central normative body European scientists could control the knowledge that was being generated, argues Londa Schiebinger, and hold “a tight rein on what was recognized as legitimate knowledge and who could produce that knowledge.”<sup>69</sup> This uniformity in the type of body depicted in medical illustration also meant that training regimes could follow a predicted and regulated pattern to ensure that newly practicing physicians followed the appropriate professional practices and had access to the same knowledge no matter where they learned their craft.

The use of the European male body as the working object in anatomical science began long before anatomical illustration became the dominant tool of the trade. The male body had been the primary object of interest in anatomical studies done by natural philosophers as far back as Aristotle.<sup>70</sup> The maneuvering of the male body into the central role in anatomical illustration was in no way an awkward one, rather it was completely in keeping with the centralizing the male form had always enjoyed in art, poetry, mythology and literature. The difference between the centralizing of the male body in anatomical illustration and in those cultural activities was that in anatomical illustration the European male body become the universal form, the working object, and the silent messenger that was used to carry knowledge about and speak on behalf of all bodies, not just European male ones.

As we have seen, the working object of anatomical science was the intentionally standardized ‘universal’ human form. As a working object, anatomical illustrations were expected to be useful as common objects of inquiry so that all scientists and students of anatomy could access them for information. These illustrations were neutral representations of bodies, they were recognizable as human but not as a specific human, meant to be relatable because they conceivably could be representative of anyone’s body. These were images of the human body that were stripped of variation and rendered in a manner that elucidated a particular concept, like physiological function or anatomical morphology. By exhibiting ‘typicality’ in form and function, which was usually idealized, these illustrations could operate as templates upon which text could be inscribed to describe or explain a particular lesson or set of lessons about the body.

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<sup>69</sup> Schiebinger, “The Anatomy of Difference,” 388.

<sup>70</sup> Stepan “Race and Gender,” 265.

Because the illustrations were meant to further the normative agenda of anatomical science the bodies depicted were ones that displayed ‘normal’ anatomy. The social and scientific narratives that surrounded the European male body ensured that more often than not the type of body used to serve as a normative universal working object in anatomical illustrations was that of the European male. As an illustrated body, the European male was presented as properly proportional, idealized so that when it was viewed by a student of anatomy what was invoked was a sense that “normative internal structure could be inferred directly from its external appearance.”<sup>71</sup> It is this sense of what can be inferred or known about the body through viewing anatomical illustrations that we will consider in the next section as we explore how illustrations work in aiding a student of anatomy to learn and understand the body the way the anatomist intended.

## 2.4 Fiction Versus Fact

It is from this point that I would like to shift from talking about the working object and borrow from another source—Kendall Walton’s theory about representation as explicated in his *Mimesis as Make-Believe*.<sup>72</sup> I find Walton’s interpretation of representations and the role they play in generating specific ideas and understandings in the minds of the viewers to be insightful. That being said, I find some portions of his theory a bit too narrow for my purposes. So, once I have outlined his vision I will suggest an alteration to his thesis that I find more useful when discussing anatomical illustration. Walton’s theory involves many moving parts, most of which I will leave alone. I am primarily interested in a very small part of his theory regarding the “principles of generation” and their relation to imagining and the idea of fictional truth.<sup>73</sup>

Walton’s argument, in a highly simplified manner, is that objects can or may prompt an act of imagination. We, either deliberately or not, consciously or not, adopt rules for imagining. When we have rules of imagining in force we are involved in a game of make-believe.<sup>74</sup> Games of make-believe are games that have rules that come in the

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<sup>71</sup> Harcourt, “Andreas Vesalius and the Anatomy of Antique Sculpture,” 43.

<sup>72</sup> Walton, *Mimesis as Make-Believe*.

<sup>73</sup> *Ibid*, 38.

<sup>74</sup> *Ibid*, 39-41.



form of *if* such-and-such is the case *then* we are to imagine so-and-so.<sup>75</sup> Representations are functional objects that are authorized or mandated to serve as a props in games of make-believe. So, an object is a prop in a game of make-believe if, in a particular game, it brings about the ‘such-and-such imaginings’ that are mandated for that game. Props generate “fictional truths” under the rules of imagination that are in force.<sup>76</sup> Fictional truths are propositions that are mandated to be imagined when a given set of rules for imagining are in force.

Walton explains these games of make-believe by suggesting that we consider a make-believe game that concerns a stump. Where there is a stump we can imagine there is a ‘fictional’ bear, “only because there is a certain convention, understanding, agreement in the game of make-believe, one to the effect that wherever there is a stump, fictionally there is a bear.”<sup>77</sup> For the principles of generation to work in this scenario, the people involved in this particular game of make-believe need to accept that where there is a stump, there is a fictional bear. In other words, the people involved in the game of make-believe, or within a specific context, if you will, have to accept the principles that are in force for them to be in force. People who refuse to imagine the presence of a fictional bear whenever there is a stump are either not playing the make-believe game or are playing it improperly.<sup>78</sup> The stump is the prop that invokes the fictional bear. So the people in that game of make-believe agree that a certain fictional truth is mandated by the presence of a particular representational prop.<sup>79</sup>

I want to take a moment to consider this idea of fictional truths. I find Walton’s use of the word ‘fictional’ and the term ‘fictional truth’ to be a bit open ended. The term ‘fictional’ in Walton’s account can be understood as true in the appropriate game of make-believe or, in other words, true in the fictional space of the representation.<sup>80</sup> But just because a fictional truth is true within the world of make-believe it belongs to does not mean it can be considered “truth in the real world.”<sup>81</sup> Walton argues that “what we

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<sup>75</sup> Ibid, 40-41.

<sup>76</sup> Ibid, 37-39.

<sup>77</sup> Ibid, 38.

<sup>78</sup> Ibid, 39.

<sup>79</sup> Ibid, 38.

<sup>80</sup> Ibid, 35.

<sup>81</sup> Ibid, 41.

call truth in a fictional world is not a kind of truth” but acknowledges that we are tempted to see “fictionality as a species of truth.”<sup>82</sup> This temptation to equate fictional truth with truth, he contends, is compelling because “although fictionality is not truth, the two are perfectly compatible” because we can imagine things that are true alongside things that are fictional in response to a prop.<sup>83</sup> Thus, different types of imaginings can be mandated by the prop.

I do not necessarily disagree with Walton in this description of fictional truth, but I do find his account somewhat limited for my purposes when discussing anatomical illustrations. Further on in his account Walton notes that works of non-fiction, like Darwin’s *Origin of Species* or textbooks used in a classroom, while props, are not props that are used in games of make-believe because they function as props that describe the real world.<sup>84</sup> Non-fiction works of this nature are not designed to generate fictional truths, they are designed to prompt within the reader a desire to consider the propositions about the real world expressed within it regardless of their veracity or falsity.<sup>85</sup> Representations, however, unlike non-fiction textbooks, remain in the realm of fiction because they are designed to prompt mandated imaginings, some of which can be true but some of which are just fictional. Walton acknowledges that there are types of fiction that straddle the line between non-fiction and fiction, historical novels, for example, that involve particular historical people and settings. But these types of novels, he feels, like representations, still serve as props in games of make-believe. This is a distinction I will come back to shortly but first I want to consider anatomical illustration as props in games of make-believe.

If we follow Walton’s account of fictional truths prompted by representational props, when we view an anatomical illustration we generate a set of fictional truths and they are fictional truths that are true within anatomical science. Anatomical illustrations are drawn from the corpses of what used to be living people in a way that is relatable. That relatability allows a viewer to connect with the illustration and generate a set of intended fictional truths which leads the viewer to imagine things about the body. Since

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<sup>82</sup> Ibid, 41.

<sup>83</sup> Ibid, 42.

<sup>84</sup> Ibid, 70.

<sup>85</sup> Ibid, 71.

anatomical illustrations are often designed to explicate hidden interior functions of the body like the movement of blood through the veins and arteries, when a viewer looks the illustration they have a sense they are seeing the body and a sense they are seeing the concept being prioritized. But in Walton's account these still remain fictional truths. This is where my frustration with Walton arises, is his amorphous use of the terms fiction and fictional truth. Representations remain in his account fictional, they can pretend to make assertions about real things but they nonetheless are still props designed to elicit fictional truths.<sup>86</sup>

As I have mentioned, I find Walton's ideas about mandated imaginings in relation to representations quite useful when considering anatomical illustration. As we have seen in this chapter, illustrations have a lot of subtext built into them but the primary goal of anatomical illustration is to do just what Walton is suggesting, prompt certain sets of mandated imaginings. Nonetheless, as I have indicated, I find his suggestion that representation equals fiction too limited for my purposes. Since Walton never gives a clear account of what he means by the term fiction I feel I can take a few liberties with the term myself. So, from here I would like to tinker a bit with the idea of fictional truths and turn it into something that I think can be even more applicable to anatomical illustration. What I would like to do is return to the idea of straddling the line between fact and fiction that Walton invokes when discussing the historical novel. To do this I will be borrowing a concept from literature, that of 'faction.'<sup>87</sup>

Faction is a portmanteau of the words fact and fiction, and it refers to the genre of 'non-fiction novels' which depict real historical figures and actual events and imagines the conversations and behaviours between the historical figures by employing fictional storytelling practices to bring the story to life. So, for example, when Alex Haley wrote about his family in *Roots*, he was able to bring real people to life in the historical setting they belonged to in a fictional manner by researching their history and imagining how they would have behaved and what they would have said during certain events in their lives. I want lift this idea of faction narratives from its home in literature and re-purpose

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<sup>86</sup> Ibid, 81-83.

<sup>87</sup> See Christina Olin-Scheller and Michael Tengberg, "'If It Ain't True, Then It's Just A Book!' The Reading and Teaching of Faction Literature," *Journal of Research in Reading* 35, no. 20 (2012): 153-168.

the word faction for use in a discussion about anatomical illustrations by replacing Walton's use of fictional truth with that of factional truth. A factional truth is something I can envision containing elements of 'facts' that enjoy wide acceptance within the discipline of anatomical science, ones that generally hold up outside of the representation that invoked it.

Initially, the business of dividing ourselves into categories of meaning based on difference, like race or gender, was a socio-cultural phenomenon. It is important to remember that scientific enquiry, particularly in the medical sciences, was often prompted by social concerns and questions arising out of these divisions of difference, like, for example, whether or not women had the intellectual capacity to attend the academy or whether or not a 'Negro' man was as human as a 'White' one. The cultural narratives, the fictional truths, that accompanied categories of difference were created and sustained, in many ways, in a manner similar to creation of scientific knowledge. Much of what was understood about gender and race started by observation, but observation that was filtered through the standpoint of specific ideologies. The narratives which became attached to different bodies were cumulative, built upon successively from society to society and generation to generation. As a result, what was 'known' or 'understood' about the people who populated different categories became part of the collective consciousness and took on a sheen of 'truth.'

When anatomical scientists became involved in the process of finding answers for pressing social questions about difference they did so, as discussed earlier, from the perspective that informed their world view and their discipline. Normative anatomy, as we will see in later chapters, was able to then add biological 'evidence' that supported the socio-cultural claims about different types of bodies. This evidence lent a level of credibility to the fictional truths that informed social categories of difference and consequently helped fasten down many of the narratives, making them difficult to dislodge. It is this blend of biological 'fact' with the socio-cultural fictional truths about difference that prompts me to shift away from Walton's used of fictional truths and employ factional narrative when discussing anatomical illustrations. Faction narratives in this incarnation are social narratives (fictional truths) that are backed up by scientific facts. Any questions about the veracity or falsity of the social narratives that prompted

the scientific enquiry seem to fade from view when the scientific evidence, which began from those socio-cultural narratives, roots ‘proof’ of those claims in the biology of the body.

I will often single out these terms ‘fact’ and ‘proof’ for a reason. We begin with a socio-cultural assumption that prompts a scientific enquiry, for example, that non-white people have lower intelligence, an assumption that was built from a discomfort European people had with a myriad of socio-cultural differences they encountered in non-white bodies, for example, differences in skin colour, language, religion, food preferences, clothing or sexual behaviour. The assumption of lower intelligence leads an investigator to measure skulls looking for biological explanations for the supposed lower intelligence. Then the investigator finds what he or she thinks are measurable differences in the size or shape of the non-white skull, for instance, a tendency to exhibit a more prognathic profile than European skulls, and claims that those measurable differences are demonstrative of that lower intelligence. We are left with a ‘fact’ or a ‘proof’ that was built from faulty socio-cultural assumptions which are connected to actual biological findings that were interpreted to support the socio-cultural assumption of lower intelligence. This is what I envision a factional narrative to be.

In this manner, we can consider that anatomical illustrations serve as props that are designed to prompt a specific set of factional understandings of the body. Anatomical illustrations are drawn from real bodies, from people with their own histories. It is a combination of that historical space and the organic origins of the body that give the body its shape and form. The anatomist takes those forms and renovates them on the page in the form of an illustration, and then builds a scientific narrative about bodies to tell the story of how things happen and why they happen within the organic bounds of the body. These narratives describe the actual morphology and functions of different bodies and imagines how those different morphologies and functions relate back to the social concerns and questions that prompted the investigation in the first place. It is in the anchoring of the factional narrative to real bodies and their functions, to their biology and the telling of that narrative in a way that is true-to-the-form which lends it its credibility.

Anatomical illustrations strike me as factional props which prompt mandated imaginings by the viewer that could be true of the different bodies within social

categories of difference. I consider this a type of factual, based-on-a-true-story narrative, because these are stories about bodies whose social fictions have seemingly been proven by science. When anatomical illustrations are furnished for pedagogical purposes, the truth or falsity of the social narratives fade away, much like the philosophical premises that informed the anatomist at the time of rendering do, and the ‘facts’ being displayed by the illustration take center stage. The fact and fiction that is blended into the illustration become a factional truth about the bodies the illustration is designed to explicate.

It is here I want to bring back the idea anatomists have that by reducing the body through illustration to a normative working object, the illustration can serve as a normative universal body that can be employed in the narratives about the body. If we consider these narratives as factional narratives then we can see the illustration serving more than one purpose. It can be used to explicate function and morphology at the same time as it is reinforcing the socio-cultural boundaries that surround categories of difference. If the illustration is understood to be a universal exemplar, then the factional truth being told by that image body can be understood as being told about all bodies. So, in this manner, the factional narrative that frames the idealized illustration of the white male body as the normative body reinforces the factional narrative about the black male body being closer to the apes in morphology and vice versa. The power of a factional truth lies in its ability to convince the viewer that it can connect back to an accepted ‘fact’ that the anatomist ‘knows’ about the body, which we can presumably trust because the anatomist is an expert. Stories about the body, told by an anatomical illustration, are stories that are rooted in the biology of the body. The biology and the organic function of that biology is undeniable and, we believe, knowable. These factional narratives are understood as congruent biologically and socially with the figures they are speaking on behalf of.

Earlier in this chapter I argued that anatomical illustrations were witnessable objects, ones that acted as silent messengers whose power lay in being spoken about. If what is spoken about in regards to an anatomical illustration is trusted as being based on ‘facts’ that were uncovered by a certain expertise, then it seems to me that its factional status is what makes the story being told by the illustration enduring, in a way that a fictional truth may not be able to sustain. I like this idea of a factional truth over the idea

of a fictional truth when discussing anatomical illustration because it seems weightier to me. Some of that weight comes from the sense I have that looking at anatomical illustrations as the generators of factional truths puts us in a position where we have to consider the anatomist, the ideology and the science behind the illustration. Once we do that we also have to remember and to incorporate the particular histories, philosophic premises and disciplinary norms of the different anatomists at the time different anatomical illustrations were created.

## **2.5 Concluding Remarks**

Throughout this chapter I have considered anatomical illustration in terms of its role in the pedagogy of medical education, particularly as it pertains to the makers and users of the illustration. I have argued that anatomical images function as silent carriers of knowledge that invoke certain mandated factional truths in the minds of those who use them to understand the body. I believe that those factional truths are normative and that specific types of bodies are designed to fill the normative role within the bounds of the factional narratives that are developed for the anatomical image. I have also suggested that factional truths find their power in their connection to facts that have been uncovered by the expert of the body--the anatomist.

I would now like to briefly draw our attention back to what a historical anatomical illustration was. An anatomical illustration was a working object that was designed to serve as a normative universal body upon which specific hidden interior functions could be encoded and explicated. As a working object, the anatomical illustration was intentionally universalized by removing or de-emphasizing variations and details that were particular to an individual body, as well as any phenotypical features that were seen as deviating from the understood default of the European male. Through the process of universalization the anatomical illustration was positioned as the stand-in for all bodies, rather than being a representation of just one body or one type of body. So, for an anatomist to reduce the body to a universal exemplar they needed to believe, first, that there was such a creature. Second, they needed to ignore, alter and/or remove any signs of individuality from the illustration. Third, they depicted an idealized version of the

body in a way that could invoke a sense within the viewer that what they were seeing was a body that was typical or characteristic of the way bodies should look.

Now we need to consider the other things that go into a historical anatomical illustration. The biological information that was drawn into the illustration was morphology and function, both of which were in many cases hidden or not visible to the eye unless revealed by the removal of things that blocked the view of it (skin, other organs), or was revealed by adding explanatory aids (text, arrows etc.) to outline it. Also drawn into an anatomical illustration were several bodies because rarely were anatomical drawings renderings of the dissection of one specific body, rather they were composites drawings based off the dissections of many, many bodies.

The expertise and skill of the anatomist as a dissector and as an expert of the body was also invested in the drawing, the anatomical illustration was a display of those talents. It took a tremendous amount of training and skill to be able to dissect a body in a manner that made it a suitable candidate for illustration. What was also included in an anatomical illustration was the point of view and the ethos under which the anatomist operated. Thus, a 16<sup>th</sup> century anatomist, as we will see in the next chapter, would illustrate a body in a particular aesthetic style considered appropriate in their time and place, and would prioritize functions that were of particular interest to the anatomists of the 16<sup>th</sup> century. That same anatomist would also choose the types of bodies to illustrate based on the agenda they brought to the dissection table and conventions of the disciplinary milieu they were a member of.

It is also important to remember that anatomical illustrations were designed as pedagogical tools for both other anatomists and students of the body. These were tools that were meant to impart lessons about what the different internal parts looked like, how they were connected to one another, how the body functioned and why it functioned but they also taught lessons about what the body should ideally look like. Through the illustration viewers were also taught what was normal and therefore what was, in contrast, abnormal. Lessons about the body came from the fictional narratives that were attached to the illustrations, narratives that were built and maintained by the credibility of the anatomist as an expert.



With all of these elements in play anatomical illustrations were able to help the biomedical sciences eventually codify understandings about the body all across Europe. Once the process of codifying anatomical knowledge was well underway, anatomists and physicians were able to position medical scientists as the natural caretakers of the body. As medical science solidified their knowledge base and began to exercise their authority over the body, professionalization swiftly followed. Through professionalization came the regulation of teaching, of the practice of medicine and of the body.

In the next chapter we will examine the evolution of anatomical images and image-making as a way to understand what type of body was selected as the stand-in for all other bodies and what that choice said about and how it affected those bodies that differed from the exemplar.



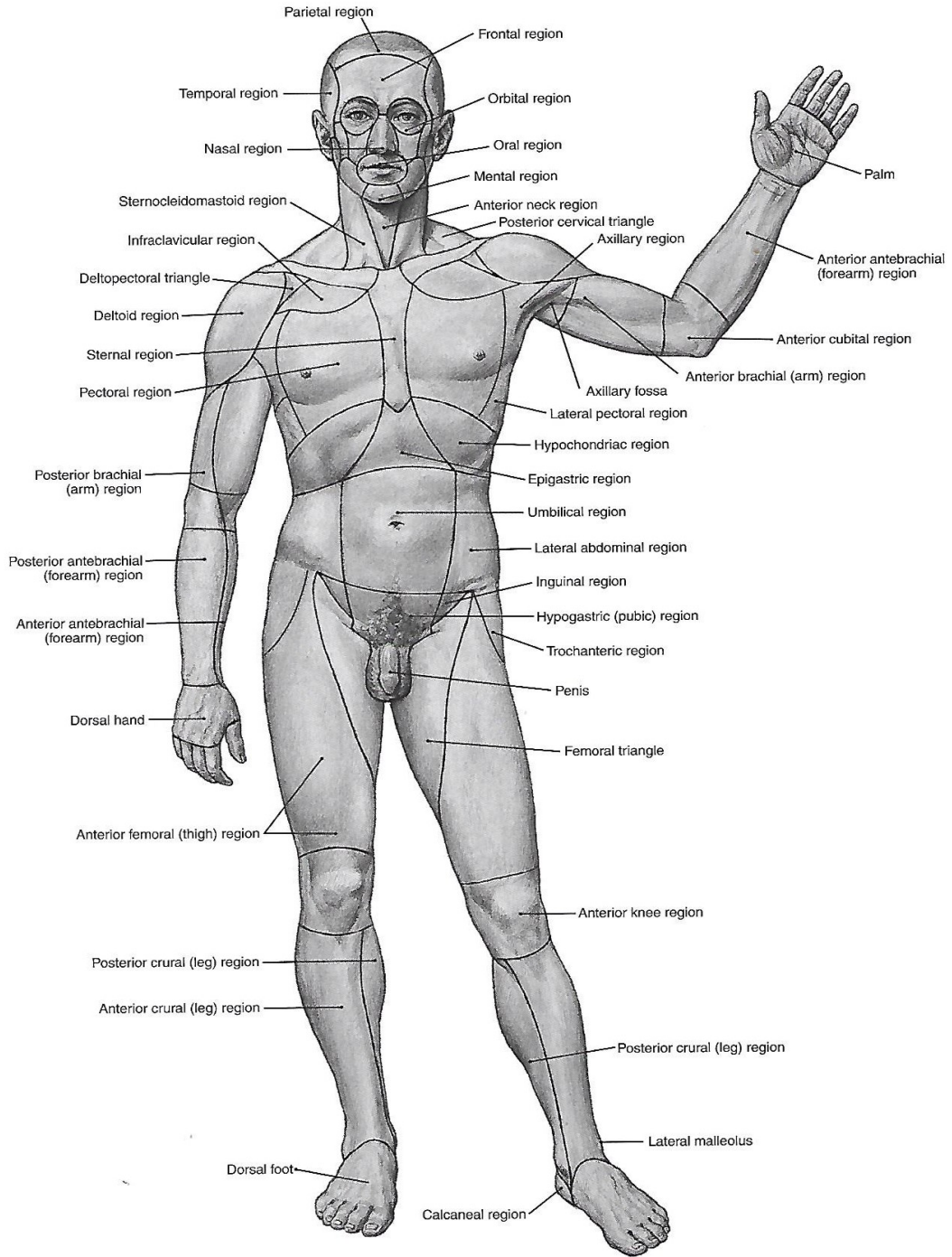


Figure 2. "Working Object" Clemente, *Anatomy: A Regional Atlas of the Human Body*. 6<sup>th</sup> edition, Plate 1.

### Chapter 3: Body By Design: A Historical Trajectory

In this chapter, I will trace a brief but reasonably comprehensive look at the evolution of the use of anatomical imagery to show how pictures of the body became an integral part of the development of the clinical gaze in the evolution of medical pedagogy. One of the problems with discussing history of this nature, which runs through several centuries and across many different geographical regions, is the risk of talking about the history in a homogenized manner. Unfortunately, in order to talk about such a large and complex subject, a certain amount of lumping together is inevitable. I do not have the space to do a detailed examination of the historical development of anatomical illustration on a country-by-country or even century-by-century basis. The result is that I will discuss the development of the discipline of anatomy and anatomical illustration in terms of it being a European phenomenon which evolved, while not concurrently across the continent, steadily in each region which eventually culminated in a professionalization of medicine in most locales at roughly the same time period of the mid to latter half of the 19<sup>th</sup> century.

The history of anatomical illustration is key to understanding the role of images of the body in a contemporary setting because, as Martin Kemp suggests, “the modes of representation in twentieth-century science are very much the heirs of the Renaissance revolution” that led to “the rise of illustration as a major tool of science.”<sup>88</sup> Anatomical illustrations are not just pictures, as we learned in the previous chapter, nor are they just representations of a body. Rather, anatomical illustrations are complex schemata, instruments of clarification, which are carefully crafted and designed to not only reveal knowledge but create it as well. The factional nature of the images, rooted in biology and connected to the expertise of the anatomist, means that as long as there are bodies, there will be enduring fact-based narratives that we accept as speaking ‘truth’ about those bodies.

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<sup>88</sup> Martin Kemp, "Seeing and Picturing. Visual Representation in Twentieth-Century Science," in *Science in the Twentieth Century*, ed. John Krige and Dominique Pestre (Amsterdam: Routledge, 1997), 363.

### 3.1 Creating a Normative Universal Body

Having established the vital nature of anatomical illustration to the art of seeing or the cultivation of the ‘disciplinary eye’ and to the progression of medical science as a practice, we can now move forward to look at how anatomy and anatomical illustration developed and evolved. In this progression we will also see how the body was disarticulated then remodelled through the visual strategies employed by the anatomists into a manipulative tool that could be embedded with meaning and then tasked with serving as the spokesperson for normative medicine.

The study of anatomy began to take off in the late 15<sup>th</sup> and early 16th-century when Leonardo da Vinci and the anatomists of the Italian Renaissance created an intersection in the fields of art, geometry and anatomy. By necessity, because of the limited knowledge of anatomy that was taught at the universities, many Italian Renaissance artists had become anatomists, in an attempt to refine a more authentic, sculptural portrayal of the human figure. Through the lens of mathematics, the artists of the day made detailed studies of the structures that lay beneath the skin, subsequently forging a consistent vocabulary of anatomical illustration with which new findings could be accurately documented.<sup>89</sup> To this day, Leonardo da Vinci’s ‘Vitruvian Man,’ the figure of what eventually came to be understood as the ‘white male’ contained within a symmetrical, geometric arrangement of a circle within a square, remains one of the most iconic images in anatomical illustration, providing a powerful human body template from which all anatomical modelling has followed (Fig. 3). Vitruvian Man was modelled after Roman architect Vitruvius’s writings where he described the “inherent harmony of the measured proportions of the human body” as providing proof of man’s divinely created corporeal symmetry.<sup>90</sup> Vitruvius describes a perfectly proportioned man, one who, with his hands and feet outspread, creates divine, perfect geometric figures of both a circle and a square.<sup>91</sup>

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<sup>89</sup> Kenneth Keele, “Leonardo Da Vinci’s Influence on Renaissance Anatomy,” *Medical History* 8, no. 4 (1964): 360-370. See also Carmen Bambach, “Anatomy in the Renaissance,” in *Heilbrunn Timeline of Art History* (New York: The Metropolitan Museum of Art, 2000–), last modified October 2002, [http://www.metmuseum.org/toah/hd/anat/hd\\_anat.htm](http://www.metmuseum.org/toah/hd/anat/hd_anat.htm).

<sup>90</sup> John Curtis Creed, “Leonardo da Vinci, Vitruvian Man,” *JAMA* 256, no. 12 (1986): 1541.

<sup>91</sup> Vitruvius, *On Architecture*, trans. Frank Granger (London: William Heinmann, 1931), 161.

Leonardo da Vinci's rendering of a man within a circle and a square expresses this concept of divine harmony making it an iconic symbolization of the "creation of man in the image of God."<sup>92</sup> In keeping with this thought, Luca Pacioli, mathematician and friend of Leonardo da Vinci wrote in his *De Divina Proportione*:

After having considered the right arrangement of the human body the ancients proportioned all their works, particularly the temples, in accordance with it. For in the human body they find the two main figures without which it is impossible to achieve anything, namely the perfect circle...and the square.<sup>93</sup>

In this passage, Pacioli was expressing what art historian Kenneth Clark contends is the legacy of Vitruvian Man, stating that it is "impossible to exaggerate what this simple-looking proposition meant to the men of the Renaissance. To them it far more than a convenient rule; it was the foundation of a whole philosophy."<sup>94</sup> Joseph Pugliese agrees, arguing that by framing the white male in this manner, da Vinci effectively "establishes a type of matrix that disciplines the very contours of the human body and determines the normative dimensions and figurations of its features and its surfaces" and thus the white male "emerges as the exemplar of perfect corporeal symmetry."<sup>95</sup>

In consequence, a diagrammatic strategy of staging the white male as the central dominant figure was to be repeated all throughout anatomical illustration. Vitruvian man became *the* normative human body image, the one which all others have followed, consolidating a visual regime that efficiently structured and disciplined illustrators of the human body to prioritize only representations that were perfectly proportioned—the white male. The result of this visual regime and philosophy that positioned the white male body as the epitome of proper proportion is that anatomical illustrators, even as individual variation often suggested otherwise, came to envision and subsequently depict the European male body as the, albeit idealized, standard human form. And this visual regime, suggests Pugliese, is where the "entire tradition of colonial visuality achieves its signifying power" as anatomical sciences henceforth were then predicated on the notion

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<sup>92</sup> Creed, "Vitruvian Man," 1541.

<sup>93</sup> Luca Pacioli, *De divina proportione* [On the Divine Proportion], ed. Antonio Capella (Venice: Paganino Paganini, 1509), 64.

<sup>94</sup> Kenneth Clark, *The Nude: A Study of Ideal Art*. (Harmondsworth: Penguin, 1960), 13.

<sup>95</sup> Pugliese, "'Demonstrative Evidence,'" 293-294.

that the white male body was the normal body, *the* normative universal body, against which all other bodies were to be measured.<sup>96</sup>

The impact of Leonardo da Vinci's Vitruvian Man, and the philosophy behind it, on the science of medicine and anatomical illustrations blossomed in the mid-16<sup>th</sup> century when mapping the body on the macro level for didactic purposes began to take off in earnest. As each anatomist suited up, what met them was an untamed wilderness of viscera, effluvia, blood, bone, organs and offal. The interior, less than magnificent in form than the imagined ideal, was overwhelming and unruly. The anatomists, so eager to dismantle the body, once they opened up the corpse were immediately confronted with the realization that "the spatial displacements of the dismemberment disturb the conceptual properties of the body."<sup>97</sup> Very quickly the concept of divinely wrought proportionality disintegrated amidst the reality of a lived, now dead and decomposing body. The anatomists knew there was an order to the chaos, but to discover it one had to be able to see past the disorder wrought by the violation of the knife. Because what became lost in that violation was the ideal body, it was the job of the anatomist to relocate this transfigured new body back to the ideal. Simply put, each encounter between anatomist and body required layered explanations so that the chaos that had been unleashed could be put into proper order and perspective.

It was in this confrontation with the interior where the detailed descriptions of the connections and processes found within the body and where the visual re-ordering of the body in an illustrative manner aided the anatomist to see the body as it 'should be' in their minds in spite of the confused, and smelly, jumble in front of them. Names, anatomists learned, could denote 'places' within the body but they could not give meaning. Oral and textual descriptions were fine but, like the names of the structures, they only went so far. For function to fuse with morphology, and for purpose and meaning to merge, illustrations were required to provide context and a visual map. So, as the use of medical illustration expanded its reach deep into the cavities of the body to become the voice of the interior, text, long dominant as the record of the body, began to

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<sup>96</sup> Ibid, 294.

<sup>97</sup> Katharine Young. "Still Life with Corpse: Management of the Grotesque Body in Medicine," in *Bodylore*, ed. K. Young (Knoxville: University of Tennessee Press, 1993), 117.

decline in importance.<sup>98</sup> Prior to the upsurge of illustration, text had largely served as a descriptive guide to the geography of the body but when illustration began to speak louder than the words, description of morphology was replaced with explanations about how morphology and function worked together since what the pictures needed was context, a topological legend of sorts, to detail the terrain for the onlooker.<sup>99</sup>

Thus, the prioritizing of medical illustration over text to transfer information meant illustrations needed to *say something* that text alone could not. To help the student see the human body and the normative lessons being taught many anatomists sought to depict the multifaceted and oftentimes chaotic interior with an idealized type of accuracy. The aim of anatomical illustration, according to 19<sup>th</sup> century anatomist John Bell, was to harmonize “those notions which are to be conveyed by words, and those which speak to the eye” to give what he called a “truer language of [the] subject.”<sup>100</sup> For anatomists like Bell, text and illustration needed to be “wrought into one perfect whole; being as two parts of one idea, or as one presented in double form, once to the eye, and once again to the ear” to serve as a kind of educational immersion for students in anatomy.<sup>101</sup>

The business of somatic cartography was a complicated one and, as the anatomists were beginning to discover as they delved deeper and deeper into the body, for every place mapped a dozen new places and connections materialized. As every macro inch of the body was systematically ‘discovered’ and the proper name applied, illustrated sections could then help the viewer focus their eye where it needed to be, and visual explanations could give meaning to the confusing jumble of fleshy tubes, valleys, mountains, and rivers that composed the body’s interior.<sup>102</sup> Naming and describing had yielded an unexpectedly expansive list of discoveries, a list that was getting more

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<sup>98</sup> Barbara Maria Stafford, *Body Criticism: Imaging the Unseen in Enlightenment Art and Medicine* (Cambridge: The MIT Press, 1993); Sawday, *The Body Emblazoned*, 133-134. See also Berkowitz, “The Beauty of Anatomy” 256.

<sup>99</sup> Early examples of textual descriptions of anatomy would be Aristotle’s *History of Animals*, *Parts of Animals* and *Generations of Animals*, as well as Galen’s *On anatomical procedure* and *On the uses of the parts of the body of man*. Early 16<sup>th</sup> century examples include Antonio Benivieni’s pathological study *De Abditis Morborum Causis* (*The Hidden Causes of Disease*) and Alessandro Achillini’s *De humani corporis anatomia* and *Annotationes anatomicae*.

<sup>100</sup> John Bell, *Engravings of the Bones, Muscles, and Joints*, 3<sup>rd</sup> edition (London: Longman, Hurst, Rees, and Orme, Paternoster-Row, and T, Cadell and W. Davies, Strand, 1810), iii.

<sup>101</sup> *Ibid*, ii.

<sup>102</sup> Datson and Galison, “The Image of Objectivity.”



challenging to make sense of. As an anatomist perfected his or her craft through multiple dissection they began to realize that individual bodies were prone to variation. As cumulative dissection experience built up the individual body was understood as a manifestation of instances and anatomical illustrations that showed one individual's morphology were deemed unsuitable for didactic purposes.<sup>103</sup> Variation in cadavers on the dissecting tables was proving to be the bane of anatomists in the teaching of their students. Showcasing individual variation proved to be counterproductive to the pedagogical purposes of the illustrations. The proportion and symmetry of the ideal form exhibited by Vitruvian Man, was often challenged by the variation of the individual and lost in the anatomization.<sup>104</sup> To impose order, therefore, some forms of censoring were necessary and subsequently undertaken so that a more normative body could be illustrated and used to teach lessons about what the body should be.

Eventually anatomists realized the solution to the dilemma of variation was codification in the form of compilations of illustrations into atlases.<sup>105</sup> It had worked for the Hippocratics in text form but what was needed in an atlas was an illustration accompanied by limited amounts of text to put name to morphology, to delineate connections and explicate function. Codification required that the disarticulated corpse be reassembled back into an illustrated body which in turn could then be transformed into a universal working object. To this end, an accurate compilation of the discoveries built from firsthand experience and direct observation needed to be illustrated in a format that could re-embody the disarticulated body into a normalized prototype to accessibly explain what should be present in the body, how the body functioned and why the body functioned. Manifestations of instances, the variations that confused that pedagogical purpose, could subsequently be suppressed through the creation of the ought-to-be-body so students and practicing physicians alike would know just what to expect from a normally functioning human body.

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<sup>103</sup> Young, "Still Life with Corpse."

<sup>104</sup> See Bernhard Siegfried Albinus, "An Historical Account of the Work." *Tables of the Skeleton and Muscles of the Human Body* (London: John and Paul Knapton, 1749), XIV. Albinus admits to 'remedying' areas of the anatomy that he felt were not properly symmetrical in the anatomical illustrations that graced his seminal work on the skeleton.

<sup>105</sup> Andrea Carlino, *Books of the Body* (Chicago: University of Chicago Press, 1999); Datson and Galison, *Objectivity*.

### 3.2 Codifying the Exemplary

One of the greatest anatomists to emerge out of the 16<sup>th</sup> century and take up this challenge of codifying the visual language of the body was anatomist exemplar Andreas Vesalius, who created an anatomical atlas that confronted the conventional descriptive understandings of the body laid down by the early body-landscape anatomists like the heretofore unassailable Galen. For Vesalius, the art of anatomy was a pedagogical one and while scholars like Galen wrote to educate, much of their work was speculative since proscriptions against dissection made seeing what was within often an exercise in imaginative guesswork based on comparative studies with animals. Vesalius's vision, when he decided to publish documentation of his extensive experience in the anatomy theatre, was a more egalitarian one. His own anatomical education was typical of the pedagogy of the era, where recitation of Galen was often done by a lecturer while a demonstration of the relevant structures was pointed out by a subordinate as another cut into the cadaver to reveal what was being described:

The deplorable division of the art of treatment introduced into the schools that detestable procedure by which usually some conduct the dissection of the human body and others present the account of its parts, the latter like jackdaws aloft in their high chair, with egregious arrogance croaking things they have never investigated but merely committed to memory from books of others, or reading what has already been described. The former are so ignorant of languages that they are unable to explain the dissection to the spectators and muddle what ought to be displayed according to the instructions of the physician who, since he has never applied his hand to the dissection of the body, haughtily governs the ship from a manual. Thus everything is wrongly taught in the schools, and days are wasted in ridiculous questions so that in such confusion less is presented to the spectators than a butcher in his stall could teach a physician.<sup>106</sup>

What Vesalius was determined to reveal was a much different body than that of his forbearers, and his lessons for his students in the dissection theatre, accompanied by illustrations later to be found in his atlases, were interactive and highly structured in way that insured the lesson being taught was not subject to distractions by the cadaver itself.<sup>107</sup> Vesalius upended the pedagogical strategy employed in traditional medical

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<sup>106</sup> C. Donald O'Malley, *Andreas Vesalius of Brussels, 1514-1564* (Berkeley: University of California Press, 1964), 319-320. This remains to this day one of the most detailed and accessible biographies of Vesalius and his *Fabrica*.

<sup>107</sup>Ibid. See also Harcourt, "Andreas Vesalius and the Anatomy of Antique Sculpture".

schools where there was a strict adherence to the descriptive musings of Galen by a lecturer as the surgeon cut and hacked his way through the body for an audience of students. In that scenario, Galen could not be challenged and Galen's words were preached as gospel regardless of what the dissected body revealed on the table. Vesalius knew that the interior of the body was difficult to comprehend and by creating a fundamental illustrative program to accompany his lectures to students about the body, he could control not only what his students saw but also what the body itself was displaying.<sup>108</sup> Gone was the anatomist of old who placed his faith in written accounts of the body, and in its place was a hands-on narrator-anatomist to tell the story of the body with words, demonstration and illustration. Manifestations of instances could then be managed and re-articulated to become the embodiment of the norms to be demonstrated.<sup>109</sup>

Vesalius and his illustrator took full advantage of the relatively new technology and power of the printing press with its accompanying typesetters, artists and block-cutters to make his *tour-de-force De humani corporis fabrica* [The Fabric of the Human Body] published in 1543, into a grand spectacle. Accompanying the *Fabrica* was a companion piece entitled *Epitome* which was designed to serve as a smaller and more affordable instructional manual for students.<sup>110</sup> The *Fabrica*, in its 700 plus pages and over 200 anatomical figures, “was both a landmark in the history of medical publishing and the concrete embodiment of a major step in the evolution of scientific medicine.”<sup>111</sup> In Vesalius's hand, no longer was anatomy an afterthought in medical teaching, taught strictly through lecture, it was now the centrepiece, one that was detailed, interactive and interconnected.

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<sup>108</sup> Charles Singer and C. Rabin, *A Prelude to Modern Science* (Cambridge: Cambridge University Press, 1946), viii.

<sup>109</sup> O'Malley, *Andreas Vesalius of Brussels*; Harcourt, “Anatomy of Antique Sculpture.”

<sup>110</sup> O'Malley, *Andreas Vesalius of Brussels*, 184. For another detailed description of the features of the *Fabrica* and *Epitome* see Sachiko Kusukawa, “Andreas Vesalius and the Canonisation of the Human Body—Res, Verba, Picture,” paper presented at Princeton University Colloquium—*Seeing Science: Image, Text, and Nature: 1500-1800*, Princeton, New Jersey, March 2005, accessed November 22<sup>nd</sup>, 2014. <https://www.princeton.edu/~hos/Seeing%20Sciences%20Wkshp/SeeingSciencePapers/paper-kusukawa.pdf> The *Epitome* was a handbook for students and the more expensive *Fabrica* was more suitable for Vesalius's medical colleagues. For purposes of this paper *Fabrica* will be used to discuss both the *Fabrica* and the *Epitome*.

<sup>111</sup> Harcourt, “Anatomy of Antique Sculpture,” 28.

Both the *Fabrica* and the *Epitome* are illustrated masterpieces, negotiating and establishing a discourse between the visual and the verbal by combining illustration with instructional text that taught the reader how to view the body from book to dissecting table.<sup>112</sup> Through his ingenious sequential arrangements, Vesalius was able to slowly peel back complex layer after complex layer of the human body to reveal the body's inner workings in an easy to follow and effortless manner. His illustrations highlighted the interrelationships between the depicted parts and his pictures positioned the parts in question in unique arrangements that allowed for visualization of 'parts hidden by parts.' He did so, particularly in the myological (muscles) series, by directing his readers to view a figure then contrast it to the preceding and succeeding figures so that a sense of what was above and beneath the depicted layer could be incorporated into a mental vision of the interrelated structures.<sup>113</sup> In this manner, morphology and function could not be separated and the reader saw that what lie beneath determined the outside form.

The myological and osteological (bones) illustrations were mannerist, sophisticated, highly animated, yet oddly contrived with the flayed male corpses and skeletons posing dramatically, displaying form and function in a way text could not convey. The visceral representations, however, were decidedly classical in their style, heavily reminiscent of ancient Greek statuary which was more often than not an image of the Greek male and which invoked an idealized sense of a smooth, clean, and robust body. The combined styles allowed Vesalius to create a "distinct disassociation of the "natural" body...from its anatomized image"<sup>114</sup> and present the human form as a canonical body.<sup>115</sup>

This canonical body harkened back to the teachings by the redoubtable Galen on the important relationship between a perfectly, well-proportioned and symmetrical male form (in the manner of Polykleitos's statue *Canon*) and the health of that form.<sup>116</sup> For

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<sup>112</sup> Vivian Nutton, "Vesalius Revisited: His Annotation to the 1555 *Fabrica*," *Medical History* 56, no.4 (2012): 416. See also Harcourt, "Anatomy of Antique Sculpture," 28 and Kusukawa, "Canonisation," 5.

<sup>113</sup> Kusukawa, "Canonisation," 5.

<sup>114</sup> Harcourt, "Anatomy of Antique Sculpture," 29.

<sup>115</sup> Kusukawa, "Canonisation," 9. See also Nancy Siraisi, "Vesalius and Human Diversity in *De humani corporis fabrica*," *Journal of the Warburg and Courtauld Institutes* 57 (1994).

<sup>116</sup> Discussion on the understandings of the well-proportioned form found in Andrew Stewart, "The Canon of Polykleitos: A Question of Evidence," *Journal of Hellenistic Studies* 98 (1978): 122-131.

Galen, Polykleitos's *Canon* represented not just perfect proportionality, it was also a body of perfect balance and morality, one he claimed that was "very rarely exemplified and could only be grasped through extraordinary dedication, experience and study."<sup>117</sup> In Vesalius's words, "the body employed for public dissection [should] be as normal as possible according to its sex and of medium age, so that you may compare other bodies to it, as if to the statue of Polykleitos."<sup>118</sup> The same held true of those bodies depicted in his *Fabrica*, it was important to avoid exposing students to too many variations and anatomy that did not conform to the "perfect man" lest students become confused and unable to distinguish between the perfect and the imperfect:

...if I observe these things [variations] in the course of carrying out public dissections, I pass them over in silence as if they did not exist, lest candidates in arts should think these things are to be observed in all bodies. The more pertinaciously they admire those monstrous things--as I have learned more than once from experience--the more attentively I have thought that this should be done, not only in dissections but now in following through the history of perfect man. Since it would be a considerable disadvantage for them to have chanced upon such a body, which varies greatly from the canon of men, for the entire dissection, unless perhaps they had [previously] been present frequently at dissections of perfect and not monstrous men.<sup>119</sup>

This distinction Vesalius was making is an important pedagogical point. In order to control what his students saw and therefore came to know, Vesalius chose not only in his lectures, but also in his illustrations, to deliberately ignore any physical difference displayed by the cadaver from the idealized 'canon of men' in effort to limit distractions from his didactic purpose. What is interesting about his style of teaching was that it, in some respects, diverged very little from the traditional lecturing method he was so dismissive of, where variations that did not conform to the words of Galen were ignored as if they did not exist. In Vesalius's hands variations that did exist in the body were passed over in a similar manner, as if they did not exist, when they did not conform to his epistemic intentions.

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<sup>117</sup> Kusukawa, "Canonisation," 9.

<sup>118</sup> O'Malley, *Andreas Vesalius of Brussels*, 343.

<sup>119</sup> *Fabrica*, as quoted in Siraisi, "Vesalius and Human Diversity," 68. For other versions of this quote, see also Kusukawa, "Canonisation," 8-9, as well as William L. Straus, Jr. and Oswei Temkin, "Vesalius and the Problem of Variability," *Bulletin of the History of Medicine* 14, no. 5 (1943): 609-633.

Vesalius's representational strategy was similar in many ways to the traditional methods of teaching employed in his time, as he supplied his students, in advance, a predetermined set of illustrations of the anatomy they would be examining, choosing carefully what was to be seen in a clean copy free of the distracting mess of the interior body.<sup>120</sup> These illustrations were then displayed during the dissection to facilitate the visual acquisition of the lesson. Only then did Vesalius allow his students to see, in the body proper, that which they had already memorized from his diagrams. In this manner, Vesalius could impose a visual order of the interior of the body on the minds of his students before they ever saw the body's interior for themselves. This strategy taught the students to see what Vesalius wanted them to see rather than what was actually before them.<sup>121</sup>

It is important to understand that Vesalius's illustrated bodies like most anatomical illustrations, as I noted in the previous chapter, were rarely pictures drawn from one particular body. Rather they are composite bodies, drawn from the dissections of several different bodies. One body was but an instance, and for the anatomist to know what, for example, a gastrocnemius muscle looked like, how it attached, and how it functioned in conjunction with the tissues around it, a dozen or perhaps even dozens of gastrocnemius muscles must be examined before one can ever be committed to paper. This distinction is significant, one single anatomical drawing was a composite representational human, a layered rendering that was not reflective of any one person but rather a series of people. Students of anatomy in Vesalius's time may have been exposed to several cadavers but they usually only participated in the dissection of one, maybe two bodies. And each body, without exception, was different from the body next to it. Variation, remember, is the rule in nature rather than the exception. The job of anatomical illustrations, therefore, was to fill in the gaps, to help blur out the variations on the dissecting table and remold the vision of the body in the mind minus the exceptions.

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<sup>120</sup> See Harcourt, "Anatomy of Antique Sculpture;" Siraisi, "Human Diversity;" Nutton, "Vesalius Revisited;" and Kusakawa, "Canonisation."

<sup>121</sup> Singe and Rabin, *Prelude*.

A visual strategy like that employed by Vesalius falls under what was discussed in chapter two in relation to the principles of generation and the discussion of imaginings that are mandated to be invoked by the use of a representation. What was designed by Vesalius was done so to encourage the viewer to see the representation and generate a set of fictional ‘truths’ or beliefs about the status of the object represented.<sup>122</sup> By presenting to students, before and after the viewing of the cadaver, repeated imagery encoded with the concepts being taught, Vesalius was able to reify in his student’s minds the type of body and the concepts they *should* be seeing--in this case what a ‘normal’ body looked like. Vesalius’s students would learn to see not what was necessarily in front of them, which was but an instance, but rather a more enduring, foundational and universal vision of the body.

Through his illustrations, Vesalius was able to craft fictional narratives replete with a story that removed the living person from their history and built an entirely new narrative around the dead, dissected and illustrated body. This new narrative could be anchored to the muscles, bones and organs of the previous lived body and could be crafted in a manner that allowed Vesalius to control just what story the image was telling. This fictional body, with its constructed back story, could then be seen as having legitimate biological foundations, thus, the drawn muscles, for instance, reflected back a mirror-ish image of the muscles of the subjects they were crafted in the manner of. The fictional body and the narrative that developed upon seeing it reflected not the *particular* reality of what the subject’s body was, rather it exhibited a type of nearly-true or, better yet, could-be-true universal reality of what the human body could ideally have been.

This creation of a fictional narrative in anatomical illustrations has both deliberately obvious and subliminal results. It allowed the specific lesson being imparted by the illustration to be learned while at the same time embedding subtle, and in some cases, even more enduring sorts of fictional truths about what form (and type) the body *was supposed to be*. Or even, to go a step further, to what the body could be if it had not deviated from the norm. Vesalius wanted to teach students what the body, in his estimation, was supposed to look like rather than what it did look like in each different instance. Vesalius chose to teach his students not to so much as ‘see past’ the variations

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<sup>122</sup> Walton, *Mimesis as Make-Believe*, 38.

but rather to not see the variations at all. By silently passing over variation and excluding it from his illustrations, Vesalius built a body in the minds of his students that was inevitably male and fulfilled his “criterion of physical perfection, which combined the internal physiological ideal of harmoniously balanced temperament with an artistic standard of beauty in external proportions” thus giving his students a body did not exist in nature but one that would be fixed in their understanding as what the body should be.<sup>123</sup>

Attempts by anatomists prior to Vesalius to create a visual story of the body had relied on anatomical images that were more concerned with artistic style than they were with anatomical fidelity because the primary goal of many of those treatises was to present the human body as a beautifully wrought, perfectly proportioned creation.<sup>124</sup> And like the anatomists before him, part of Vesalius’s focus in the *Fabrica* was the presentation of the male body as a canonical figure but unlike his predecessors he believed that to achieve that goal the interior anatomy of the body needed to be revealed in a highly idealized but accurate manner. The types of bodies Vesalius had access to, criminals who had languished in prison and met their fate on the gibbet, were rarely superior specimens. In fact, many of the bodies Vesalius acquired were in advanced stages of decomposition or were disarticulated due to the time they spent hanging as a warning to the public.<sup>125</sup> Consequently, Vesalius had to piece the bodies back together in a way that made them useful for pedagogical and illustrative purposes, and like his students he had to look past the obvious flaws and rot to see the canonical body he would eventually design for the pages of his *Fabrica*. So powerful was the cultural narrative that surrounded the male body as a canonical form designed by God that in spite his of repeated exposure to bodies which clearly contravened that narrative Vesalius still saw and drew the anatomy in way that was true to that form.

By presenting his illustrations in classical and idealized depictions, Vesalius could then serve up a biologically supported ‘truth’ of the human body in a putatively

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<sup>123</sup> Siraisi, “Human Diversity,” 70-71.

<sup>124</sup> See, for example, Jacopo Berengario da Carpi, *Isagogae breues, perlucidae ac uberrimae, in anatomiam humani corporis a communi medicorum academia usitatam* (Bologna: Beneditcus Hector, 1523), Last Modified June 5<sup>th</sup>, 2012. [https://www.nlm.nih.gov/exhibition/historicalanatomies/berengario\\_bio.html](https://www.nlm.nih.gov/exhibition/historicalanatomies/berengario_bio.html)

<sup>125</sup> O’Malley, *Andreas Vesalius of Brussels*; Harcourt, “Anatomy of Antique Sculpture;” Singer, *A Prelude to Modern Science*.



normative manner. The classical statuary and imagery so heavily relied on by Vesalius in his *Fabrica* and *Epitome* was marked by a heavy adherence to a well-proportioned, symmetrical, well-muscled, ideal male body (Fig. 4). This visual rhetoric in the systematic presentation of the canonical structures employed by Vesalius implicitly and explicitly created a human anatomical norm that was established through an arrangement and emphasis of a specific type of body and body parts in the depictions. The factional nature of the images in both the *Fabrica* and the *Epitome* were particularly effective in establishing the canonical narrative as normative because they were not only rooted in the biology of the bodies Vesalius had illustrated, they were also connected to a historically admired and trusted style of artistic expression. The use of Classical Greek statuary was a brilliant choice by Vesalius, as art of this nature was also rooted in a deep study of the biology of the body, giving the images a feel of historical accuracy. The credibility of these images made the factional story told by Vesalius about the body compelling, convincing and enduring.

With the reinforcement of illustration and text combined, Vesalius's *Fabrica* was able to create an entire body of knowledge in illustration after illustration that was built up and down of a structurally 'normal,' yet highly idealized, Classical Greek, or in more contemporary terms, Caucasian male human form. For Vesalius, if a student of anatomy was to learn how to make the contextual distinctions, the student needed to be presented with visual imagery that was as close to perfect or ideal as possible, in the form of not only the body to be dissected but also in the illustrations of the individual body parts being studied. Simply, if Vesalius's students were presented with repeated images of a 'perfect' or 'normal' white male body they would eventually learn to identify, automatically, the differences between a 'normal' body and, by extension, its opposite the abnormal body, which was any body that did not conform to the canonical Classical Greek male form.

The important take away here is that the influence of Vesalius on the burgeoning science of anatomy and its pedagogical leanings is without parallel. His *Fabrica*, and its more popularly used *Epitome* set the standard for anatomical atlases makers of the Renaissance and according to art historian Martin Kemp, "there is evidence to suggest

that it retained its hold as a source book for artists until the early nineteenth century.”<sup>126</sup> This distinction of Kemp’s, and other scholars’,<sup>127</sup> regarding the importance of Vesalius’s contribution to the science of anatomy is a key point. In both the *Fabrica* and the *Epitome*, Vesalius and his illustrators were able to create remarkably detailed fictional bodies that transcended any actual human form, without all of its vagaries and variations. Vesalius designed a perfect, (white) male human form that did not exist in nature and revealed it to his audiences of fellow anatomists and medical students as the *fait accompli* human form, a canonical human form that ought-to-be which was accepted as *the* normative universal body. Through his atlases generations of scholars and students learned to see, expect, accept and *know* a fictional body, a body that *was not real* but which came to be treated as more real than the individual instances that populated the space around them. And it was this fictional body, a ‘based-on-a-true-story’ version of the dissected bodies that graced Vesalius’s laboratory table, which became fixed in anatomical understanding as *the* human body.

### 3.3 The Legacy of the Canon Body

And what began in the 16<sup>th</sup> century with Vesalius did not end there as anatomists, anatomical artists and anatomical illustrations continued to build upon the visual tradition so masterfully begun by Vesalius. As the tendrils of the Scientific Revolution began to take root, anatomists, increasingly emboldened by the success of the fictional normative universal body as a pedagogical tool, continued to exploit its manipulability as an opportunity to showcase their expert knowledge. As each anatomist generated their versions of the illustrated body, they contributed to a growing pile of layers upon layers of similar fictional renderings. These visual fictions continued to effectively provide the science of anatomy, and by extension all human biological sciences, hundreds of years’ worth of seemingly peer-reviewed documentation that served as series of proofs that the normal human body was white and male. And as the Renaissance gave way to the

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<sup>126</sup> Martin Kemp, “A Drawing for the *Fabrica*; And Some Thoughts upon the Vesalius Muscle-Men,” *Medical History* 14, no. 3 (1970): 288.

<sup>127</sup> See Reinhard Hildebrand, “Attic Perfection in Anatomy: Bernhard Siegfried Albinus (1697-1770) and Samuel Thomas Soemmerring (1755-1830),” *Annals of Anatomy* 187 (2005): 555-573, as well as Harcourt, “Anatomy of Antique Sculpture,” Kusukawa, “Canonisation” and O’Malley, *Andreas Vesalius of Brussels*.

Scientific Revolution and the Age of Enlightenment, anatomical atlases, treatises and medical texts heavily influenced by Vesalius and his vision of the perfect man designed by God continued, with a few specific exceptions, to predominantly feature white male cadavers, continually presenting the white male body as the *de facto* normative model for the human form.<sup>128</sup>

In the early years of anatomical illustration prior to the 18<sup>th</sup> century, the female body was largely ignored, except in atlases featuring reproduction and fetal development. The ‘coloured’ body, when discussed, was consigned to the pages reserved for the anomalous and the exotic, often being compared to the great apes and other animals (Fig. 5).<sup>129</sup> The trend in normative anatomical science, well into the 18<sup>th</sup> century, to centralize the white, male body was partially due to circumstance, as access to bodies for dissection was limited by religious, political and social reasons for hundreds of years in many European countries. Consequently, the usual bodies available for study after death were those of criminals, a population that was predominately white and male.<sup>130</sup> And while access certainly played a large part in the deliberate centralizing of the white male body in the atlas and anatomical image-making disciplines, it was hardly the only reason this epistemic strategy remained so firmly entrenched. The decision to feature European male bodies was, in many ways, still for the same aesthetic reasons as Vesalius’s choice to make the European male the focus of his study two hundred years previously—the pursuit of the canonical body.

The canonical body, as an iconic symbol of the perfectly proportioned and aesthetically beautiful human form, was considered to be an embodied example of the

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<sup>128</sup> Carlino, *Books of the Body*. See also Lyle Massey, “Pregnancy and Pathology: Picturing Childbirth in Eighteenth-Century Obstetric Atlases,” *The Art Bulletin* 87, no. 1 (2005): 75.

<sup>129</sup> Europeans has a long history of delegating the non-white body to the realm of the bestial. Pliny the Elder’s *Historia Naturalis* (Pliny the Elder, *Historia Naturalis*, trans. H. Rackham (Cambridge: Harvard University Press, 1938), vol. 2, book 7, 507-527) contained a number of monstrous races described in bestial terms from far flung corners of the earth. See also Schiebinger, Londa. 1986. “Skeletons in the Closet,” 42-82; and Schiebinger, “The Anatomy of Difference,” 387-405, as well as Anne Fausto-Sterling, “Gender, Race, and Nation: The Comparative Anatomy of ‘Hottentot’ Women in Europe, 1815-1817,” In *Deviant Bodies: Critical Perspectives on Difference in Science and Popular Culture*, ed. Jennifer Terry and Jacqueline Urla (Bloomington: Indiana University Press, 1995), 19-48, for more discussion on this topic.

<sup>130</sup> See Michael Sappol, *A Traffic of Dead Bodies: Anatomy and Embodied Social Identity in Nineteenth-Century America* (Princeton: Princeton University Press, 2002); Richardson, *Death, Dissection and the Destitute*; and Sawday, *The Body Emblazoned* for an in depth discussion on this topic.

pinnacle of human achievement and morality.<sup>131</sup> This Classical Greek vision of the body saw the male human as Nature's masterpiece, and in Vesalius's hand this sentiment was echoed as he exhibited the human body as an extraordinarily intricate 'fabric' which when studied could be shown to be work of God, stating, "the wonderful knowledge of the human body attests the wisdom of the immense Creator."<sup>132</sup> Vesalius's use of flayed canonical bodies posing and strutting dramatically across the pages of his *Fabrica*, alongside images that brought to mind the smooth and beautiful lines of Classical Greek statuary had remained the standard to be measured by in the creation of anatomical illustrations. Amid the explosion in the production of anatomical atlases in the 18<sup>th</sup> century, many of the anatomists worked diligently to find a way to display, illustratively, *homo absolutus*, the perfect man.<sup>133</sup> This was a body which knowledge of, the great Vesalius argued, was only obtainable through the correct application of skilled dissection techniques to train the disciplinary eye which led to the acquisition of expert understanding of the body. If an anatomist could uncover knowledge of the elusive *homo absolutus*, then surely the best way to share that knowledge was through the production of a series of anatomical images that could be admired by one's peers and be used to teach the next generation of practicing physicians.

The pursuit of *homo absolutus* meant that atlases presented disproportionate numbers of white male bodies amongst their pages. Anatomists understood the 'perfect man' to be just that, a man. And as such an inordinate amount of time was devoted to the deep study of the European male in an effort to connect him to the 'image of God' and to place him in relation to everything in the natural world. The European man was understood as the pinnacle of God's creation and anatomists were determined to commit that knowledge to paper. This sentiment is echoed in the highly influential work of Bernhard Siegfried Albinus's *Tables of the Skeleton and Muscles of the Human Body* in 1749, who states:

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<sup>131</sup> Kusukawa, "Canonisation."

<sup>132</sup> O'Malley, *Andreas Vesalius of Brussels*, 276.

<sup>133</sup> *Ibid*, 9. See also Hildebrand, "Attic Perfection in Anatomy;" and Chiara Ambrosio, "Objectivity and Representative Practices Across Artistic and Scientific Visualization." In *Visualization in the Age of Computerization*, ed. Annamaria Carusi, et al, Routledge studies in Science, Technology and Society (New York: Routledge, 2014), 120.

And as skeletons differ from one another, not only as to age, sex, stature and perfection of the bones, but likewise in the marks of strength, beauty and make of the whole; I made choice of one that might discover signs of both strength and agility; the whole of it elegant, and at the same time not too delicate; so as to neither shew a juvenile or feminine roundness and slenderness, nor on the contrary an unpolished roughness and clumsiness; in short all of the parts of it beautiful and pleasing to the eye. For as I wanted to shew an example of nature, I chused to take it from the best pattern of nature.<sup>134</sup>

*Tables of the Skeleton and Muscles of the Human Body* by Albinus was a seminal piece of work, one that in a similar manner to Vesalius before him, influenced and inspired anatomists for nearly a hundred years. Many anatomists sought to mimic the precision and accuracy of Albinus's work, seeking to find the perfection of form that Albinus had seemingly uncovered.<sup>135</sup> Albinus spent a significant amount of time creating his *Tables of the Skeleton*, determined to showcase the human form, a very specific human form that of "the male sex, of a middle stature, and very well proportioned; of the most perfect kind, without any blemish or deformity" in the most precise and accurate a manner as possible.<sup>136</sup> But even Albinus, whose exacting standards bordered on the fanatical, was unable to find "the most perfect kind" in the bodies he chose for his project. As a result, he was forced to swap out different parts of the skeleton for others from a multitude of different skeletons and correct anomalies in the engravings when the anatomy did not conform to his expectations, in order to assure that the skeletons he did have illustrated were the most symmetrical and harmonious in looks.<sup>137</sup> Much like Vesalius, Albinus seemed determined to create fictional images in a visual language that represented not necessarily was what seen on the dissecting table but rather what should be seen.

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<sup>134</sup> Albinus, "An Historical Account of the Work," XIV.

<sup>135</sup> Albinus inspired several atlas makers including Samuel von Soemmerring, William Smellie, Charles Nicholas Jenty, William Hunter, John Bell and Charles Bell, all of whom created different atlases with different styles, perspectives and pedagogical purposes but all of whom attempted to be faithful to the precision and accuracy in illustration that Albinus's work displayed.

<sup>136</sup> *Ibid*, XIV.

<sup>137</sup> *Ibid*: XI and XIV.

### 3.4 Gender and Race Anatomized

The discourse of science evolving in the 18<sup>th</sup> century had begun to advance a different perspective on the conception of humans and their relation to the world. Prior to the 18<sup>th</sup> century and the Scientific Revolution, God had remained in the position of authority and as the locus for questions pertaining to the human self. Conceptions of the body and understanding of what it meant to be human were filtered through the authority of Christian doctrine. Revelations by Nicolaus Copernicus and Galileo Galilei in the 16<sup>th</sup> and 17<sup>th</sup> centuries challenged Christian understandings creating a fissure between religious faith and science. The result of the revolutionary ideas brought forth by Copernicus and Galileo was the beginnings of a new secularized Western philosophy that by the 18<sup>th</sup> century argued for an interpretation of Christianity grounded in reason rather than faith alone. As the Age of Enlightenment gathered significant steam, the emerging system of science endorsed the material body as the place to situate natural knowledge.<sup>138</sup> By concentrating on an analysis of the physical structures of the body, scientists were able to slowly usurp authority of the body away from theological discourse and position empirical observation as a superior method of procuring, interpreting and certifying knowledge.<sup>139</sup> The employment of the human body by natural philosophers and scientists as one of representative objects of scientific knowledge fixed the empirical eye on the visible, and heretofore invisible, structures of the body, to accumulate and build meaning about the body through direct, and ostensibly objective, observation.<sup>140</sup>

The increased focus on the employment of empirical investigation as a process of procuring natural knowledge promoted a vision of ‘objective truth’ as the underlying foundation of scientific discourse. And anatomy, dissection and illustration fit nicely into this new way of acquiring bodily, and by extension, natural knowledge.<sup>141</sup> The body, along with its structures and functions, had as far back as Hippocrates been an object of

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<sup>138</sup> Mary Flanagan and Austin Booth, *Reload: Rethinking Women Cyberculture* (Cambridge: MIT Press, 2002).

<sup>139</sup> Nancy Leys Stepan and Sander L. Gilman, “Appropriating the Idioms of Science: The Rejection of Scientific Racism,” in *The “Racial” Economy of Science: Toward a Democratic Future*, ed. Sarah Harding (Indiana University Press. Bloomington and Indianapolis, 1993), 175.

<sup>140</sup> See Datson and Galison, *Objectivity*; Stafford, *Body Criticism*; and Nancy Leys Stepan, “Race, Gender, Science and Citizenship.” *Gender & History* 10, no. 1 (1998): 26-52.

<sup>141</sup> Stafford, *Body Criticism*.

scrutiny in the pursuit of medical knowledge, but the use of the human body as the foundation for a new scientific system of knowledge that reached past the boundaries of medicine had a discernibly different method of conceptualizing the body. The body, in keeping with Cartesian philosophy, became a structure with systems that exhibited machine-like mechanical functions that could be manipulated to improve performance.<sup>142</sup>

Exploration of the anatomical body by scientists as a method for gathering knowledge was associated with many other developing forms of knowledge, most of which were an extension of the already existing project of colonial expansion.<sup>143</sup> The need to explore and discover the inner workings of the body through dissection and give voice to those discoveries through illustration was part of an overall cultural shift that placed great stock into the process of acquiring, classifying and ascribing meaning to natural knowledge through an accumulation of visual evidence. Colonial expansion into the New World through land and sea expeditions by the Europeans had exposed explorers to natural worlds replete with fascinating new discoveries in flora and fauna, terrain and people. Charting, mapping, classifying, sorting and arranging the new information was an enormous task and making sense of it all, interpreting what was being seen, challenged European understandings of the world and their place in it.

In response to the increased exposure natural philosophers were having to non-European bodies, scientists began to focus on the concept of difference. This specific focus led to a shift in vision from one aimed on pursuit of the *homo absolutus* to one centered on confirming the role of the European male as superior to all creatures in the natural world. Building on the work of the founders of the sciences of biology and anthropology, Linnaeus, Blumenbach and Buffon, scientists were able to turn their attention to the answering of questions about issues pertaining to non-white and female bodies which led to “a rendering of [those] groups as distinct in their biology and differentiated from an implicit white, male norm.”<sup>144</sup> The process of stripping the body, in anatomical study, of its substantiation and reducing it to a factional object allowed

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<sup>142</sup> Sawday, *The Body Emblazoned*, 31.

<sup>143</sup> Sawday, *The Body Emblazoned*. Much of Sawday’s book centers on this very idea of equating explorations of the interior of the body to the extensive imperial expansion that took place into the New World.

<sup>144</sup> Stepan, “Race, Gender, Science and Citizenship,” 29.

scientists a way, to paraphrase Nancy Leys Stepan, to ‘ontologize’ gender and racial difference which led to the scientific “construction of races and genders as natural, biologically grounded entities, entities which render its members lesser or even non-individuals”<sup>145</sup>

In keeping with the ongoing trends in anatomical science and its illustrative counterpart in this scheme of meaning focused on difference, bodies were once again reduced to key concepts, to factions, with crafted narratives that had nothing to do with the individual and everything to do with addressing pressing social concerns about finding a place for the different varieties of bodies along a continuum of hierarchal worthiness. Differences in things like skin colour, shape and size of the skull and sexual organs were measured in terms of bodily similarities to the established bodily norm, similarities moved the group closer to the norm, and differences moved it away.<sup>146</sup> The white male (European) body had representative status as the signifier of normal anatomy. Anatomical discourse was used to reduce racial and gender differences into bodily differences, *natural* differences, and if whiteness and maleness were the signifier of normality then difference from that norm were, in effect, deviations simpliciter.

The systematic factioning of the body, throughout the 18<sup>th</sup> and 19<sup>th</sup> centuries was a way to create clear lines of demarcation between the European body and all Other bodies and it was a way of ordering knowledge of foreign bodies, and the cultural baggage that came with them, through the lens of European-coloured glasses.<sup>147</sup> It is no surprise that the emergence of racial discourse during this era of great scientific upheaval was taken up in the work of naturalists like Buffon and Blumenbach, and later naturalists like Lamarck and Cuvier, who were known for their taxonomic work. The science of taxonomy, with its methods of ordering, classifying and defining biological organisms and hierarchically ranking them according to the complexity of their biological organization was in many ways the ideal fit for the task of sorting out varieties of humans. Taxonomic investigations were undertaken into the different varieties of bodies represented across the human species and ranked lists were created by comparing the

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<sup>145</sup> Ibid, 29.

<sup>146</sup> Stepan, “Race, Gender, Science and Citizenship;” Schiebinger, *The Anatomy of Difference*.

<sup>147</sup> See Schiebinger, *The Anatomy of Difference*; and Stepan, “Race, Gender, Science and Citizenship.”



bodies of Europeans to those of non-Europeans. The reduction of difference by naturalists like Blumenbach into a scientific discourse of ‘comparison to the norm’ of white and male meant that individual specificities were used to substantiate a non-white or non-male body as a representative of the larger racial or gender group.

This signification of the body was bound up in the concept of nation, and differences in bodies were understood as representative of the difference in whole nations of peoples.<sup>148</sup> By framing the debate about difference in terms of nation, anatomical, ethnographical, biological and anthropological investigations could be combined into a collaborative paradigm that placed European interests and European bodies as the centre and norm of scientific enquiry. The body and its connection to concepts surrounding nation became a space where debates about politics and human rights were transformed into a debate about nature and natural differences. Moral worthiness and equality could be then measured in terms of anatomy.<sup>149</sup>

By the late 18<sup>th</sup> century the burgeoning science of anthropology and anthropometrics in collaboration with anatomical science sought out measurable signs of visible (external) and invisible (internal) bodily differences. Anatomical illustration was employed to delineate differences from the norm and create factional narratives for the ‘bodies of difference’ to help weigh “the meaning of such differences for social reform and social policies.”<sup>150</sup> Similarities, like those allowed for between different groups of white males, meant “a political similarity in rights followed,” but “if bodily differences existed, then political differences in rights followed.”<sup>151</sup> In this manner, Stepan notes, “By being embodied as qualitatively different in their substantial natures—by creating group identities in difference—communities of individuals were placed outside the liberal universe of freedom, equality and rights.”<sup>152</sup>

These medical texts were studies steeped in ideology, and often spent significant amounts of page space detailing anatomical ‘evidence’ in the body, like poor hygiene or

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<sup>148</sup> Flanagan and Booth, *Reload: Rethinking Women Cyberculture*.

<sup>149</sup> Stepan, “Race, Gender, Science and Citizenship.”

<sup>150</sup> *Ibid*, 31.

<sup>151</sup> *Ibid*, 30.

<sup>152</sup> *Ibid*, 29.

sallow skin, as proof of the appropriateness of social and class conventions of the time.<sup>153</sup> It is important to understand that questions surrounding the social body varied from one geographical region to another. The result was an explosion of anatomical illustrations and anatomy atlases all across different European and American locales that were built to address any number of regional issues surrounding the body, like, for example, slavery, women's rights, motherhood, sexuality, and the role of midwives in childbirth.<sup>154</sup> One of the consequences of the designation of *less than* that was grafted on to the non-white and female body was the continuation of the exploitation of the non-white body as slave labour in the face of opposition by abolitionists and reaffirmation of the place of women in the role of motherhood and out of the academy and the political sphere more generally.

Phenotypical differences, particularly in the area of skin colour, placed the European men of science in a bit of a quandary, bringing forward questions about how it was possible that humans could look so different from one another if all peoples descended from Adam and Eve. In response, natural philosophers sought explanations that could account for phenotypical difference. Those who adhered to monogenism, the belief that humanity evolved from Adam and Eve, looked to the environment for their answers, positing the idea that skin colour and facial features changed in relation to where one lived. So, for example, those who lived in hot climates with significant exposure to the sun, like the denizens of the continent of Africa, would develop much darker skin and the suggestion was made that a move to a more northerly climate may eventually lead to the lightening of that skin.<sup>155</sup>

Environmental explanations did not satisfy many natural philosophers who felt that the broad range of phenotypical difference between people who were not European versus those who were Europeans must mean that different ancestors were responsible for the different types of people. The polygenists, who believed biblically-based monogenism could not account for such dramatic differences in people, raised questions about the origins of non-white bodies and whether or not they were of an entirely

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<sup>153</sup> Kelly E. Happe, "The Body of Race: Toward a Rhetorical Understanding of Racial Ideology," *Quarterly Journal of Speech* 99, no. 2 (2013): 131-155. See also Schiebinger, *The Anatomy of Difference*; and Fausto-Sterling, "Gender, Race, and Nation."

<sup>154</sup> See Jordanova, "Gender, Generation and Science;" and Massey, "Pregnancy and Pathology" for a discussion about the role of medicine in the removal of midwives as authorities in childbirth in England.

<sup>155</sup> Stephen Jay Gould, *The Mismeasure of Man* (Toronto: George J. McLeod Limited, 1981).

different species from white people and another category of human that required explanation.<sup>156</sup> The discomfort felt by the European men of science who felt the heretofore clear world order was being challenged was enormous, a challenge that could not go unanswered by those who had comfortably occupied the top spot in the natural world order since the time of Aristotle. Voltaire, an outspoken polygenist, speaking of people from distant shores, summed up the sentiments of many polygenists when he declared:

But what ugly people! What brutes! ...And it is a great question whether among them they are descendants of monkeys, or if monkeys come from them. Our wise men have said that man is the image of God: behold a pleasant image of the eternal Being with a flat black nose, with little or no intelligence! A time will come, without a doubt, when these animals will know how to cultivate the earth well, to embellish it with houses and gardens, and to know the routes of the stars. Time is a must, for everything.<sup>157</sup>

One of the ways some natural philosophers made sense of non-white bodies, which was helped along by earlier travelogues that described different ‘races’ of man,<sup>158</sup> was to invent taxonomic systems of human identification which built upon previous taxonomic systems of classification. The Great Chain of Being, the hierarchal linking of plants, animals and humanity which natural philosophers as far back as the Classical Era Greeks had devised and revised to determine the progression of life forms from the simplest of creatures (inferior) to the more complex humans (superior), was becoming crowded at the top. In response, natural philosophers from Linnaeus, Blumenbach, Lamarck to de Blainville, sought a way to hierarchically order and rank different groups of humans in a manner that would reinforce the position of the European over all other ‘races.’ Much like the science of anatomy and the evolution of anatomical illustration, the early science of difference steadily began to accumulate ‘evidence’ of racial difference and build a dense web of ideas that crossed disciplinary borders and built a compendium

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<sup>156</sup> Ibid.

<sup>157</sup> Voltaire. “Septième Lettre D’Amabed.” *Les Lettres d’Amabed : Œuvres complètes de Voltaire, Tome 21*, trans. Garnier 1877 (1769), 462.

<sup>158</sup> See François Bernier (1684). 2001. “A New Division of the Earth: The Division of the Earth According to the Different Types or Races of Man Who Inhabit It,” trans. Janet L. Nelson, *History Workshop Journal* 51 (Spring 2001): 247-250 and Henry Home (Lord Kames), *Sketches on the History of Man* (Edinburgh: W. Strahan and T. Cadell, 1778).

of knowledge. Evidence was consequently gathered from fields like phrenology, anatomy, medicine, and anthropology to support conjectures that difference had meaning.

It was not enough to just classify non-white bodies, they needed to be ranked according to their aesthetic, their purpose and their place in the great chain of life in order to keep intact the religious and philosophical teachings of the period. To sort bodies into manageable categories, the superficial features of the body and the lines of ancestry that linked them to others were used to group people into taxonomic divisions. Since the European male was presumed to be the pinnacle of racial perfection Blumenbach believed that every race could “deduce its origins from manifest causes of degeneration” from the superior European (white) norm.<sup>159</sup> These categories of difference were utilized to create causal order, to define social life by imposing philosophically and scientifically ascribed meanings which forced non-white, racially identified groupings of people to conform to the parameters defined by those divisions.<sup>160</sup>

As factional narratives went, these were deeply compelling to the European scientists because, as noted by Winthrop Jordan, “by the early Middle Ages a binary opposition between blackness and whiteness was well established in which blackness was identified with baseness, sin, the devil, and ugliness, and white-ness with virtue, purity, holiness, and beauty.”<sup>161</sup> Racially motivated classifications and the factional narratives connected to them were widely accepted in European scientific, political and social circles largely because there was a “fundamental congruence with cultural expectations” which in turn seemed to lend a level of credibility to the faction crafted around skin colour.<sup>162</sup> Skin colour was clearly biological, which gave the factional narratives that defined blackness natural roots to cling to.

As a result, phenotypical difference, geographical location and ancestral lines were used to interpret non-European bodies, and place them in separate categories of racial identification. The configurations of racial groupings and terminology used to

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<sup>159</sup> Johann F. Blumenbach, *The Anthropological Treatises of Johann Friedrich Blumenbach*, ed. Thomas Bendyshe (London: Longman, Green, Longman, Roberts and Green, 1865), 264.

<sup>160</sup> Root, “How We Divide the World,” S628-S639; Ron Mallon, “Passing, Traveling and Reality: Social Constructionism and the Metaphysics of Race,” *Nous* 38, no. 4 (2004): S644-673.

<sup>161</sup> Winthrop D. Jordan, *White over Black: American Attitudes Toward the Negro, 1550-1812* (New York: Norton, 1977), 7.

<sup>162</sup> Stepan, “Race and Gender,” 266.

designated them differed from theorist to theorist but most agreed that the European bodies were white and different than ‘black,’ ‘yellow,’ ‘brown’ and ‘red’ bodies. Bodies that did not conform to the European standard were taxonomically ranked according to how closely they conformed to the visual aesthetic of the newly defined white Caucasian (European) body.<sup>163</sup> In the science of difference, the more difference there was from the norm, the further away one was from the superior position in the rankings. This taxonomic ranking led to what George Mosse describes as a “continuous transition from science to aesthetics” which created biological meanings and explanations to link character, intelligence and value directly to the visual aesthetic, in terms of differences and similarities to the norm, of the human form.<sup>164</sup>

What remained central to the projects surrounding racial and gender difference being undertaken in the latter half of the 18<sup>th</sup> century and all through the 19<sup>th</sup> century was the understanding that the European male was not just anatomically superior to all other bodies, but hierarchically and morally superior as well. To explain how the differences in non-white and female anatomy made them unsuited to equal status with the white male, female and non-white anatomies were dissected down and detailed descriptions of variations from the European male were painstakingly kept record of and published for the benefit of the scientific community.<sup>165</sup> The anatomical investigation of both gender and race was linked through the science of difference. As attention increasingly turned to investigations of difference, “gender was found to be remarkably analogous to race, such that the scientists could use racial difference to explain gender difference, and vice versa.”<sup>166</sup>

The female anatomy and the non-white anatomy were rarely examined as fully complete, stand-alone bodies worthy of study on their own, instead they were continually

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<sup>163</sup> Anthony K. Appiah, “Race, Culture, Identity,” 30-105; See also Pugliese, “Demonstrative Evidence.”

<sup>164</sup> George Mosse, *Toward a Final Solution: A History of European Racism* (Madison: University of Wisconsin Press, 1985), 2-3.

<sup>165</sup> See W. H. Flower and James Murie, “Account of the Dissection of a Bushwoman,” *Journal of Anatomy and Physiology* 1, no. 2 (1867): 189-208; Thomas H. Bryce, “Notes on the Myology of a Negro,” *Journal of Anatomy and Physiology* 31, no. 4 (1897): 607-619 and William Turner, “Notes on the Dissection of a Negro,” *Journal of Anatomy and Physiology* 13, no. 3 (1897): 382-386. (Turner also wrote two follow-ups to this paper “Notes on the Dissection of a Second Negro” and “Notes on the Dissection of a Third Negro.”)

<sup>166</sup> Stepan, “Race and Gender,” 263.

referenced back to where they differed from and where they were similar to the white male. Differences were then also catalogued in connection with lower primates in an effort to slot the non-white and non-male bodies into their appropriate place along the hierarchal continuum. The conundrum that faced the European men of science was just how to place the white female, who was the inferior sex of the dominant race in conjunction with the black male, who was the superior sex of an inferior race.<sup>167</sup> Non-white females remained at the bottom of the rankings as the inferior sex of an inferior race.

In the case of women, their anatomy was discussed in terms of their main point of divergence from the male body—their reproductive organs. Significant attention was paid to the shape of the pelvis, the uterus and the breasts which were linked to weaknesses in the areas of physicality, sexuality, and emotional immaturity.<sup>168</sup> Access to female bodies was more limited and when dissections (and illustrations) were done on them their anatomy was “reduced functionally to their organs of generation” with many of the illustrative plates focused specifically on the display of the uterus, Fallopian tubes and vagina. The prioritizing of the reproductive anatomy when discussing female bodies in anatomical illustrations was quite common across the discipline, as anatomists attempted to discover the secrets embedded in the uterus and vagina as a way to control and police female sexual desires and reproductive capacities.<sup>169</sup>

This fascination with the female reproductive organs is an important point. Women were accounted for in anatomical illustrations in fairly small numbers, in some respects due to the lack of access to their corpses. But lack of access was not the only reason illustrated female bodies failed to show up in anatomical illustrations in any significant manner. The female body just did not meet the didactic needs of the anatomist when it came to explicating form and function, it was perceived as weak and in some cases underdeveloped. Since a woman’s worth was often tied directly to her ability to

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<sup>167</sup> Schiebinger, 1990, “The Anatomy of Difference,” 389. See also Stepan, “Race and Gender,” 264.

<sup>168</sup> See Schiebinger, “Skeletons in the Closet” for an excellent discussion on Soemmerring’s female skeleton atlas. See also Sander L. Gilman, “Black Bodies, White Bodies: Toward and Iconography of Female Sexuality in late Nineteenth-Century Art, Medicine, and Literature” *Critical Inquiry* 12, no. 1 (1985): 204-242.

<sup>169</sup> Sawday, *The Body Emblazoned*, 219-225.

procreate, an inordinate amount of the illustrations focused on the pregnant uterus.<sup>170</sup>

Rarely were female bodies reproduced in anatomical illustration to demonstrate anatomical concepts other than those of reproduction.<sup>171</sup> As noted by Lyle Massey in her discussion of the emergence of obstetrical atlases, in the latter part of the 1700s and into the early 1800s:

Whereas the male body carried the burden of explaining the greater part of normative human anatomy, the pregnant female body served to illustrate the reproductive system and human generation. Included for illustrative purposes but rarely examined at length, the pregnant female body had never previously been the exclusive focus of the anatomist's gaze.<sup>172</sup>

The normative universal body remained that of the white male when conceptual information and explanations for function needed to be given, pushing the white male body into centre and demonstrating without words that the body of the white male still held the answers to questions about the body. The continual reinforcement of the proper clinical gaze and the ability to see the body as it should be, meant that anatomists often felt they must treat divergent anatomies like the female or the non-white body as spaces that needed explanation in terms of their variations from the norm. And the natural foundations of those differences and variations seemingly served as confirmation that they were deviations and in some cases deformities.<sup>173</sup>

In the case of non-white bodies, in a similar manner to the European female, investigations of their anatomy centered around the areas where they were thought to differ significantly from the white male—the colour of their skin and other phenotypical facial features such as lip shape, hair type and penis size. Much investigation was also devoted to the sexual appetites of the non-white body and their perceived anatomical concordance to the lower primates which indicated a more 'primitive' nature.<sup>174</sup> Many treatises detailing the physical differences between the European male and the non-white body contained no illustrations at all often because the authors of the texts, sometimes

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<sup>170</sup> Shiebinger, "Skeletons in the Closet."

<sup>171</sup> Sawday, *The Body Emblazoned*. See also Katharine Park, *The Secrets of Women: Gender, Generation and the Origins of Human Dissection* (New York: Zone Books, 2006).

<sup>172</sup> Massey, "Pregnancy and Pathology," 75.

<sup>173</sup> Schiebinger, "The Anatomy of Difference," 394. See also Andrew S. Curran, *The Anatomy of Blackness: Science & Slavery in an Age of Enlightenment* (Baltimore: The Johns Hopkins University Press, 2011)

<sup>174</sup> See Flower and Murie, "Account of the Dissection of a Bushwoman," Bryce, "Notes on the Myology of a Negro," and Turner, "Notes on the Dissection of a Negro."

anatomists, sometimes ethnographers but oftentimes neither, based their ‘observations’ of the non-white body upon the written observations of others.<sup>175</sup> Some works were written in response to direct observation, and one of the earliest examples of an anatomical text written specifically about non-white bodies was by German anatomist Samuel Thomas von Soemmerring as a result of the dissection of four bodies of African descent (one female, one adolescent male and two males) who had returned with Hessian soldiers and died in Germany.<sup>176</sup> There are no accompanying illustrations to the text which details what Soemmerring viewed as obvious flaws and defects in the black male body. He used his authority and expertise as an anatomist along with detailed textual explanations of the dissections to lend credence to his claims that racial inequality was inevitable given the clearly inferior anatomy being displayed by the African bodies he dissected which he felt was “nearer the ape” than that of the European male.<sup>177</sup>

The lack of accompanying illustrations in his text was not unusual, many anatomists who performed dissections on non-white bodies opted for textual descriptions over illustrations. Why this is the case is unclear as the anatomists themselves remained silent on the subject and the absence of these bodies in historical atlases is not addressed in the literature on anatomical illustration. It could be argued, however, that any anatomical differences between the white and the non-white body that were ‘discovered’ by anatomists were of such insignificance and fell well within the realm of human variation which made illustrated detailing of them difficult to justify. As well, as I noted earlier, many of the treatises that detailed supposed racial differences in anatomy were often done so by scientists who had made no firsthand observations of those differences in an anatomy laboratory making it a challenge to illustrate what had not been seen.

Samuel von Soemmerring’s treatise was one of many that contributed to the growing body of racial politics and philosophical musings that was gaining significant ground in the latter half of the 18<sup>th</sup> century well into the 19<sup>th</sup> century.<sup>178</sup> His work was not

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<sup>175</sup> See Immanuel Kant, *Von der Verschiedenen Rassen der Menschen* [Of the Different Human Races], trans. Jon Mark Mikkelsen (Indianapolis: Hackett Publishing Company Inc, 1999) as an example.

<sup>176</sup> Samuel Thomas von Soemmerring, *Über die Körperliche Verschiedenheit des Mohren vom Europäer* [On the Physical Difference Between the Moor and the European] (Frankfurt, 1784).

<sup>177</sup> *Ibid*: Preface.

<sup>178</sup> Georges Buffon, 1781. “Of the Varieties of the Human Species,” *Natural History: General and Particular* (8 volumes). Transcribed by Fran Moran, Trans. William Smellie. 1781. Accessed May 11<sup>th</sup>, 2015.



revolutionary or even particularly inspired, rather it added yet another piece of documentation to the pile that had been amassing since Francois Bernier published his *A New Division of the Earth According to the Different Species or Races of Men* anonymously in 1684.<sup>179</sup> The difference between Soemmerring's treatise and others was that he was able to claim a level of credibility for his assertions, as I mentioned previously, because he based his work on observations he himself had made in the dissecting laboratory. There is no question of objectivity in Soemmerring's piece, in spite of his claim that his findings were strictly "cold facts."<sup>180</sup> His work was written to serve the racialized ideology of the time and space he occupied but his work smelled scientific and his credentials were impeccable, giving his work credibility in a way that some of the travelogues did not have.

Along with the publication of Soemmerring's treatise were other treatises that followed suit, with various agendas in mind. Petrus Camper's facial angle thesis arrived at a time when debates surrounding creation, polygenesis versus monogenesis and the ordering of the Great Chain of Being were ongoing and very heated. Camper attempted to create a visual representation of the gradations of mankind by depicting a progression of faces based on facial angle. In the first illustration, Camper tabulated a progression of crania and facial angles that began with a skull of a monkey then progressing upward to an orangutan, 'Angolese' and 'Calmuck.'<sup>181</sup> In a second illustration, Camper aligned a series of what he termed "diverse Europeans" arriving finally at the most perfectly

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<http://petruscamper.com/buffon/varieties1.htm>; L. J. M. Daubenton "Essay on the Differences of the Position of the Occipital Foramen in Man and in Animals," *Histoire de l'Académie Royale des Sciences avec les Mémoires de Mathématique & de Physique*, trans Miriam Claude Meijer (Paris, 1764), 568-579, Accessed November 23<sup>rd</sup>, 2014. <http://petruscamper.com/daubenton.htm>; and J. J. Rousseau, *A Discourse Upon The Origin and Foundation of the Inequality Among Mankind*, anonymously-translated English publication preserved all of Jean-Jacques Rousseau's original footnotes, 1761, Accessed May 28<sup>th</sup>, 2015, <http://petruscamper.com/rousseau/discours1.htm>

<sup>179</sup> Bernier, "A New Division of the Earth," 247-250.

<sup>180</sup> Soemmerring, *Körperliche Verschiedenheit*, Preface. Please note that the title of this treatise was changed without explanation by Soemmerring in 1785 to *Über die Körperliche Verschiedenheit des Negers vom Europäer*.

<sup>181</sup> Petrus Camper, *Facial Angles*, trans. T. Cogan (London: printed for C. Dilly, in the Poultry, 1794). Angolese refers to individuals of African descent and Calmuck refers to peoples who were later referred to as Mongolian and Eskimo. 1794.

proportioned canonical head, that of a Greco-Roman statue whose profile attained a near-vertical of 80 degrees (See Fig. 6).<sup>182</sup>

That Camper was not advocating a closer biological congruency between the ‘Angolese’ and the apes was irrelevant to ideologues who proceeded to cite and reproduce his illustration with great frequency in their own anatomical treatises as proof of the superiority of the European male. Camper, argue both Miriam Meijer and Martin Kemp, was attempting to show that the Angolese (African) and Calmuck (Mongolian) were in reality closely related to the Europeans rejecting claims that they were ape-like and were “at the baser animal end of the scale.”<sup>183</sup> Camper himself made his rejection of these more “extravagant” claims by philosophers stating, “conjecture that the race of blacks originated from the commerce of the whites with oranges and pongos” was not borne out in the anatomy and suggestions that “these monsters, by gradual improvement, finally became men” was not possible due to the obvious “boundaries which the creator has placed between the various animals.”<sup>184</sup>

Campers objections notwithstanding, because his illustrations seemed to run along a continuum naturalists and philosophers at the time seized upon his illustrations to declare there was a clear moral order demonstrated in Camper’s facial angle thesis, tacitly ignoring Camper’s written rejection of that very claim. This by no means suggests that Camper was the poster boy for racial equality. I mention this dissention by Camper to point out that the science of race was not a homogenous one. Indeed, much of the power of the factional narratives that supported race science were derived from the very accumulation of such a diverse set of cultural fictions and scientific enquiries that seemed to lend credence to the notion that racialized phenotypical variation had meaning.

Case in point, one of the most damaging treatises to support a misconstrued version of Camper’s thesis was written and illustrated by Charles White. In his 1799 *An Account of the Regular Gradations in Man and in Different Kinds of Animals and Vegetables*, White, an English physician who placed great stock in the theory of

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<sup>182</sup> Martin Kemp, “Slanted Evidence: The Tortuous Path from Skull Measurements to Theories of Racial Superiority,” *Nature* 402 (1999), 727.

<sup>183</sup> Ibid, 727. See also Meijer, Miriam Claude. *Race and Aesthetics in the Anthropology of Petrus Camper (1722-1789)* (Amsterdam and Atlanta: Rodopi, 1999).

<sup>184</sup> Camper, *Facial Angles*, 57.

polygeny, argued that two different species of people emerged out of Africa from different ancestors.<sup>185</sup> White was convinced that European whites and African blacks were not just simply two different ‘races’ like many of his contemporaries but of two different species altogether.<sup>186</sup> Camper’s illustrations of skulls in succession provided White the foundation upon which to build his own continuum which ranked the ‘Negro’ as evolutionarily more primitive than the white European (Fig. 7). White’s work, buffered by Johann Kaspar Lavater’s work in the field of physiognomics, which assessed an individual’s character and personality from the shape and appearance of the face and head, was used effectively by likeminded scholars at the time to align animals and humans in a moral order.<sup>187</sup> In order to link biology to character, the new science of anthropometry began to incorporate anatomical illustrations of skulls as diagrammatic evidence of anatomical variations amongst the different ‘races’ for comparative purposes against the white Caucasian exemplar. By assigning positioning along a continuum, scholars like White were able to create an enduring hierarchy of racial superiority and inferiority to white Europeans over all other non-white bodies.<sup>188</sup>

Both the female and the non-white body were intensely subjected to these anthropometric studies done on their skeletons and particularly on their skulls. The findings proved, to the satisfaction of many European and American scholars, that beliefs about the lower intelligence and more primitive nature of both the female and non-white body were borne out in the bones. Since skull size and shape ostensibly did not measure up, so the conjecture went, to the standard of the European male, nature had clearly designed non-white and female to be intellectually and emotionally inferior to the rational European male.<sup>189</sup>

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<sup>185</sup> Charles White, “An Account of the Regular Gradations in Man and in Different Kinds of Animals and Vegetables, and from the Former to the Latter, Illustrated with Engravings Adapted to the Subject,” in *Slavery, Abolition and Emancipation: Writings in the British Romantic Period*, vol. 8: Theories of Race, eds. Deborah Lee and Peter J. Kitson (London: Pickering & Chatto, Ltd., 1999).

<sup>186</sup> Kemp, *Slanted Evidence*.

<sup>187</sup> Lavater, Johann Kasper. 1775-1778. *Physiognomische Fragmente zur Beförderung der Menschenkenntnis und Menschenliebe*.

<sup>188</sup> See Kant, *On the Different Races of Men* and Christoph Meiners, *Grundriss der Geschichte der Menschheit* [Outline of the History of Mankind] (Frankfurt and Leipzig, 1786).

<sup>189</sup> Allan, J. McGrigor. “On the Real Differences in the Minds of Men and Women.” *Journal of the Anthropological Society of London*, vol. 7, cxcv-ccviii: cciv. 1869. And see Cleland, John. “An Inquiry into the Variations of the Human Skull,” *Philosophical Transactions, Royal Society*, 89:117-174. 1870.

Anatomical investigations of this nature into the anatomy and natural propensities of the non-white and female bodies exploded in the 19<sup>th</sup> century. Their particular potency was found in the fact that illustrations of differences in skulls, bones and faces were, like skin colour, more palpable once they were pointed out, or to put it another way, easier to see and consequently connect to the fictions about intelligence and primitivity that surrounded non-white and female bodies. The accessibility of these anthropometric studies made it possible for scientists and non-scientists to utilize them as a tool to justify the eugenics campaigns that had begun to develop in Europe, and more particularly in America, and to provide ‘proof’ that enslavement of the non-white body was in their best interests. The incorporation into the anatomical project through the use of illustration the supposed anthropometric deficiencies of the non-white body was a great success helping to enshrine the concept of ‘normal’ as the habitual state of the white male body while at the same time reinforcing the understanding that the non-white body was in all ways, except for heavy labour, inferior to the white body. What was interesting about this illustrative turn to skulls, faces and bones was that while non-white bodies rarely showed up in traditional anatomical atlases, they were often the stars of illustrated works dedicated to anthropometrics.

This type of rhetoric became increasingly popular amongst anatomists and naturalists, many who were beginning to dabble in physical anthropology. This shift led to a popularization of anthropometrics across the biological sciences, including medicine. The anthropometric turn can be seen in the works of Josiah C. Nott, an American physician and an outspoken polygenist, who collaborated with his colleague George Gliddon to do a deep study of the different races. Nott was greatly influenced by the work of Samuel Morton, a physician and craniologist of great repute. Morton, a dedicated polygenist, was a giant in the field of physical anthropology, penning and illustrating a seminal text in craniotomy, *Crania Americana*, which was considered to be the most empirical and definitive collection of data of cranial capacity connected to race. Morton’s work supported his polygenist view of the world and argued that Caucasian skulls exhibited a large carrying capacity which allowed for larger brains and therefore higher

intelligence. ‘Negros,’ by his estimation, demonstrated small carrying capacity and therefore were doomed by biology to be intellectually inferior to Caucasians and most, if not all, the other races.<sup>190</sup>

Nott, in an homage to the late Morton, examined and compared the works of Morton and other prominent naturalists to support his polygenist multiregional hypothesis which posited the idea that multiple strains of human lines were designed by God in different geographical regions of the world. Nott was convinced his theory proved that common descent was a myth and that each race had a separate origin.<sup>191</sup> Nott, eager to affirm his objectivity, concluded that:

Although I do not believe in the intellectual equality of races, and can find no ground in natural or in human history for such popular credence, I belong not to those who are disposed to degrade any type of humanity to the level of the brute-creation. Nevertheless, a man must be blind not to be struck by similitudes between some of the lower races of mankind, viewed as connecting links in the animal kingdom; nor can it be rationally affirmed, that the Orang-Outan and Chimpanzee are more widely separated from certain African and Oceanic Negroes than are the latter from the Teutonic [Germanic] or Pelasgic [Ancestors to the Ancient Greeks] types.<sup>192</sup>

To supplement this conclusion Nott helpfully supplied illustrations (Fig. 8 & 9) commenting that: “It will doubtless be objected by some that extreme examples are here selected; and this is candidly admitted: yet, each animal type has a centre around which it fluctuates — and such a head as the Greek is never seen on a Negro, nor such a head as that of the Negro on a Greek.”<sup>193</sup> His “extreme examples” served a specific purpose, to show the gradations of human and primates in a way that confirmed that when the different types of ‘Negros’ were positioned properly, it was possible to see where the extremes could eventually meet.

This style of rhetoric was typical of Nott, a highly influential slave owner, whom Adam Dewey notes “intentionally used his influence and his science to defend the

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<sup>190</sup> Samuel Morton, *Crania Americana* (Philadelphia: J. Dobson, 1839).

<sup>191</sup> Adam Dewbury, "The American School and Scientific Racism in Early American Anthropology", in *Histories of Anthropology Annual* 3 (2007): 121-147.

<sup>192</sup> J. C. Nott, and George Gliddon, *Types of Mankind* (Philadelphia: Lippincott, Grambo & Co., 1855), 457.

<sup>193</sup> *Ibid*, 460.

subjugation of blacks through slavery” throughout several publications.<sup>194</sup> It was not unusual for scientists embroiled in the controversy surrounding polygenism and monogenism and the humanity of non-white bodies to use their science to shore up whichever side of the abolitionist debate they fell on. And many men of Nott’s stature had a stake in the continuation of the slave trade which influenced the tenor of their work. One common method employed by many of the scientists writing anatomical and anthropological treatises on the place of the non-white body in the evolution of the species was to base their conclusions on the work of other scientists, which they would skilfully position as supporting their own conclusions.

In this manner, Nott backed up his conclusions by citing Dr. Jefferies Wyman, a comparative anatomist who conducted an anthropometric study on bones of a new species of primate uncovered by naturalist Thomas Savage during his sojourn as a missionary in Liberia, Africa.<sup>195</sup> During his explanation of the bones, Wyman takes the time to muse upon the differences that separate the Negro from the lower primates and from the Caucasian male stating that:

The organization of the anthropoid quadrumana\* justifies the naturalist in placing them at the head of the brute-creation, and placing them in a position in which they, of all the animal series, shall be nearest to man. Any anatomist, however, who will take the trouble to compare the skeletons of the Negro and Orang, cannot fail to be struck at sight with the wide gap which separates them. The difference between the cranium, the pelvis, and the conformation of the upper extremities, in the Negro and Caucasian, sinks into insignificance when compared with the vast difference which exists between the conformation of the same parts in the Negro and the Orang. Yet it cannot be denied, however wide the separation, that the Negro and Orang do afford the points where man and the brute, when the totality of their organization is considered, most nearly approach each other.<sup>196</sup>

Wyman, a devout Christian, subscribed to transcendentalist anatomy and was deeply interested in uncovering ideal patterns in nature as proof of the existence of

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<sup>194</sup> Ibid, 142. Indeed in *De Bow’s Commercial Review of the South and West* IV (1847): 247-289, Nott concludes in his “Statistics of Southern Slave Population” on page 289 that “The negroes have attained a greater moral and intellectual elevation—greater physical development and longevity, and incomparably more happiness, in our slave States, than they have ever enjoyed under any other circumstances.”

<sup>195</sup> T. S. Savage and J. Wyman “Notice of the External Characters and Habits of Troglodytes Gorilla, A New Species of Orang From the Gaboon River, Osteology of the Same,” *Boston Journal of Natural History* 5 (1847): 417–443.

<sup>196</sup> Ibid: 441. \*Please note that the term anthropoid quadrumana references primates excluding man considered as a group distinguished by hand-shaped feet.

God.<sup>197</sup> Oddly enough, in his work on the gorilla Wyman considered the work of Gerardus Vrolick and Samuel Soemmerring before him, discounting their claims regarding certain signs of ‘degradation’ in the skeletons of Negroes and yet nonetheless, citing the work of other anatomists he admired, still concluded that ultimately the Negro was closer in physical nature to the apes than the Caucasian man was.<sup>198</sup>

Treatises on the non-white body in the manner of Nott’s were plentiful in the 19<sup>th</sup> century, but what was not plentiful were anatomical illustrations of those non-white bodies like those so painstakingly illustrated white bodies in the anatomical atlases of giants like Vesalius, Albinus, Bell, and even Soemmerring. In place of detailed anatomical illustration of whole bodies were depictions of skulls and faces, often with exaggerated features that were used to show pictorially the apparent congruence between the Negro and the ape. In some cases, scientists also provided a depiction of the ‘Negro body’ alongside different species of ape and monkey which created a factional visual history without the need for explanation.

An excellent example of these types of illustration can be found in the pages of the works of German biologist Ernst Haeckel, who argued in his *The History of Creation* “The Caucasian, or Mediterranean man (*Homo Mediterraneus*), has from time immemorial been placed at the head of all races of men, as the most highly developed and perfect.”<sup>199</sup> Haeckel, an accomplished zoologist, who spent a lot of his time developing work around Darwin’s ideas on evolution and natural selection, concluded after much study that “These lower races (such as the Veddahs or Australian negroes) are psychologically nearer to the mammals (apes or dogs) than to civilized Europeans; we must, therefore, assign a totally different value to their lives.”<sup>200</sup> Haeckel, like many of his contemporaries, offered illustrations of heads in a progression that placed the ‘Negro’ in close evolutionary proximity to the apes (Fig. 10 & 11) and also supplied pictures that depicted the ‘Negro’ in a ‘family tree’ of sorts to show how they descended directly from

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<sup>197</sup> T. Appel, "Jeffries Wyman, Philosophical Anatomy, and the Scientific Reception of Darwin in America," *Journal of the History of Biology* 21, no. 1 (1988), 72.

<sup>198</sup> Savage and Wyman, "Troglodytes Gorilla," see note 1, page 438 and note 1, page 440.

<sup>199</sup> Ernst Haeckel, *The History of Creation, Vol. II*, trans. E. Ray Lankester (New York: D. Appleton and Co., 1880), 229.

<sup>200</sup> Ernst Haeckel, *The Wonders of Life: A Popular Study of Biological Philosophy*, trans. Joseph MacCabe (New York and London: Harpers & Brothers Publishers, 1905), 280.

the apes (Fig.12). Illustrations of this type, like Nott's depictions, served a specific purpose, to clearly position the 'Negro' as a close relative of the apes whose humanity was more brutish and less evolved than that of the far superior Caucasian.

### 3.5 Concluding Remarks

Normative anatomical science and the accumulation of three hundred years' worth of anatomical illustration that positioned the Caucasian male as the normative universal body remained the bulwark that supported race science. The cumulative and heterogeneous nature of the science of difference meant that anatomical illustrations and many of the treatises they supported were exploited across a broad spectrum of disciplines to lend credibility to a variety of claims about the 'natural' origins of supposed racially prescribed inequalities. The power of the illustration lay in its ability to provide visual, scientific evidence of what was normal and what was not which agreed with "long-standing, long-familiar, culturally endorsed metaphors" about human variation and difference.<sup>201</sup> Sander Gilman, in his *Seeing the Insane*, argued that "we do not see the world, rather we are taught by representations of the world about us to conceive of it in a culturally acceptable manner" and if the representations we see are backed up by scientific evidence we are all the more likely to accept them without a qualm.<sup>202</sup> Again, as I noted before, this is the power of the factional narrative about the body, scientific fact and socio-cultural fiction blend comfortably to create a convincing story of the normative body which in turn creates an equally convincing story about all Other bodies.

The take away here is that by the 19<sup>th</sup> century scientists, often in direct contradiction of their own observations, remained comfortable in relegating the non-white body to the lower echelons of the human evolutionary ladder. Nott, Wyman and Haeckel were not alone in their inability to see past the racist rhetoric that dominated the 19<sup>th</sup> century and early 20<sup>th</sup> century anatomical sciences, human biology and physical anthropology. So powerful was the discourse after hundreds of years of anatomical investigation and illustration surrounding the superiority of the anatomy of the Caucasian

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<sup>201</sup> Stepan, "Race and Gender: the Role of Analogy in Science," 265.

<sup>202</sup> Sander Gilman, *Seeing the Insane* (New York: John Wiley, 1982), xi.



male form that evidence to the contrary could no longer be *seen*. The repeated rendering over and over again, by different hands and in different styles, across those generations, of the same types of factional depictions, made the ‘truth’ of a ‘normal body’ as Caucasian and male, and the supremacy of whiteness an institutionalized fact.

The relationship between anatomical illustration and medical epistemology is inextricably linked. The importance of anatomical illustration to the science of the body cannot be overstated. Anatomical illustration in medical texts, notes Ludmilla Jordanova, “were not ornamental additions, nor were they convenient diagrams; they were their very *raison d’être*,” and one of the key elements in the eventual professionalization of medical science.<sup>203</sup> The use of anatomical illustration was, and continues to be, in medical pedagogy an “extraordinarily complex visioning process” where the “larger administrative, institutional, and representational struggle involving the regulation and visualization of the social body” played out in the past and continues to play in the present with significant consequences for not just the scientists in the field but for the larger public as well.<sup>204</sup>

The defaulting to normative white male anatomy was common across all styles of anatomical atlases, treatises and medical texts for hundreds of years from Vesalius to Gray for the purpose of teaching medical scientists what to expect from the human body and what it *ought* to look like. This legacy and tradition still continues to inform the present. This complex envisioning process is still a critical mode for interpreting biological ‘truths’ and rooted deep within anatomical illustration is the belief that social and scientific ‘truths’ can be represented visually.

Historical factional bodies became the visual template for the normal body of modern medical understanding. The non-white body in the historical anatomical imagery rarely enjoyed a place in medical literature on its own, a trend we will see that has continued in contemporary anatomical texts. The tradition of intentionally and systematically juxtaposing the non-white body against the normative Caucasian body to showcase its inferiority against the superior white form has made it a challenge for the

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<sup>203</sup> Jordanova, “Gender, Generation and Science,” 385. See also Stelmackowich, “Bodies of Knowledge,” 83-84.

<sup>204</sup> Stelmackowich, “Bodies of Knowledge,” 84.

non-white body to be visualized as a legitimate and normal body. The factional narratives, the based-on-a-true-story method of illustration that was carved out of the real blood, bones and muscles of real human bodies, have become so deeply intertwined with the bodies they define that it is difficult to separate the fiction and the fact inside the faction narrative. The power of the socio-cultural fictions that encouraged scientific enquiry into difference has distorted much of the science so as to render many of those 'facts' so diligently recorded in anatomical illustration as fictions of their own.

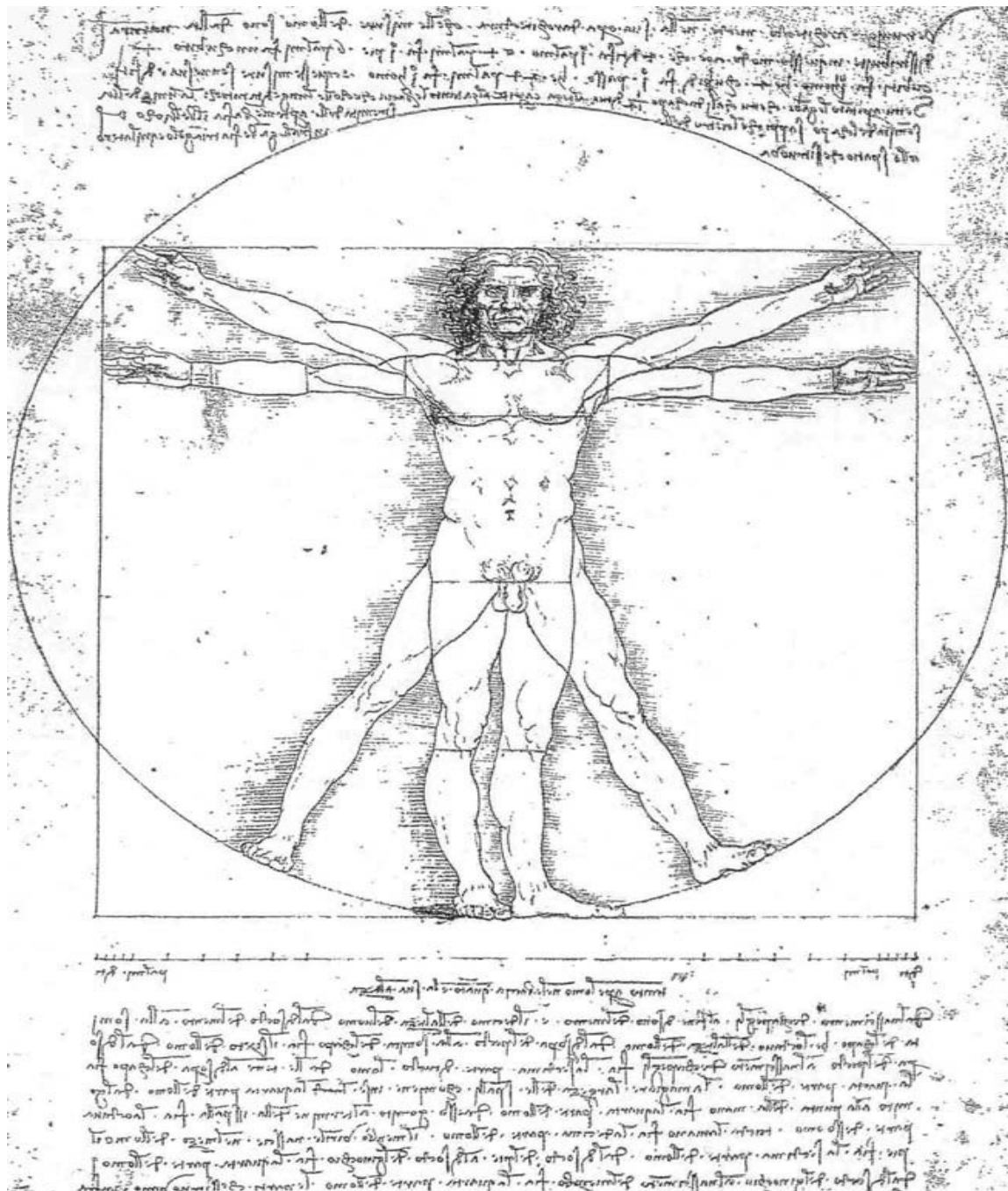


Figure 3. Leonardo da Vinci's Vitruvian Man. Reprinted from <http://www.smithsonianmag.com/>

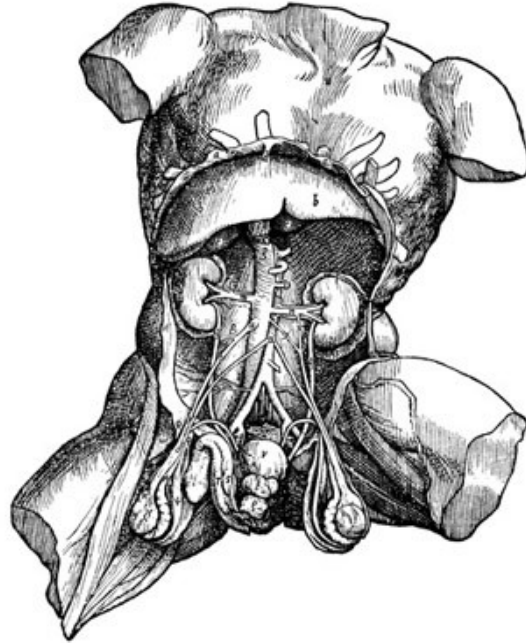
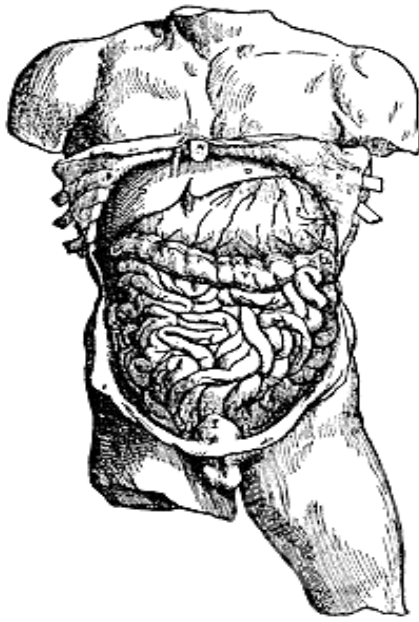


Figure 4. Vesalius, *De humani corporis fabrica*, Reprinted from O'Malley, *Andreas Vesalius of Brussels, 1514-1564*. Plate 55:1, Book 5  
Plate 59:1, Book 5



Angusta frons.

**A**RISTOTELES in suis Physiognomic. Parua frontis homines imperiti sunt à simili suum fronte. Sed per paruam frontem angustam intelligendum iudicarem; angusta enim fronte sues, quibus comparantur, praedit sunt, non parua. Confirmant opinionem meam Polemon, & Adamantius, qui inquiunt. Angusta frons non minimum est imperiti e argumentum. Conciliator. Frons parua, angustaq; stolidum, indocilem, inquietum, & inquinatum hominem monstrant, ad sues relatum. Albertus eadem.

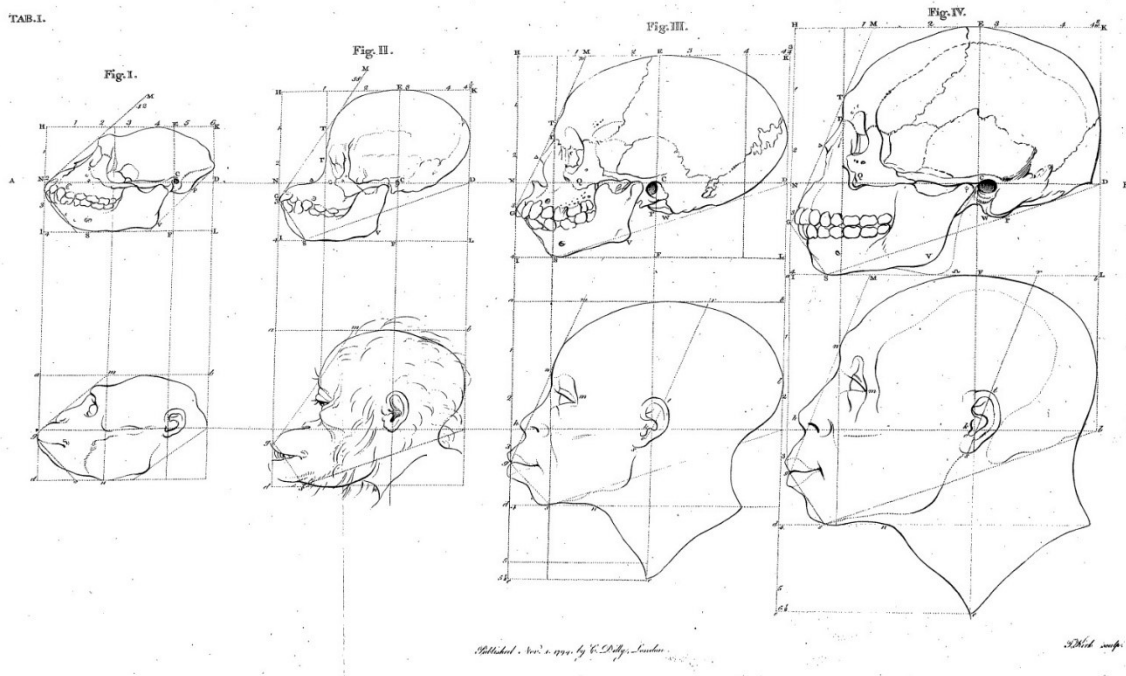
Platonis frontis simulacrum hic designatur à dextris.



Longa

Figure 5. "Narrow forehead" Giambattista della Porta. *De humana physiognomonia libri IIII. Vici Aequensis [Vico Equense]: I. Cacchium, 1586: 53.* Reprinted from Historical Anatomies on the Web. A comparison between a young African man with Aristotle. The African man's forehead is deemed too small and narrow which della Porta concludes indicates he is stupid, unteachable (unintelligent) and restless and likens him to a swine.

TAB. I.



TAB. II.

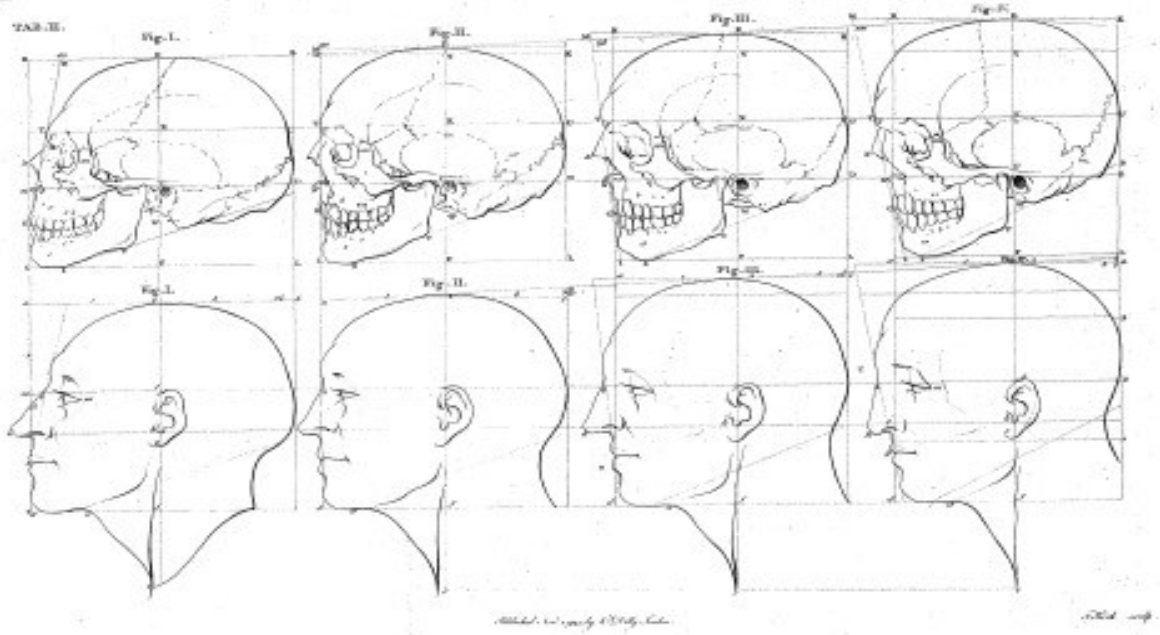


Figure 6. "Facial Angles," Camper, *The works of the late Professor Camper, on the connexion between the science of anatomy and the arts of drawing, painting, statuary, &c. &c. in two books*, 146.



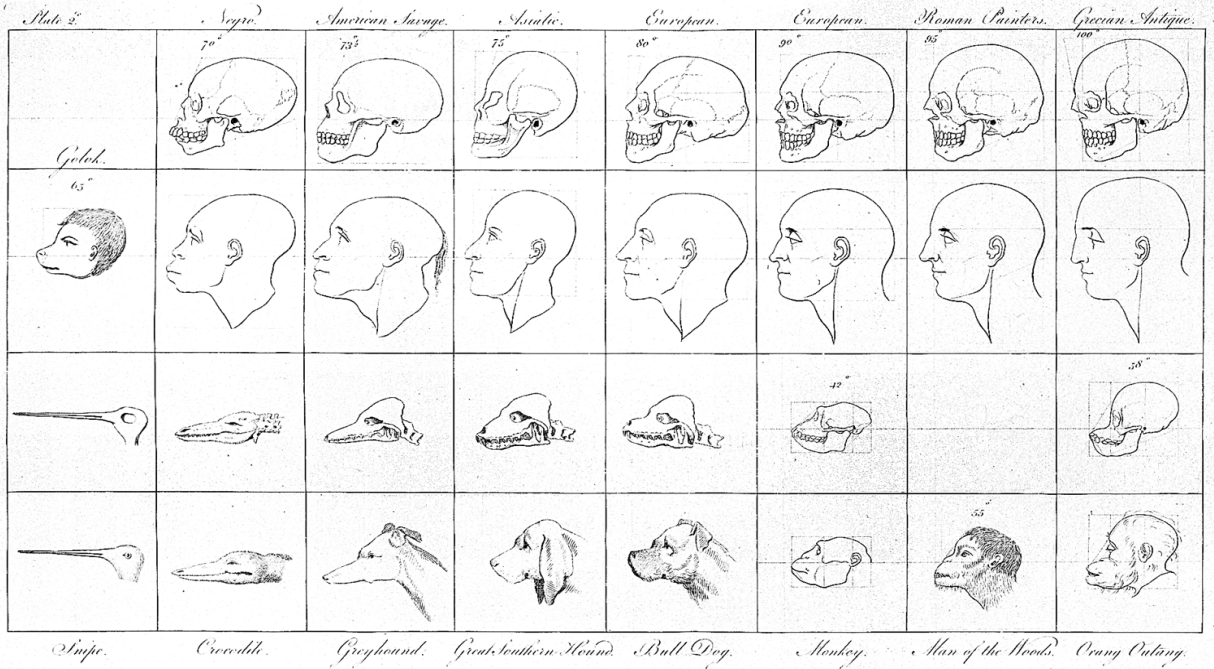


Figure 7. White, (1799). Reprinted from *Slavery, Abolition and Emancipation: Writings in the British Romantic Period*, vol. 8, 262-63.

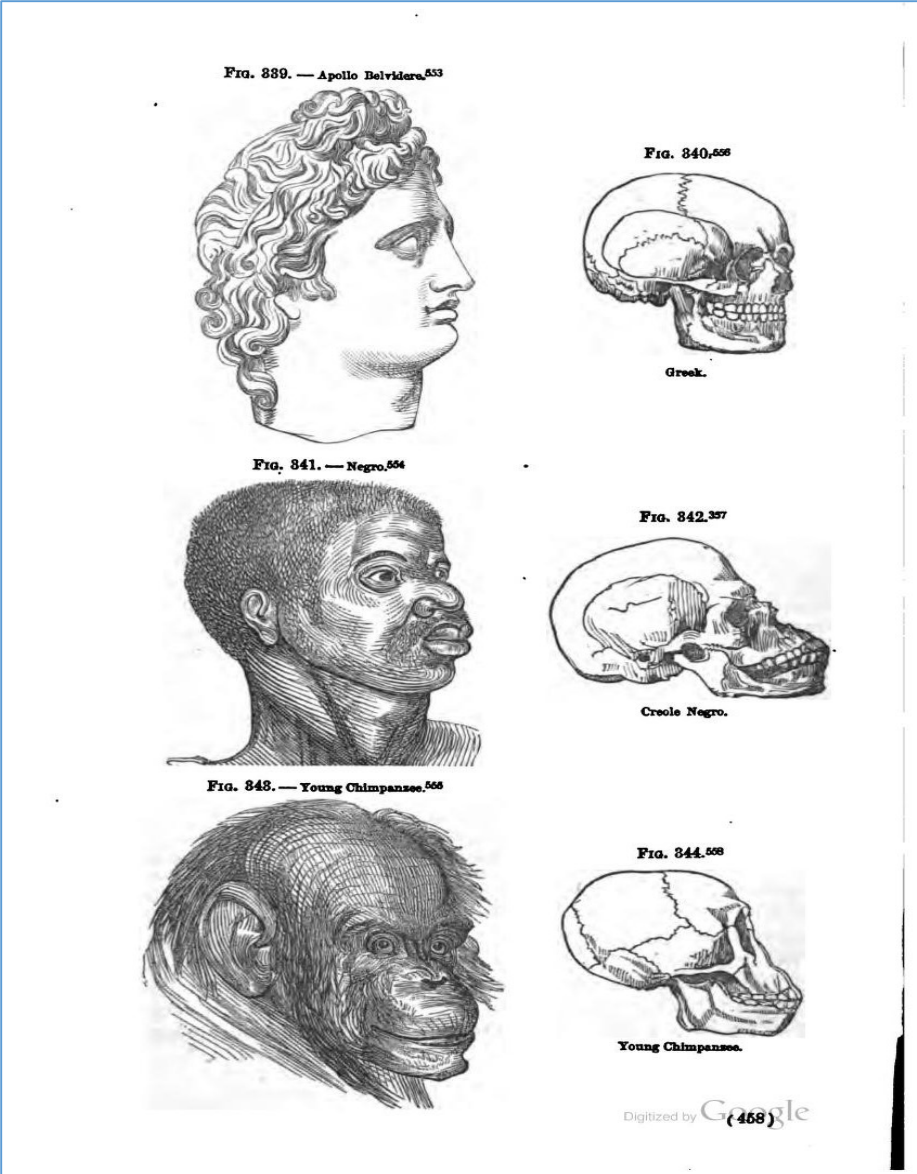
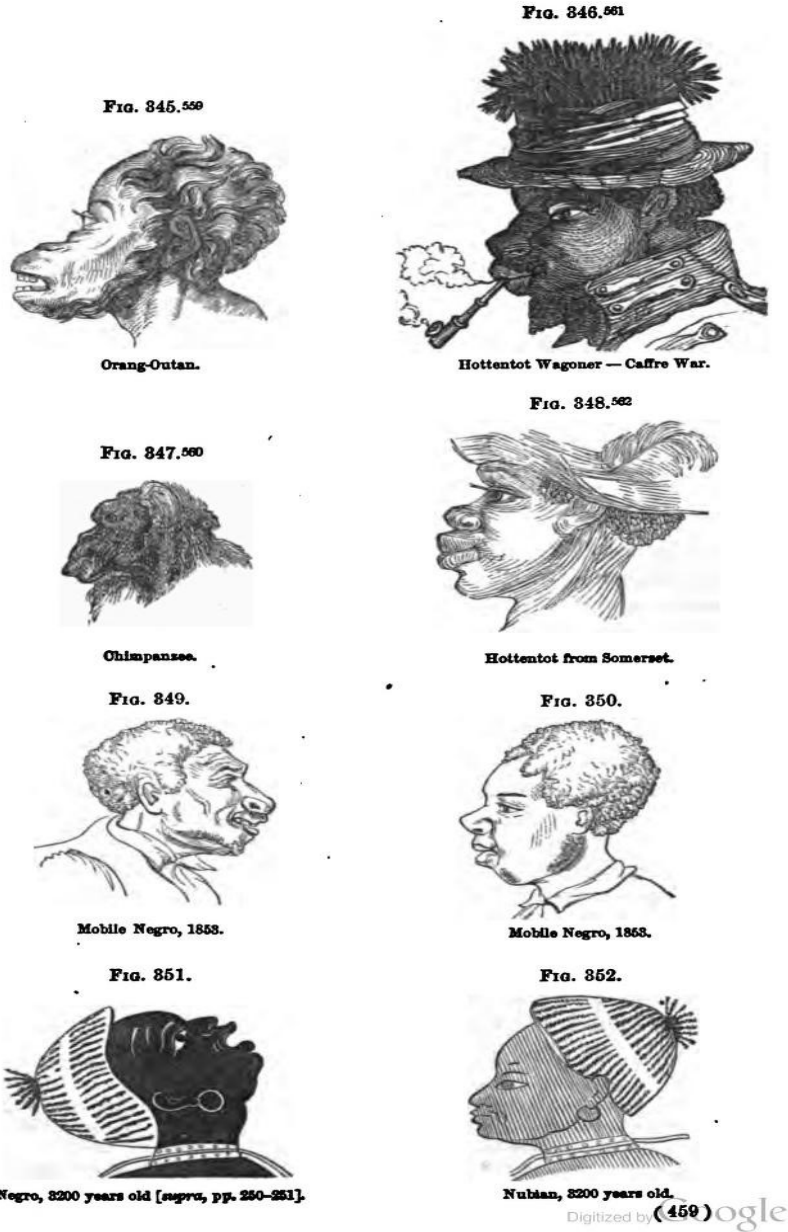


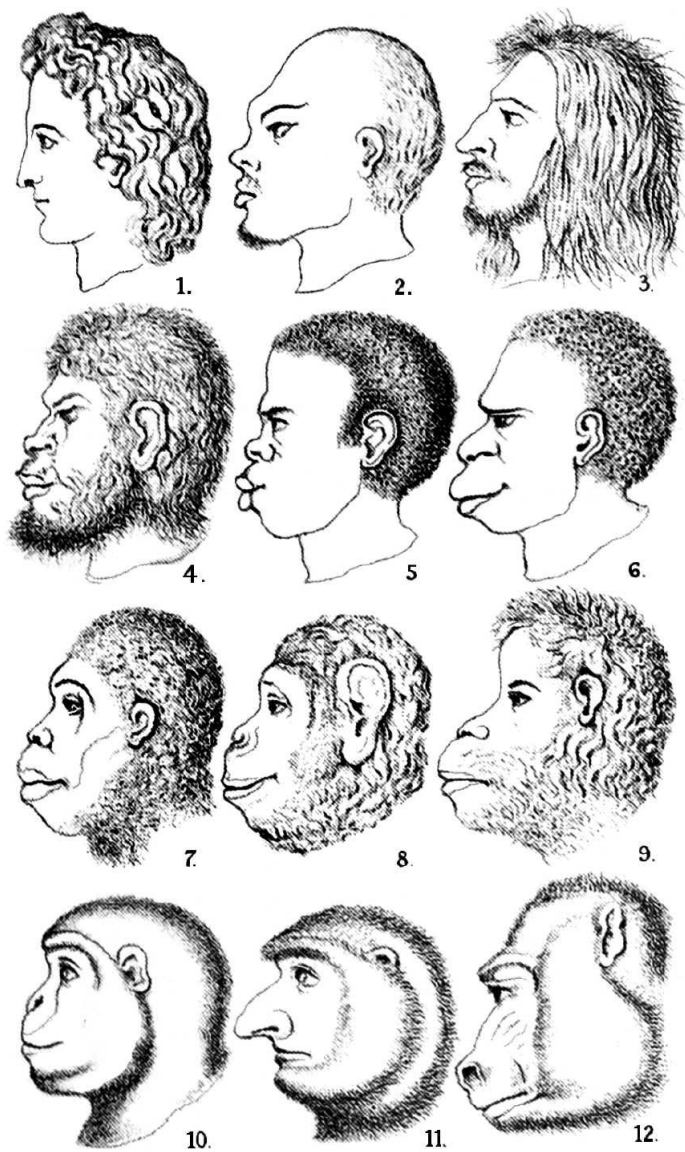
Figure 8. Nott and Gliddon, *Types of Mankind*, 458.





Digitized by (459) ogle

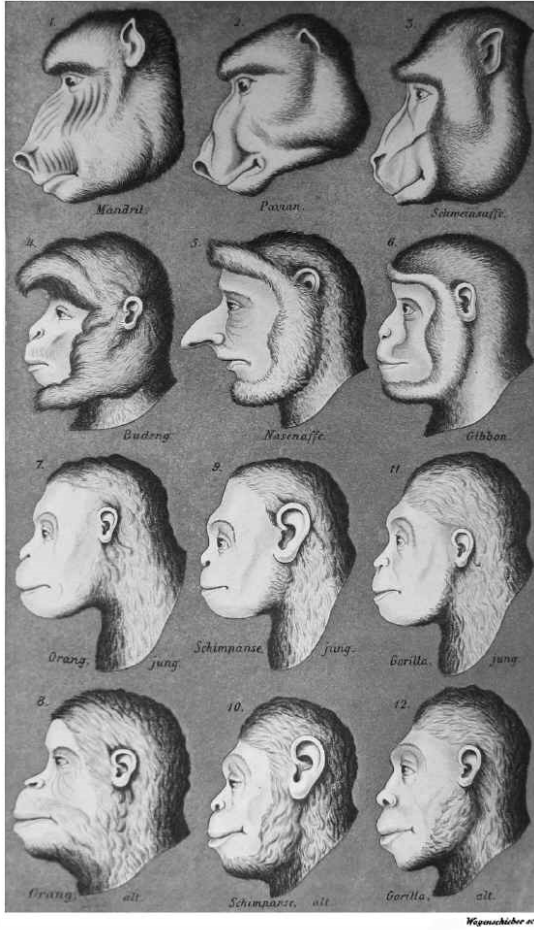
Figure 9. Nott and Gliddon, *Types of Mankind*, 459.



Die Familiengruppe der Kalarrhinen (siehe Seite 555).

Figure 10. Haeckel, *Natürliche Schöpfungsgeschichte* 1<sup>st</sup> edition, Frontpiece.

Taf. XIII



Taf. XIV

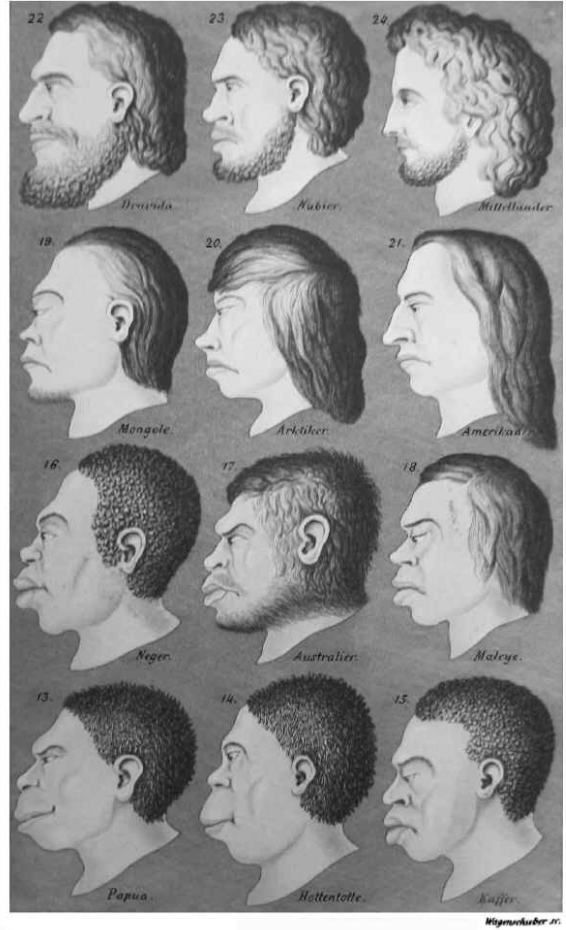


Figure 11. Haeckel. *Natürliche Schöpfungsgeschichte*, 2<sup>nd</sup> edition., 577.

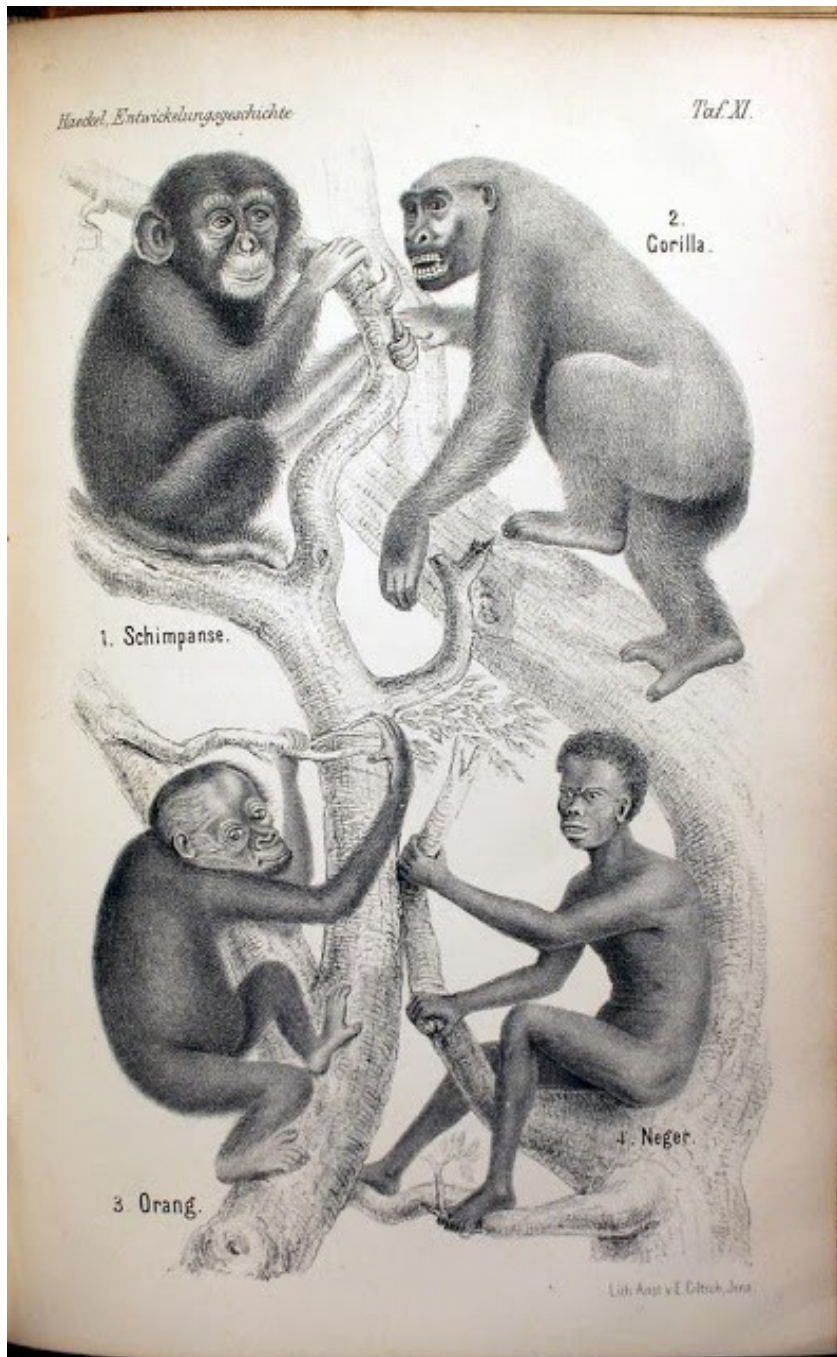


Figure 12. Haeckel, *Anthropogenie oder Entwicklungsgeschichte des Menschen*, 489.

## Chapter 4: Factioning the Contemporary Body

As we have seen, historical anatomical illustrations, with their emphasis on the proper white male form, have employed a factional visual rhetoric that has positioned the Caucasian male body as the ‘normal body.’ This Caucacentric visual rhetoric, rather than remaining a remnant of an outdated historical trend, has surreptitiously continued even to this day in the practices of a more enlightened contemporary medical science. Today anatomical atlases and illustrations are still employed in anatomy labs to teach ‘truths’ about the human form. And while some photographic representations have begun to reflect a more inclusive approach to body depictions, where that has not changed in any significant way are in the hand-drawn anatomical images. Like their historical ancestors, contemporary anatomical illustrations are designed with the express purpose of stripping away variation in form so as to present a body devoid of individuality which is seen as distracting and confusing. If the purpose of an illustration is to depict an ‘everyman’ body, a universal form that can represent the typical body (and by implication the most common body), then variation, it is believed, becomes diverting, drawing the eye away from what is meant to be seen and blurring conceptual clarity.

In contemporary biomedical textbooks and atlases a variety of media are used to illustrate the body. Some rely heavily on photographs of cadavers in various states of dissection, a practice more common to atlases than textbooks, for their displays of interior organs and structures.<sup>205</sup> The typical anatomy textbook uses a combination of photography, hand drawn coloured plates and hand drawn line drawings, with the style used being largely dependent on the information that the image is trying to impart. Photographs are often used as supplements to the more detailed coloured plates and line drawings in a supporting role when bodies need to be seen engaging in a specific activity. For instance, if the leg muscles have just been detailed in a colour plate there may be a photograph of that portion of a leg in a flexed position to indicate where the muscles are located and what the surface skin that surrounds it looks like when the muscles are flexed.

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<sup>205</sup> See for example one of the more widely used clinical atlases Peter H. Abrahams, et al, *McMinn & Abrahams' Clinical Atlas of Human Anatomy, 7<sup>th</sup> edition* (Amsterdam: Elsevier Ltd., 2013). Many texts also use CT images, x-ray images and MRI images as well.

When specific conceptual information needs to be imparted most textbooks and atlases rely on hand drawn coloured plates and line drawings to do the heavy lifting. Coloured plates are generally used when showing a section of the body's interior, like the abdominal cavity and the organs it contains (Fig. 13). These are carefully rendered so as to highlight the specific features being discussed (arteries, nerves etc.) and the parts that are not under discussion are deliberately de-emphasized so as to not distract the eye away from the important features.<sup>206</sup> Coloured plates are an excellent medium for organ, vascular, neural, bone, muscle and other tissue displays, since the artist can illustrate the different structures in different colours to make them stand out against the other structures and to help them be identified with their cohort of like structures. So the lymph nodes are shown in green, the arteries in red, vessels in blue and so forth.

Often in coloured plate sections the viewer is only seeing one small portion of the interior of the body, so surface detail is rare. The reader may recall from chapter two that normative bodies are the working objects of the discipline of anatomy, they are designed to be manipulable and they are also designed to be relatable, or in other words to look like people. Coloured plates are normative bodies as well, but their function is usually to showcase interior structures in sophisticated detail, and they tend to be highly idealized versions of the structures they are revealing. The sectioning of a coloured plate means, to be somewhat gruesome, they look more like meat than they do people.

Line drawings, by definition, are traditionally monochromatic images that consist of straight or curved lines placed against a plain background, generally without gradations in shade or hue (although there are many exceptions) to represent three-dimensional objects.<sup>207</sup> Line drawings are used to great effect in anatomical texts to explicate unseen functions of the body. They are diagrams that usually feature an illustrated body with has some type of textual information included on their surfaces to detail a particular concept (Fig. 14). Unlike other types of anatomical imagery, line drawing images are “more generalized, more interpreted, and less confusing than photographs” and since they are easier to produce are the image type of choice in many

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<sup>206</sup> Hodges, *The Guild Handbook of Scientific Illustration*, 493.

<sup>207</sup> Henry M. Sayre, *A World of Art* (New Jersey: Prentice Hall, 2010).

anatomical texts.<sup>208</sup> Colour plates are definitely more detail laden but can be challenging to interpret, particularly when function is what is being explicated. Colour plates are excellent for giving a visual description, in other words showing what things inside the body look like, and they show connections well, but they are static images which do not give a sense of movement. Photographs are similar and are even often more difficult to make out detail in since they are usually taken from cadaver pro-sections whose tissues during the fixing process are all rendered more or less the same colour.

I have chosen to explain the types of illustrations to make a particular point. A lot of care and consideration goes into the presentation of an illustration. Illustration type needs to match up well with the concept being elucidated. In anatomical illustrations the details are meticulously planned and executed. Anatomist and artist, as we have seen in previous chapters, collaborate to determine the best aspect and angle to display the parts under discussion, what should be highlighted and what should be de-emphasized. This attention to detail is no less true today than it was in the time of Vesalius. Thus, I think it fair to extrapolate that the choice of body depicted in contemporary text is also planned with as much thought and care that goes into the other details of the illustration. This means that the positioning of the bodies in the texts we will examine in this chapter were a conscious choice.

In order to get a clear sense of the types of bodies being used for display and the explication of hidden interior function, I selected five commonly used anatomical atlases, two quick reference atlases, and three anthropological bone manuals from which to do a survey of the illustrations.<sup>209</sup> As we saw in the previous chapter, historically the Caucasian male body became, through the deliberate machinations of the anatomists and physical anthropologists, the normative universal body. A tradition that we will see has seemingly continued on into contemporary atlases and medical textbooks. Based on figures recognizable by both sex (binary of male and female) and race (white and non-white), the white male figures consistently outnumbered all three of the other categories,

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<sup>208</sup> Peter Taylor and Ann Blum, "Pictorial Representation in Biology," *Biology & Philosophy* 6 (1991): 128.

<sup>209</sup> While there are dozens of anatomical atlases and physical anthropology bone manuals, not all are created equal. I have selected ones that are widely used in the anatomy and physical anthropology programs. The two quick reference books that were selected are ones that students would purchase as a supplement to their atlases and textbooks.

comprising from forty percent<sup>210</sup> of the illustrations to eighty-nine percent<sup>211</sup> of the illustrations in the five anatomical atlases. In the two quick reference atlases there were no recognizable non-white bodies.<sup>212</sup> And in four out of the five anatomical atlases there was no representation of non-white females (Appendix 1).<sup>213</sup>

I will also be discussing two other anatomically-based disciplines in this chapter besides anatomy, those of forensic pathology and forensic anthropology. Both of these disciplines also rely on normative universal images in order to teach students the routine practice of their profession. Some time will be spent in this chapter looking at the way the Caucasian male is positioned as a tool in both disciplines. Given the enormous role physical anthropology played in the creation and reification of racial categories, one could be forgiven for expecting forensic anthropology to be more sensitive to issues surrounding race, and one would be wrong. What will become clear as we look at how all three disciplines position the Caucasian male body is that the Caucacentric racialized discourse of difference and deviation that started in the 18<sup>th</sup> century still lingers perceptibly.

Another aspect that becomes clear is that line drawings in particular seem to be the medium of choice when positioning the Caucasian male as the normative universal body. The irony here is that line drawn anatomical images, by virtue of being black lines on a white background, could in a broad sense be claimed to be ‘colourless.’ And yet, most of them they still remain identifiably Caucasian and male which, given the claims of how the generic working object is the universal stand-in for all bodies, makes these figures as somehow being presented as ostensibly race-less. It could be easy to accept these figures as manifestations of a legitimate attempt at ‘colour blindness,’ if that is what they were. Colour blindness, in this manner, being the idea that race is a socially constructed phenomenon and is therefore meaningless, and as such things like the colour

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<sup>210</sup>Keith L. Moore, Arthur F. Dalley and Anne M. R. Agur, *Moore Clinically Oriented Anatomy, 7<sup>th</sup> edition* (Philadelphia and Baltimore: Lippincott Williams & Wilkins, 2014).

<sup>211</sup> June L. Melloni, et. al. *Melloni’s Illustrated Review of Human Anatomy, 3<sup>rd</sup> edition*. (New York: Cambridge University Press, 2008).

<sup>212</sup> As mentioned earlier, the anatomical figure needed to display recognizable features that signaled their gender (male/female) and their race (skin colour, epicanthic folds on the eyes, hair type/colour and other phenotypical facial features that are used to identify different racial groups). All illustrations were examined for these markers, including photographs, line drawings, and colour plates.

<sup>213</sup> See Appendix for breakdown by text.



of skin should be consequently ignored. Or we could believe that these illustrations were designed with the thought that there is such diversity in the human form that it would be impossible to depict it all so the presentation of a neutral, “colourless’ form is preferable.

But in actuality the figures that dominate medical texts are not deliberate examples of some sort of colour-blindness, in which the bodies that are depicted are deemed neutral enough in presentation so as to stand in for all. Arguments such as these could only work if a phenotypically Caucasian body was indeed colourless or race-less, but a white body is in no way colourless in a racial scheme, on the contrary, it is *white* which, according to racialized discourse, makes it not black, brown, yellow or red. For these illustrations to be neutral, that would require these illustrations to be purposely designed with a colour-blind agenda in mind. And they are not, simply because white is the colour that has since the creation of racial classification always been associated with the white race. As we will see, it is not the lack of colour in the drawings that matters but rather it is the deliberate designing of phenotypical variations associated with Caucasian males on the illustrations that renders them highly racialized iconography.

It is important to remember that anatomical illustration as a craft has a long history, and the traditions that underpin it run deep. As we have seen in previous chapters, anatomists worked hard in collaboration with their illustrators to ensure that the depictions in their atlases reflected their experience, expertise and skill as dissectors. That their observations were coloured by the standpoint and highly subjective worldview under which they operated would never have occurred to those anatomists. Race, particularly by the late 18<sup>th</sup> century, was known to be a real state of being. Hundreds of years of factional narratives that positioned the white male body as the ideal form made it fairly simple to accept racial classifications and the baggage that came with them as fact. Conversely, the history of renouncing race as a legitimate biological truth is considerably shorter and, if we recall Lüthy and Smets’ warning in the second chapter, old traditions which have become an integral part of the current scientific practice will see awareness of the specific philosophical premises which were a fundamental part of its original creation disappear from view.<sup>214</sup>

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<sup>214</sup> Recall Lüthy and Smets, “Words, Lines, Diagrams, Images,” 439.

## 4.1 Functional Anatomy

Race in functional anatomy is looked upon largely as a distraction that is immaterial to the project of explicating interior functions, like blood flow, that remain hidden from the eye. Functional anatomy is primarily interested in the way the body moves and how it conducts its daily activities. Race, in a muscle, is not just absent, it is in principle non-existent. And the colour of the skin is irrelevant in a functional anatomy lab because one of the first processes a cadaver goes through after it leaves the embalming room is the removal of surface skin and connective tissues in order to expose the musculature underneath. Once the skin is removed, muscle tissue on each body is the same colour. For this reason alone functional anatomy can comfortably make claims to colour-blindness and, for all intents and purposes, ignore race altogether when teaching about the form and function. Until, that is, one begins to refer to anatomical atlases.

Functional anatomy, as we have learned in previous chapters, relies heavily on diagrammatic schemata to present non-discrete concepts and to illustrate things that are invisible to the eye. Even in the gross anatomy cadaver lab there are things that a scalpel cannot reveal and it is up to anatomical illustration to fill those gaps. Functional anatomy illustrations have remained principally unchanged in the five hundred years they have been part of medical pedagogy. The illustrations are still presented as cleaned up and stripped down versions of the body's exterior and interior whose purpose is to draw the eye to the lesson being taught and to habituate the eye to *see* what is meant to be seen without the distraction of messy fluids and extraneous tissues to obscure that line of sight.<sup>215</sup>

Even though mentions of race are largely absent in the pedagogy of functional anatomy, this does not mean that race does not exist in functional anatomy. It is clearly present, primarily in the choice of bodies in the illustrations used to elucidate abstract hidden functions within the body. Functional anatomy is dependent on normative universal bodies in its illustrations to serve as textual canvases of demonstration. For example, one of the most common textual body illustrations employed in anatomy is one that maps the lymphatic system of the body. In these types of illustrations, diagrams of

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<sup>215</sup> Datson and Galison, *Objectivity*; Harcourt, "Anatomy of Antique Sculpture;" Carlino, *Books of the body*; Berkowitz, "The Beauty of Anatomy;" Stelmackowich, "Bodies of Knowledge."

the lymphatic system are drawn upon the image to indicate the path of lymph drainage and the areas that the lymph nodes can be located within the body. Both of the illustrations I have provided are typical examples of this type of image. While they are images of two different figures, what is the same is that both are Caucasian males (Fig. 15, 16). These images are both typical examples of the line drawing normative body, the form is generally simplified to accommodate the textual information that is added to the surface. What I find particularly interesting about these two images is that the detail that is given to the form, beyond the addition of the lymphatic system, are facial characteristics and hair, both of which clearly mark these images out as Caucasian males. These are details that arguably make the figures more relatable but both of these images could have been rendered without facial features that marked them as Caucasian males and been just as effective outlining the lymphatic system.

Illustrations like these ones are ubiquitous in anatomy texts as a way to teach abstract concepts. In a similar manner, the motions and functions of various hidden anatomies, like the arteries (Fig. 17), the dermatomes (Fig. 18) or the nerves (Fig. 19) are often drawn upon an illustration to show how these systems function *in situ* as part of the overall whole. A cadaver, by virtue of its lack of animation, is often ill-suited to providing a clear demonstration of purpose for systems that require the hydraulic-like actions of the body's interior to perform. It is up to anatomical illustrations to stand in as a way to trace the arc, route or range of a system that is buried deep within the body's tissues.<sup>216</sup> In this way a line drawing can show the nerves involved in specific movements of the limb (known as myotomes) and give a sense of the motions (Fig. 20). To understand how these motions are performed allows a medical professional to assess where or what is damaged on the interior of the body when function is inhibited.

Unsurprisingly, these are all functional explanations which are typically attached to an illustration of a Caucasian male. As I mentioned, illustrations of the Caucasian male are ubiquitous in anatomical texts and my choice was primarily about which ones to choose out of the myriad of options available. In no way was I forced to scour anatomy atlases in an effort to locate Caucasian male bodies in the illustrations. What I find striking about the myotome image is that even though the image is clearly marked by the

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<sup>216</sup> Stelmackowich, "Bodies of Knowledge."

deliberate application of facial features as Caucasian and male there was nonetheless an attempt to neutralize the presentation of the genitals. That the figure is a Caucasian male is in no doubt, and the neutralizing of the genitals in no way alters that reality. Style choices of this nature are hard to fathom, as it is clear that effort went into designing the body as a Caucasian male, and if the genitals are considered distracting, one could argue the same about the addition of facial features and hair as well.

In all of these illustration instances the body is provided and then is written upon to encode the illustration with a message of meaning that allows the viewer to envision the unseen interior function. In order for the text to be written upon the ‘skin’ of the normative body line drawings are necessary to provide a clear surface. What is not necessary is the addition of phenotypical physical features that are common to the Caucasian male when featureless or neutral figures would work just as well. If the preference is to provide facial features to humanize the illustration and make it more relatable, then it seems to me that illustrations that reflect the population would be even more effective than ones which reflect over and over only one segment of the population. Here, however, is an area where the factional narrative that surrounds the Caucasian male flexes its muscles. The female body, as we have seen in the previous chapter, is factionally positioned in anatomical illustration as a sexed object of reproduction. The non-white body is primarily defined by its factional narratives as a ‘body with race’ a narrative that is bolstered by the positioning of the white body as race-less. Neither the female, nor the non-white body embody the fundamental humanness required to serve as a universal body.

In keeping with tradition, female figures are still rarely used in functional anatomy images unless the process being detailed with the illustration is one connected directly to female-related functions like lymph drainage from the breast tissues or in illustrations of female sex organs and reproductive processes. The preference for Caucasian male figures over female figures becomes particularly striking when the male figure is used to represent a pathological process that is more prevalent in females than males (Fig. 21). According to the American Academy of Orthopaedic Surgeons, idiopathic scoliosis is ten times more likely to affect women than men, and other studies have revealed that the rates of lordosis and kyphosis, two other common vertebral column

deformities are again higher for women than men.<sup>217</sup> So to present an illustration of Caucasian male with all three of these conditions seems counterintuitive and frankly, an odd choice.

This propensity to favour male anatomy over female anatomy in anatomical texts has been the subject of several studies<sup>218</sup> where it has been noted that most texts show a marked preference to use “male illustrations to demonstrate anatomical features common to both sexes far more frequently than female illustrations.”<sup>219</sup> And while the lack of female bodies in anatomy texts has not gone unnoticed, the lack of non-white bodies has been rarely remarked on. One result of my study of this issue was that I found a significant lack of non-white female bodies across almost all the anatomical texts. With the exception of *Moore Clinically Oriented Anatomy*, whose illustrations of non-white bodies comprised of fifteen percent male and fifteen percent female of the overall totals, the non-white female saw no representation at all in the other four texts. But, as we saw in the previous chapter, this is not a new phenomenon, as non-white female bodies historically have rarely rated a mention unless it was to discuss their fecundity or supposed voracious sexual appetites.<sup>220</sup> Hence, when females are represented in the text they are almost invariably white. In only one text out of the five that I examined did non-white males outnumber white females, and that was simply because there were no recognizable female figures at all depicted in that text (Appendix 1). And even though the non-white male illustrations may have outnumbered the nonexistent females they still

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<sup>217</sup> See Amy L. McIntosh and Jennifer M. Weiss, “Scoliosis and Sex,” *AAOS Now*, April 2012; Panayotis Soucacos, et al, “Risk Factors for Idiopathic Scoliosis: Review of a 6-Year Prospective Study,” *Orthopedics* 23, no. 8 (2000): 833-838; Sedighe Eslami and Jamshid Hemati, “Prevalence Lordosis and Dorsal Kyphosis Deformity among Girls 23-11 Years and its Relationship to Selected Physical Factors,” *International Journal of Sport Studies* 3, no. 9 (2013): 924-929; C. A. Giglio and J. B. Volpon, “Development and Evaluation of Thoracic Kyphosis and Lumbar Lordosis During Growth,” *Journal of Children’s Orthopaedics* 1, no. 3 (2007):187-193.

<sup>218</sup> See Susan C. Lawrence and Kae Bendixen, “His and Hers: Male and Female Anatomy in Anatomy Texts for U.S. Medical Students, 1890–1989,” *Faculty Publications, Department of History* 35 (1992): 925-934. Accessed March 30<sup>th</sup>, 2015. <http://digitalcommons.unl.edu/historyfacpub/35>; M. Giacomini, P. Rozée-Koker and F. Pepitone-Arreola-Rockwell, “Gender Bias in Human Anatomy Textbook Illustrations,” *Psychology of Women Quarterly* 10 (1986): 413-420; Kathleen D. Mendelsohn et al, “Sex and Gender Bias in Anatomy and Physical Diagnosis Text Illustrations,” *JAMA* 272, no. 16, (October 1994): 1267-1270; Diana Scully and Pauline Bart, “A Funny Thing Happened on the Way to the Orifice: Women in Gynecology Textbooks,” *American Journal of Sociology* 78, no. 4 (1973): 1045-1050.

<sup>219</sup> Lawrence and Bendixen, “His and Hers,” 929.

<sup>220</sup> See Gilman, *Black Bodies, White Bodies*; and Fausto-Sterling, *Gender, Race, and Nation*.

only accounted for twenty-five percent of the illustrations to the white male's seventy-five percent.

Again, what is perplexing is that line drawings are fairly simple in form and the addition of facial features is done presumably to make the illustrations more relatable, so why repeatedly render them as Caucasian males when it would be just as easy to provide a different set of facial features or genitals to make them relatable to a broader audience? The repeated use of the Caucasian male form as the normative universal body paradoxically, on one hand seems unreflexively reflective, if I can use that phrase, of the tradition of anatomical illustration and on the other hand is a seemingly deliberate choice by contemporary atlas makers. So, I think the answer to that question comes back to the idea that the conforming normalness of the Caucasian male figure is seen as unremarkable in its very whiteness, and by extension unsubversive and unchallenging. It is as if the text written upon that type of body can perform its work without interference, transmitting its message cleanly and clearly. As reasons go, this is not a very compelling excuse for the consistent use of a Caucasian male body to demonstrate specific anatomical abstract concepts. Not when the 'generic' male figure is so very clearly phenotypically un-generic in his racial affiliation. It is not the lack of colour in the line drawing of the lymphatic figure or the scoliosis image that demarcates either as Caucasian because, frankly, white people just are not that white. It is the normative body's details, his generically Caucasian facial features and hair, which speaks to his racial status as a white man.

And history would suggest that once the issue of race became the focus of anatomy, the use of a Caucasian male as the normative universal body in functional anatomy became less about the use of a Caucasian male and more about the non-use of a non-white body. One must remember that the primary objective of the science of anatomy has been to delineate a human structural norm so that the abnormal and the pathological can be easily identified, rooted out and eliminated.<sup>221</sup> Bodies today are the legacies of the powerful systems of classification, measurement and visualization that proliferated out of the authoritative fields of scientific empiricism that began to emerge in the hands of natural philosophers like Aristotle and Galen and then erupted in the 17<sup>th</sup>

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<sup>221</sup> Harcourt, "Anatomy of Antique Sculpture."

century in response to discoveries made during colonial expansion. The factional narrative of the ‘normal body’ was one that remained intact as a fully realized form and it acquired much of its meaning mainly through contrast to the various non-conforming bodies that surrounded it. It is in the factional narrative of normality encasing the Caucasian male body where the authoritative power of scientific racism found much of its credibility.

The historical epistemological underpinnings of anatomical science have stood firmly upon the factional knowledge that the Caucasian male was biologically and culturally superior to all Other bodies. The subtext undergirding the disproportionate use of illustrated Caucasian male bodies was that to know female and non-white anatomy one must comprehensively learn Caucasian male anatomy. Thus, given the history of the discipline, the placement of a Caucasian male body as the central figure of contemporary anatomical epistemology is not just about the position of the Caucasian male in an anatomical hierarchy, which began to be clearly established in 16<sup>th</sup> century when the first anatomical atlases began to enjoy the fruits of the Gutenberg printing press. It is also about reinforcing the place of Other bodies within that knowledge producing hierarchy.<sup>222</sup> To this end, anatomical information is, and has always been, coded illustratively upon the normal form of the Caucasian male. In this manner, the illustrated normative universal body and the lessons they impart not only support the factional narrative about the Caucasian male, they help create and sustain the factional narratives that define all Other bodies as well.

## **4.2 Forensic Pathology**

In forensic pathology, anatomical illustrations play a crucial role in the identification of an individual, in the determination of the cause and manner of death and in the detailing of injury and insult to the body in the time leading up to death. All of these elements are combined in a forensic pathology examination in order to aid law enforcement in the determination and answering of questions surrounding unattended deaths, suspicious deaths, suicides and homicides. Forensic body charts are used to depict

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<sup>222</sup> Curran, *The Anatomy of Blackness*; Frantz Fanon, *Black Skin, White Masks* (New York: Grove Press, 1967).

specific sites of trauma on a body as well as detail identificatory marks and features (birthmarks, tattoos, indications of surgical or dental interventions etc.) that will aid investigators in identifying the dead individual. The forensic body charts are used in legal proceedings and are what is known as “demonstrative evidence,” which is the use of visual illustrations and representations in court and trial displays.<sup>223</sup> Clearly, in the case of dead individuals, the body itself cannot be presented as evidence, so illustrations and photographs are substituted as documentary evidence.

Body charts are a staple in forensic pathology pedagogy. The use of the forensic body chart is also ubiquitous in Western pathology labs. There is little deviation from the standardized format from country to country and all use the same style of schematic to detail their findings upon. What is common amongst all the representations used in the medico-legal setting, notes Joseph Pugliese, is that:

The process of schematizing the human body necessarily pares down visual details to a representational minimum. The resulting figures reproduced...are represented, in other words, as ‘generically’ human figures. This very genericity of the human, however, is founded on unacknowledged caucacentric models of the human figure.<sup>224</sup>

Pugliese effectively makes this argument manifest by providing a visual example the ‘typical body chart’ that is used extensively in forensic pathology as the body-of-record in medico-legal autopsy suites (Fig. 22). The example provided by Pugliese is taken from what is considered one of the seminal texts in contemporary forensic pathology, *Simpson’s Forensic Medicine* (1997, 11<sup>th</sup> edition). It is a diagram that Pugliese, in his research, found reproduced “without exception, within the scores of textbooks, manuals and anatomical atlases” which is used as the forensic examination chart in medico-legal labs in North America, the UK and Australia.<sup>225</sup> These typical body charts (see Fig. 23 for a different version) are designed to be a blank canvas upon which the attending pathologist is expected to diagram any anomalous topographical markers and insults that the body may have experienced *ante-*, *peri-* and *post-mortem*. The typical body chart itself speaks volumes about the place the Caucasian male body has in forensic

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<sup>223</sup> K. T. Taylor, *Forensic Art and Illustration* (London CRC Press, 2001), 4.

<sup>224</sup> Pugliese, “Necrological Whiteness: The Racial Prosthetics of Template Bodies,” *Continuum: Journal of Media and Cultural Studies* 19, no. 3 (2006): 352.

<sup>225</sup> *Ibid*, 352.



science, but it is the caption that accompanies the illustration from the Simpson's text that cements its claims to that supremacy when it declares the depicted Caucasian male body is 'typical.' This use of Caucasian male body as the typical body seems to take place without any reflection or any acknowledgement that what is being displayed is representative of but one type of body.

Claims to typicality are one thing, but the deliberate lack of phenotypical variation seems at odds with the text that follows the introduction of the typical body chart when author Knight states, "In a living person or an intact body, the facial appearance is all-important, both from racial aspects and from individual appearances."<sup>226</sup> What is fascinating about the use of this 'generic' Caucasian male in forensic pathology is how the race of the Caucasian form seemingly disappears, allowing the Caucacentric body to be positioned as race-less. This positioning of the Caucacentric body chart as racially neutral consequently reinforces the idea that non-white bodies are the ones 'with race' and that having this racial status is somehow a deviation from the race-less and typical Caucasian norm. If race is acknowledged as an important element in a forensic investigation because phenotypical features help with identification, then the very use of Caucacentric male images as race-less suggests Caucasian male bodies do not need to rely on racial features to be identified unlike the non-white bodies that do.

Knight has very little to say about racial features but what he does say positions race as something extra that requires attention only when it challenges what has been accepted as the 'natural' Caucasian racial norm noting:

In both the living and the dead, the height, weight and general physique need to be recorded and compared with any missing person. Racial pigmentation, racial and ethnic facial appearances, such as flared nostrils, epicanthic folds, crinkled hair, etc., are obvious features which need no medical knowledge. The eye colour is useful in the caucasian race (negroid and mongoloid races virtually all have brown irises). In white races, caution must be used in the dead, as post-mortem changes tend to darken blue or green eyes so that within a day or so, they appear brownish.<sup>227</sup>

In these brief but laden comments regarding race and racial characteristics, Knight clearly shows that the detailing of racial characteristics are specific to those designated as non-

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<sup>226</sup> Bernard Knight, *Simpson's Forensic Medicine, 11<sup>th</sup> edition* (New York: Oxford University Press, 1997) 33.

<sup>227</sup> *Ibid*, 32.

white. With the exception of eye colour, Caucasian phenotypical features are not mentioned. Identity in this passage is built upon visual differences that are noted as racial but 'racial' in this instance means bodies that are not white. White bodies are once again positioned as race-less. Race is also reduced and understood to be a subset of easily defined racialized physical identifiers that, if necessary for the purposes of identification, can be applied or pasted on to the body chart. If the body is that of an Asian individual, in this manner, all a pathologist needs to do is add, with a quick stroke of a pen, some epicanthic folds to the face of the body chart. If "negroid" then an application of "crinkled hair" and "flared nostrils" will suffice. Non-white bodies, in consequence, are reduced to only pieces, parts that can be grafted onto the whole Caucacentric normative universal body.

Since the Caucasian male body is presented as a complete form, it is a unit that requires only the alternations that the circumstances of death have brought to it. Representational marks of wounds and trauma are to be drawn upon the body chart to provide evidence of change to the body form. And race too, is to be added much like the manner in which the pathologist will also log the various insults discovered on the body after death. A non-white body is not presented in this medico-legal schema as complete unit, rather it is viewed in a piecemeal way, and the racially-identified representative parts must be layered on top of the Caucacentric body chart, when necessary, as deviations from the norm. The non-white body, in this manner, is defined in terms of its differences from the Caucacentric 'generic' body chart.

It is the placement of the Caucasian male body as the race-less, generic body where the paradoxical nature of racial classification in forensic pathology becomes manifest. On one hand, race and the phenotypical characteristics that are associated with it can be viewed as having no valid place in a discussion concerning how a person died and thus the use of a 'non-raced' universal body could ostensibly be justified. On the other hand, the use of a clearly Caucasian male body as the normative universal body upon which, it is recommended, that "...racial pigmentation, racial and ethnic facial appearances, such as flared nostrils, epicanthic folds, crinkled hair, etc"<sup>228</sup> be recorded because "facial appearance is all-important, both from racial aspects and from individual

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<sup>228</sup> Knight, *Simpson's*, 32.

appearances”<sup>229</sup> suggests that the use of Caucasian male body is indeed done with an awareness of its racial status as white.

So why use the Caucasian body as a neutral universal body if it indeed is understood to have a racial status? The simple answer could be because it has *always has been*. But I am left to wonder if part of what is going on in forensic pathology can find its roots in the historical positioning of the Caucasian race as the primal race and the male body as the primal body. For the monogenists who subscribed to environmental explanations, non-white bodies, given the right set of environmental circumstances, could have the potential to eventually become lighter or closer to white. For the polygenists the white race was the human race, the Other bodies were connected to less human origins.

Maybe the sense that race has more to do with being non-white than it does with being white stems from the historical legacy that factionally positioned the Caucasian race as the perfect race and defined all Other bodies by how close they conformed to that perfection. The further away the Other bodies were removed from the white norm the more racially invested it became. Whiteness, in spite of its obvious racial identification as such, is thus presented as unraced and neutral while the non-white body is very deliberately not used as a representative of the masses expressly because its racialized features are too specified to be considered neutral. The non-white body goes unacknowledged by the Caucacentric body chart until its racial status must be acknowledged for identificatory reasons. The use, then, of a Caucasian male body in forensic pathology can be seen as both deliberate and unreflexive at the same time and the non-white body, by its very ambiguous nature, remains largely absent, forced to lurk at the margins.

### **4.3 Forensic Anthropology**

Forensic anthropology is tasked with identifying human skeletal remains and the manner of death for medico-legal purposes. Forensic anthropologists often work closely with forensic pathologists in the identification and determination of the manner and cause of death. As a result the two disciplines share many similarities in their approach to pedagogy. Forensic anthropology, unlike forensic pathology which practices its craft on

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<sup>229</sup> Ibid, 33.

the flesh, however, focuses its attention almost exclusively on the bones. Often left with little more than an assortment of fleshless bones and bone fragments to identify someone with, forensic anthropologists have, in response, developed a series of highly technical processes to read the bones for evidence of identity. Many of the techniques used find their foundations in the anthropometry of the 19<sup>th</sup> century where extensive charts of non-metric characteristics and metric ranges of measurements were recorded and subsequently treated to statistical management for comparative purposes.<sup>230</sup> In concert with these statistical tables, forensic anthropology manuals also rely on specific bone/body images to serve as exemplars for comparative purposes.

In recent years, there has been a concerted effort to sanitize racialized terminology from the descriptive process, particularly those terms which have attained pejorative status like ‘Negroid,’ ‘Oriental,’ ‘Indian,’ for more benign geographical terms like African, Asian and North American Asian, respectively. Even the word ‘race’ has undergone a facelift, shifting in many texts from ‘race’ to that of ‘ancestry.’<sup>231</sup> That being said, not all physical anthropology has made the more politically correct shifts some of their contemporaries have. Indeed, in the seminal text of the discipline, William Bass’s *Human Osteology*, racial groupings are still referred to as Caucasoid, Negroid and Mongoloid and the illustrations that accompany these categories are in turn labelled ‘American White,’ ‘American Black’ and ‘Native American’ respectively.<sup>232</sup>

This type of classification is in no way a departure from the rest of the field, the move to more sanitized terms is the departure, rather it is a clinging to traditional terminology instead. Bass is a giant in the field of forensic anthropology and we will be looking at his racially identified skulls a little further along in this section. The point of mentioning this issue of terminology discrepancy is that it is important to note that forensic anthropology still holds on to the subjective, and oftentimes faulty, anthropometric data and terminology compiled by their forebears that lent credence to the biological origins for race developed in the 19<sup>th</sup> century, data which was built off of the

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<sup>230</sup> See William M. Bass, *Human Osteology: A Laboratory and Field Manual, 5<sup>th</sup> edition* (Springfield: Missouri Archaeological Society, 2005), 21 for an example of the reliance on 19<sup>th</sup> century anthropometric tables in the 21<sup>st</sup> century.

<sup>231</sup> Karen Burns, *Forensic Anthropology Training Manual, 3<sup>rd</sup> edition* (New Jersey: Pearson Education, Inc), 2013.

<sup>232</sup> Bass, *Human Osteology*, 83-88.

craniums of thousands of ‘non-white’ people.<sup>233</sup> While the rest of anthropology has leapt to distance itself from its earlier racial claims, forensic anthropology quietly continues to operate under the same principles that 19<sup>th</sup> century anthropometry established—that race is inscribed on the very foundations of the human form, the bones.

Some argument could possibly be made that the reproductive and geographical isolation of the different racially identified populations prior to the 19<sup>th</sup> century could have led to some measurable biological differences in the bones. But the increase in global traffic and racial mixing since the 19<sup>th</sup> century has made many of those potential measurements questionable. The use of ancestry, as an identifier in place of race, has increased the inclusion of peoples into ancestral groups whose phenotypes are more diverse than those that were used to determine folk conceptions of racial classification. Thus, in the language of forensic anthropology, people of Asian ancestry can be anyone who is identified as Japanese, Chinese, Native American or Australian Aboriginal. European can include some groups that are culturally identified as Asian, such as people of Indian and Pakistani descent (although, not all groups, as some groups would fall under African and others yet as Asian designations). Thus, the inscription of race on the bones has become, in many ways, increasingly difficult to sustain, a reality that has had little impact on the practices of forensic anthropology.

In recent years there has been a move by some theorists, particularly in anthropological studies of human evolution, to examine the genetics of contemporary populations to “estimate degrees of relatedness among human breeding populations” to “reconstruct human evolutionary history” in a way that allows for a biologically objective way to define race.<sup>234</sup> In this manner, race could be moved away from socially constructed folk conceptions of racial categories--the white, black, brown, red and yellow way of looking at the world--to a biologically-based classificatory system “that individuates taxa by appeal to common ancestry.”<sup>235</sup> Gone would be generalized folk

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<sup>233</sup> Gould, *The Mismeasure of Man*.

<sup>234</sup> Robin O. Andreasen, “Race: Biological Reality or Social Construct?” in “Proceedings of the 1998 Biennial Meetings of the Philosophy of Science Association Part II: Symposia Papers,” supplement, *Philosophy of Science* 67 (September 2000): S659.

<sup>235</sup> *Ibid*, S653.

classifications like Asian, or Caucasian that are based on similarity and in their place would be those based on a genetic evolutionary mapping of ancestry.<sup>236</sup>

The shift to this type of biological race classification has yet to make any significant impact on the methods currently in use in forensic anthropology to identify remains but the terminology that has been used to describe different racially identified groups may yet begin to slide in the direction of evolutionary ancestry. Folk terminology, for the time being, remains entrenched as a language to identify remains. Forensic anthropology is often used in service to law enforcement whose use of folk terminology to identify people is fairly straightforward, with words like Caucasian, Black, Asian, Latino and Native used to describe different groups. If identification of remains are to line up with missing person databases, for example, then the forensic anthropologist usually tries to provide a racial identification that makes sense within those groupings.<sup>237</sup>

What is interesting about this concerted shift from the word ‘race’ to the word ‘ancestry’ is the way in which it quietly tucks away the origins of the anthropometric science which helped establish the flawed biological foundations of race in the first place. Racial categories began as a classificatory tool to make sense of bodies that looked different from the white European body but anthropometry, which obsessively measured and catalogued those differences, gave credibility to the belief that there were marked biologically-based differences that could be statistically *proven*. And yet, as Stephen Jay Gould argued, many of those measurable differences were either so statistically insignificant as to be useless or were fudged to fit the specific agenda of the burgeoning field of 19<sup>th</sup> century race science.<sup>238</sup> All that notwithstanding, conceptually race remains a complicated and controversial topic within forensic anthropology, as it is in most disciplines that have connections to anatomical science. But the complications of race in forensic anthropology are largely linguistic and rarely biological for those who practice in the discipline.

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<sup>236</sup> Robin O. Andreasen, “The Meaning of ‘Race’: Folk Conceptions and the New Biology of Race,” *Journal of Philosophy* 102, no. 2 (February 2005): 94-106.

<sup>237</sup> Tim D. White, Michael T. Black and Pieter A. Folkens, *Human Osteology, 3<sup>rd</sup> edition* (Burlington: Elsevier Academic Press, 2012), 422.

<sup>238</sup> *Ibid.*

Anthropology as a discipline is well aware of their deep affiliation to the race science that developed in the latter half of the 18<sup>th</sup> century and efforts have been made to distance themselves from the more egregious transgressions of the past. The problem is that while race, in anthropology as a discipline, is recognized as a socially constructed phenomenon, in forensic anthropology there is a deep-seated belief that those socially constructed categories of racial identity do have demonstrable physical markers to sustain them. Historically, identified ‘Negro’ skulls (and of course, those of women as well) were measured and claimed to exhibit smaller carrying capacity which led to lower intelligence, a historical factional narrative that forensic anthropology has distanced itself from. But race in some measurable ways, it can be argued, is written on the bone. And the skulls were not the only bones measured to make up the myriad of data tables that are employed in physical anthropology. All the bones were measured and many of these data tables and anthropometric measurements, if we recall, were often used with great success to equate non-white skeletal morphology with the lower primates. Those tables of measurements are now used to great effect when determining age, sex and race. This practice of relying on dubiously acquired data sets from the questionably objective ‘science of anthropometry’ is the uncomfortable reality of contemporary forensic anthropology and it is a practice that will not change until a convincing alternative can be positioned to dislodge it.

I mention this reality of anthropometry deliberately because I wish to draw our attention to an unusual illustration that I found in the osteology manual created by Tim White with his two collaborators Michael Black and Pieter Folkens (Fig. 24).<sup>239</sup> Tim White is one of the most celebrated paleoanthropologists of his generation, famous for his work on Lucy the *Australopithecus afarensis* discovered in 1974. White’s *Human Osteology* is an ambitious and impressive piece of work. It has hundreds of photographs of every bone in the body taken from a variety of angles. There are few actual hand drawn illustrations, which are more typical of the disciplinary texts. However, one of the few hand drawn illustrations that is in the text is one found in most anatomy atlases and osteology manuals, that of the directional terms and planes of the body. Many anatomy and osteology manuals supply a picture of a human with a quadruped mammal like a cat

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<sup>239</sup> White, Black and Folkens, *Human Osteology*.

or a dog to show how bipedal planes line up with quadrupedal ones. In the White manual there is a recognizably non-white, arguably African, male as the illustrative stand-in for the planes sectioning. Illustrations of non-white bodies are, of course, rare in many of these texts so this illustration is already unusual. But what is striking about this illustration is that the quadruped mammal next to the African male is a baboon. Given the history of the discipline of anthropology and its role in placing the African male closer on the evolutionary tree to the monkeys and great apes I found this illustration to be troublesome and frankly, ill-advised.

This is particularly unfortunate in the White manual, which contains a thoughtful discussion regarding race, social construction, folk terminology and the medico-legal demands for racial identification in one of the later chapters which mentions many of the issues surrounding racial classification *except* for the role anthropology as a discipline had in its creation.<sup>240</sup> White does acknowledge that racial identification practices need updating, noting that cranial morphology still remains the best option for racial identification but suggests that given the more globalized world we live in those markers of ‘race’ are slowly losing their explanatory power.

One has to question then, given Tim White’s attempt to address the controversial issues surrounding race in his discipline, why he chose an illustration of an African man juxtaposed against a monkey to grace his text. The most enduring factional narratives about non-white bodies were the ones that placed the ‘Negro’ in close familial proximity to the great apes, recall the Haeckel illustration from the previous chapter that provided a ‘family tree’ of the ‘Negro’ and apes (Fig. 12). Socio-cultural claims made about the primitive nature, lower intelligence and baser sexual appetites of the non-white body were supported first by the anthropological ethnographies written by naturalists and then later by the scientific ‘facts’ revealed by the anthropometric data sets that eventually followed. These types of factional narrative remained firmly in play right into the first half of the 20<sup>th</sup> century in both anthropology and sociobiology. This leads me to wonder if White was, unbeknownst to him, operating under the influence of his own academic training, a training that made an illustration of this type seem appropriate. Did he deliberately choose to atypically present an African male in an illustration with a baboon

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<sup>240</sup> Ibid, 421-424.



without reflecting on the negative connotations of such a comparison? I have no answer to this question. But let me be clear, the choice to provide an African male body as an illustration in an anthropological text as a normative figure is an anomaly, and yet White chose it. The choice to position it against a baboon, however, as we have seen, is a tactic well in keeping with historical anthropological narratives. I highlight this illustration and Bass's use of the terms *Caucasoid*, *Negroid* and *Mongoloid* for a specific reason. Physical anthropology and forensic anthropology have yet to find a way to reconcile their past associations with race science in their contemporary practice. Bass and White's texts are certainly two of most widely used bone manuals in physical and forensic anthropology, and yet both texts lapse occasionally into outdated and, in stark terms, racist tendencies with little to no acknowledgement of the unpleasant history attached to those choices.

We will begin now to look at these three texts so we can see how the Caucasian male is positioned in forensic anthropology. Virtually all forensic anthropology textbooks and manuals start at the top and work their way down the skeletal body. The skull, which consists of the cranium (the cavity designed to hold the brain) and the mandible (lower jaw), are the first bones to be taught as a collective which are then disarticulated to showcase each bone individually from a variety of perspectives in an effort to provide the most comprehensive visual tour of the morphological anatomy possible. The importance of learning the skull as thoroughly as possible in forensic anthropology cannot be overstated. With this in mind, the Burns text consequently keeps the skull prominently displayed all throughout the text to reinforce the lessons it is trying to impart and to help learners absorb the features of the skull so they are able to recognize the salient features quickly and accurately.

The skull functions as one of the most important features of human identification in forensic anthropology and, through the use of non-metric and anthropometric measurements, can serve up indicators for all three of the big identity markers, age-at-death, sex and race. Sutures, basioccipital fusing and dental wear are indicators of age.<sup>241</sup> Frontal bossing, the prominence of the mastoid process, external occipital protuberance

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<sup>241</sup> *Ibid.*

and the sharpness of the orbital margin can give indicators of sex.<sup>242</sup> Dentition, palatal sutures, sutural bones, zygomatic projection, nasal aperture, sill and spine, as well as profile projection are all used in combination to determine race.<sup>243</sup> These lists are by no means exhaustive, the point here is to show that identity determinations based on the skull are complicated and comprehensive. And while it is not important for our purposes that we understand what all of these terms mean or indicate, it is important to understand that age-at-death, sex and race are all determined by a set of biological and statistically defined parameters that have seemingly withstood the test of time for over a hundred years.

The Burns skull illustration is typical of the discipline and similar examples are used in all the texts I surveyed. Like the Burns text, both the Bass and White manuals I examined featured the skull predominantly all throughout the text when discussing identification techniques related to age-at-death, sex and race. The illustrated skull is meant to be typical in its presentation, as symmetrical and uniformly without variations, so that the ‘normal’ features can be appreciated and recognized. Like the typical body chart of forensic pathology and the anatomical images in functional anatomy texts, the illustrations of the skull and other bones of the body presented in these manuals are all expected to represent the expected, usual or typical configuration of the bone. This symmetry and uniformity, while showcased as typical, however, it is important to note, is in reality a highly idealized vision of cranial morphology.

There is a presumption in the science of forensic anthropology, built from the racially motivated agendas of 19<sup>th</sup> century anthropometry, that Caucasian skulls generally exhibit symmetry. But few if any individual skulls, of anyone from any identified racial or ancestral group, are perfectly symmetrical. Time, nutrition, health factors, age, sex, right or left muscle dominance and a myriad of other determinates make it very difficult for the underlying skeletal structure of the human body to achieve, let alone maintain symmetrical proportions. In spite of this biological actuality, the skull in the Burns manual, and indeed in all three manuals I examined, nonetheless continues to present a uniformly similar exemplar that varies little except in illustrative style.

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<sup>242</sup> Ibid, 52-53.

<sup>243</sup> Ibid, 224-237.

And upon closer examination of the cranial illustrations, it becomes clear that both the Burns and the Bass manual have resorted to the same type of skull illustration for its skull treatments—the European (Caucasian) male. The skull in the White manual is less racially clear, while it remains consistent with a European male in many of the markers leading one to conclude it is likely a European male there are two markers that could suggest mixed race.<sup>244</sup> For now I will focus on the skull in the Burns manual (Fig. 25 & 26) which displays two easily identified features of an adult male, double bossing on the frontal bone (frontal view) and a prominent mastoid process (lateral view). Also, in keeping with some of the markers for race, the skull is shown to have a narrow nasal aperture, absence of malar tubercle, prominent nasal spine and orthognathic profile--all common markers consistent with individuals of European ancestry (Fig. 27). And while it can be easy to mistake some of these features without the benefit of comparative materials considered typical of each sex and race, Burns places her normative skull up against one that is female in side-to-side comparisons to show where the female skull deviates from the male skull.

A similar exposition is given for that of race, with the Asian, European and African sectioned examples lined one on top of another to show how each type displays differences from the other. The placement by Burns of her normative skull against the female and other racially identified sectioned-off features for comparative purposes means there is no question that the normative skull presented so prominently in her manual is that of a Caucasian male. What is especially telling in the Burns manual is the presentation of the Caucasian male skull as the only fully complete version which allows it to showcase its symmetry. The other two racially identified skulls are shown merely in a piecemeal fashion with the specific points of deviation from the European skull highlighted in a series of sections. The non-European (non-white) skulls in Burns'

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<sup>244</sup> In fairness to the skull rendered in Tim White, Michael Black and Pieter Folkens's, *Human Osteology*, 3<sup>rd</sup> edition, it could be argued that while the skull in the photograph exhibits phenotypical traits associated with a Caucasian male it also exhibits two traits consistent with an African male as well--the width of the nasal aperture and possible guttered nasal sill. I say possible guttered nasal sill because the lighting of the photograph makes it difficult to be certain. That it is a male skull is not in doubt it is labelled as an 'Adult Male Skull.'

manual have no actual complete form, rather they are served up only as problematic pieces of phenotypical variation, disconnected and asymmetrical.

The skull treatment in the Bass manual is slightly different but in no way improved for several reasons. The initial skull illustration used is, like the Burns manual, that of a Caucasian male. Once again, the narrow nasal aperture, absence of malar tubercle, prominent nasal spine, and orthognathic profile are indicators of a European skull. The squared off mandible and prominent mastoid process indicate male (Fig. 28). And if it was any doubt, like the Burns manual, later when discussing racial difference between skulls Bass places a similar skull under the label of ‘American White.’ As I mentioned earlier, Bass’s treatment of race differs from Burns in the type of terminology used, and unlike Burns he provides full skulls of the two other identified racial groups besides the one labelled American White.

It is these three skulls that interest me the most in the Bass manual. Besides the dubious use of terms like Caucasoid, Negroid, and Mongoloid, Bass also presents the racially identified skulls in a hyper exaggerated manner (Fig. 29, 30, 31). In the simplest terms, rather than resorting to technical language to describe his skulls, the best way I can sum up what he has done is to say that he has taken every feature associated with each racially identified group and expressed them in such a way as to make them the most extreme example that feature can be. What results are three skulls that are so hyperbolic in presentation that they resemble caricatures, ones that harken back to the over wrought images used by Josiah Nott in his polygenist polemic on the racial inferiority of the Negros. What Bass has done with these three illustrations is over-exemplify the exemplars, which ultimately renders the illustrations questionably useful for identification purposes.

I cannot help but question just what Bass is doing with these three illustrations. It is as if he feels that there is a need to present a quintessential ‘White’ skull, and quintessential ‘Black’ skull and a quintessential ‘Native’ skull so that the differences between each are very clear. The problem with this conjecture is that racialized morphology is rarely, if ever, confined to any particular group. In other words, the possibility that an anthropologist would ever come across a modern human skull with all of the racial morphological markers that are equated with Bass’s ‘White,’ ‘Black’ and

'Native' groups is highly unlikely. To further muddy the waters, the 1971 version of the same text has the exact same Caucasian skull (Fig. 28) that is featured in the 2005 5<sup>th</sup> edition, and the three hyperbolic racially identified skulls are absent.<sup>245</sup> If the positions had been reversed, oddly enough, the three racialized skulls would have not seemed out of place in the 1971 version of the text. Indeed, the powerful factional narratives that were still in place about racial difference in the late 1960s and early 1970s would have almost demanded that illustrations of this type but included if for no other reason than to pedagogically reinforce the categories of race that were so popular in anthropology at the time. And yet, Bass left them out, a choice that is particularly odd given that the discipline of anthropology from the late 18<sup>th</sup> until the earliest 20<sup>th</sup> century routinely included illustrations of non-white skulls as a point of comparison to the normative Caucasian skull. Like the White manual, I have no answers for the questions that arise about the three hyperbolic racial skulls in the 2005 edition of Bass's text. What I will say is that the absence of these skulls in the 1971 version of the text seems, in a way, less racist than the intentional inclusion of them along with the antiquated terminology in the 2005 text.

As we have seen in this section, the use of skull illustrations is key to the pedagogical aims of forensic anthropology. The use of the Caucasian male skull as the normative universal skull is in many ways similar to the use of the Caucacentric typical body chart of forensic pathology with some noteworthy differences. Like the typical body chart, the use of the Caucasian male skull, as the exemplar of the kindhood of *human*, is employed unreflexively and goes completely unacknowledged. The typical body chart, however, is overtly Caucasian in appearance and presented in a blank canvas manner as a tool for manipulation. The skulls in all three manuals are not identified as Caucasian when they are presented, and unlike the typical body chart they are not a tool for manipulation, they are displayed as a complete representative specimen. Explanations of sexual dimorphism and racial differences are not highlighted until much later in the text long after the normative skull, in its complete and disarticulated forms, is used repeatedly

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<sup>245</sup> William M. Bass, *Human Osteology: A Laboratory and Field Manual of the Human Skeleton* (Springfield: Missouri Archaeological Society, 1971).

throughout the text as an example of the typical morphology of the bones under discussion.

Sex and race, much like the typical body chart, are excluded through the use of the white male default but, unlike the typical body chart, sex and race cannot be applied on top of the Caucasian male skull. Female and non-white skulls, once the Caucasian male skull is established as exhibiting the proper morphological characteristics, are actually juxtaposed against the Caucasian male skull to show exactly where they deviate from the norm. On the typical body chart, racialized phenotypical characteristics are looked at as surface deviations, however, in the case of the skull illustration, the skeletal deviations of the female and non-white skulls are foundational. Race, when applied to the typical body chart, is done so as an aesthetic alteration. Racial alterations at the skeletal level are architectural in nature and, unlike the aesthetic alterations made to the typical body chart, remain hidden from the eye until revealed by forensic anthropological investigation.

In the bones then, race is seen as participating in a sort of racial subterfuge emerging only when ferreted out and compared to the ‘proper’ Caucasian morphology by the expert forensic anthropologist. In the typical body chart of forensic pathology, the Caucasian male stands in as a colourless blank canvas, as an unraced subject. Race, in this instance, is not hidden but is rather, in the very whiteness of the image, is treated as if it is almost completely absent. The positioning of the Caucacentric body chart as raceless pushes *other* racially identified phenotypes to become deviations from the norm. In the skull diagrams, however, racial morphological differences require an erasure of the Caucasian contours of the bone to shape the bone into racialized non-white contours, rendering the assumed and idealized Caucasian symmetry void. If we once again consider the words of Winthrop Jordan, who argued that the binary established between black and white which equated blackness with sin, baseness and ugliness and whiteness with beauty, virtue and purity we have in the typical body chart a pure canvas that becomes marred with the application of blackness.<sup>246</sup> And in the skull images we have white beauty erased by black ugliness.

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<sup>246</sup> Jordan, *White Over Black*, 7.

In both forensic pathology and forensic anthropology, race is a deviation from the norm but in typical body charts race, except for the purposes of identification, remains ultimately incidental to the forensic pathological process. The absence of phenotypical features associated with non-white anatomy from the body chart is in many ways deliberate because it is considered irrelevant. A detailing of proof of a body's racial status can be done as an aside on a typical body chart by listing what Knight refers to as the "obvious features which need no medical knowledge."<sup>247</sup> In forensic anthropology, racialized non-European alterations to bone need detailed explanations, justifications and comparisons to the Caucaentric normative skull if they are to count as a valid marker of identity. Silent and largely absent, race in a forensic anthropological context is nonetheless ever present, and presumed to be lurking in the contours of the bone looking for an opportunity to upset the idealized symmetry of the Caucasian form.

#### **4.4 Concluding Remarks**

A further discussion of the placement of the Caucasian male body in contemporary biomedical texts and the issues surrounding the exclusion of the non-white body will take place in the next chapter. I wish to conclude this section with a few brief remarks since the issues raised in this chapter will be considered in more detail shortly.

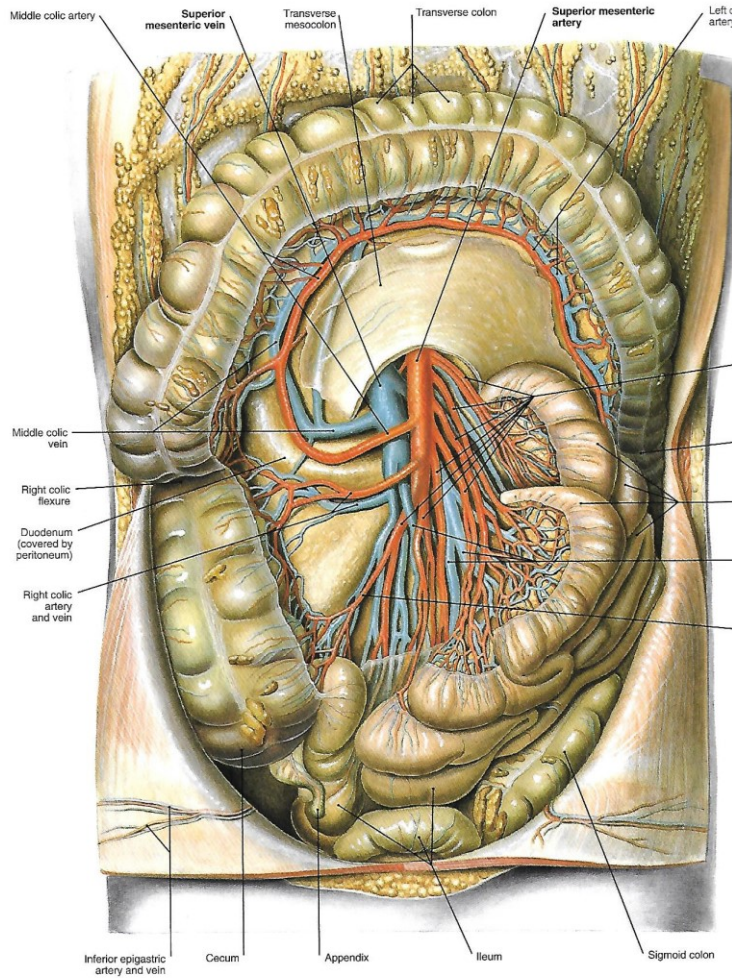
Race does seem to have a place within the medico-scientific regimes; it is an uncomfortable place, one that is both ambiguous and paradoxical at the same time but which is fixed in place nonetheless. Racialized discourse, complete with race-based and racialized categories are visible all throughout the biomedical sciences and have recently found a very comfortable home in fields like genomic research, epidemiology and pharmacology. These new attempts at inserting race into the discussion largely encompass research that focuses on the social determinants of health and the role race plays in those outcomes. Some work in the area of genomics does still focus on the search for genetic markers of race, attempts that are shaded by unacknowledged, antiquated biological essentialism and undergirded with the idea that if there are some identifiable genetic components of race, tailor-made solutions for disease processes may be possible.

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<sup>247</sup> Knight, *Simpson's*, 32.

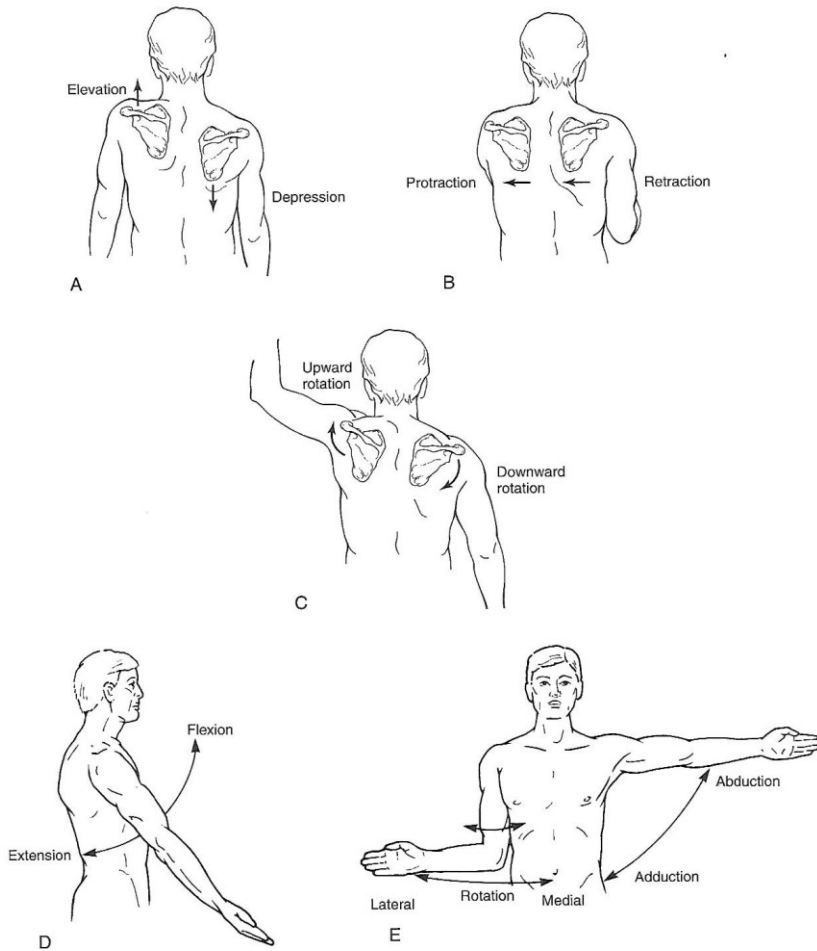
So while race may superficially be denied substantive biological legitimacy, it is nonetheless continually practiced in an unacknowledged, ritualized and unregulated manner all throughout medical pedagogy. The repeated and pervasive use of Caucasian male bodies throughout the three disciplines examined in this chapter points to how embedded outdated racial categories of description and meaning are in the routine practices of their sciences. Race, as we have seen in both forensic pathology and forensic anthropology, has maintained a place in those disciplines largely due to its use as a system for identification. In functional anatomy race is ostensibly ignored in favour of a universal body but it is a universal body which more often than not displays the phenotypical features specific to the Caucasian male. The argument that race is a socially constructed phenomenon which has no concomitant biologically essential underpinnings has created a unique space where the use of a supposed universalized figure of the Caucasian male can be seen as a denial of the race essentialism of old. Simply put, it is a space where the refusal to acknowledge racially defined phenotypes in favour of a 'non-raced' illustrative body can be, ironically enough, in keeping with accepted contemporary understandings of race all while, at the same time, allowing the medico-scientific community to continue to reinforce the hegemonic colonial essentialist hierarchies of classification that created race in the first place.





**FIGURE 292** Abdominal Cavity: Superior Mesenteric Vessels and Branches

Figure 13. "Abdominal Cavity," example of a coloured plate from Clemente, *Anatomy: A Regional Atlas of the Body*, 6<sup>th</sup> edition, Plate 292.



**Figure 14. "Movements of the Scapula,"** example of a line drawing from Jenkins, *Hollinshead's Functional Anatomy of the Limbs and Back*, 8<sup>th</sup> edition, 71.

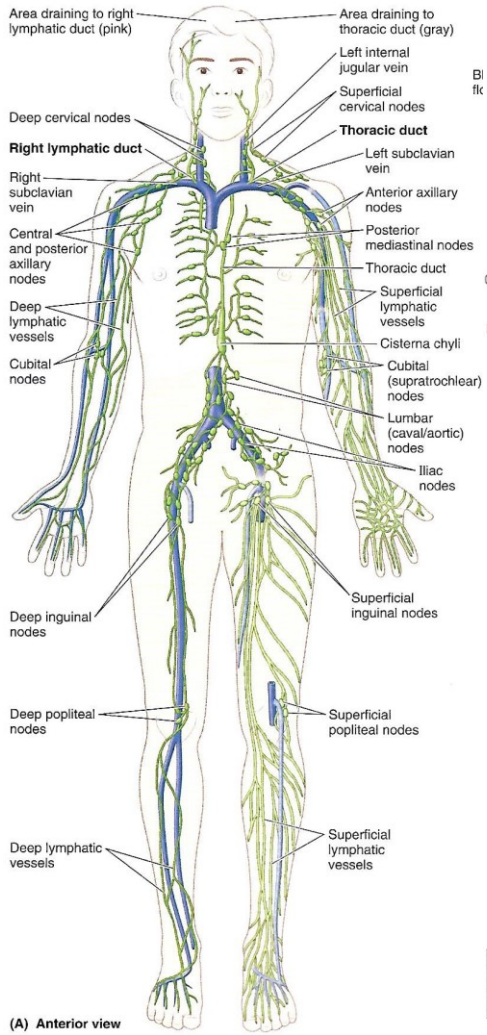


Figure 25. "Lymphatic System," Keith, Dalley and Agur, *Moore Clinically Oriented Anatomy*, 7<sup>th</sup> edition, 44.

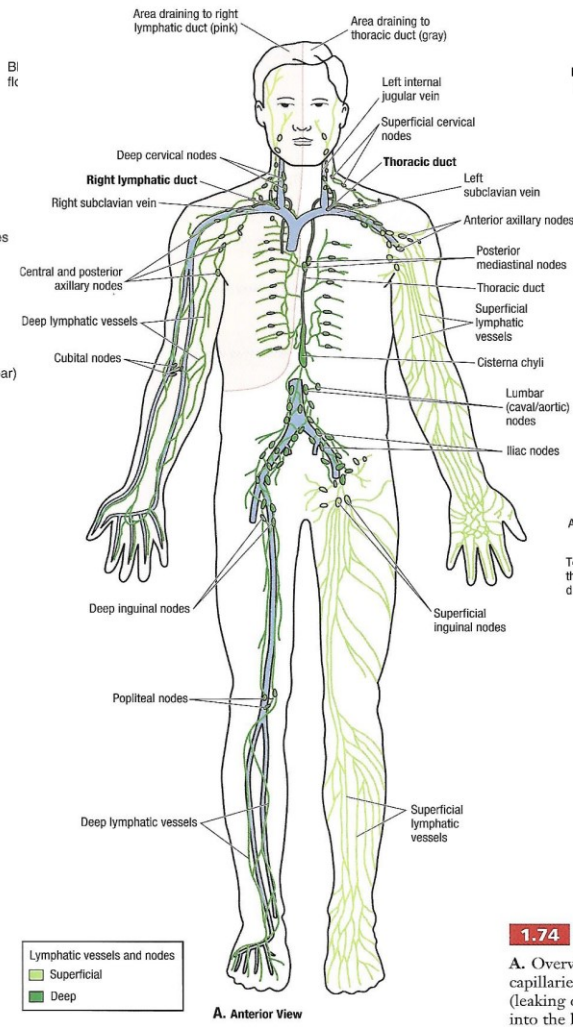
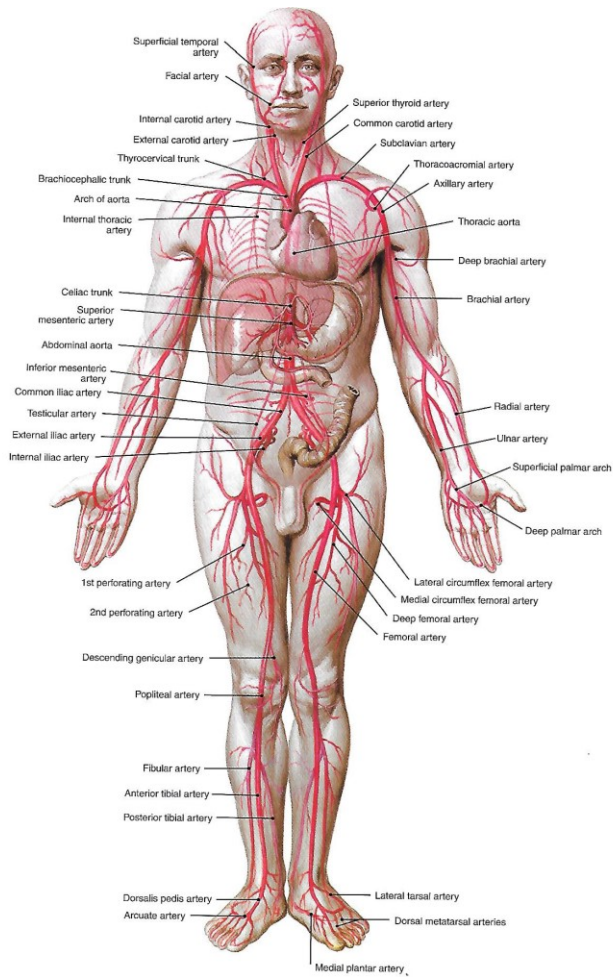


Figure 16. "Lymphatic System," Agur and Dalley, *Grant's Atlas of Anatomy*, 12<sup>th</sup> edition, 77.



**Figure 17. "Adult Systemic Arterial System (Male),"** Clemente, *Anatomy: A Regional Atlas of the Human Body, 6<sup>th</sup> edition*, Plate 194. This plate indicates in the title that this is the arterial system of a male, however there is no equivalent illustration of the female arterial system.



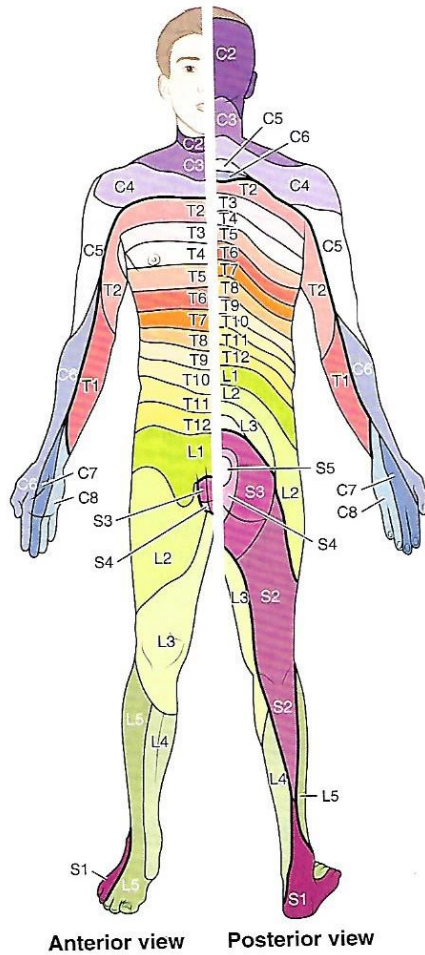


Figure 18. "Dermatomes," Keith, Dalley and Agur, *Moore Clinically Oriented Anatomy*, 7<sup>th</sup> edition, 51.

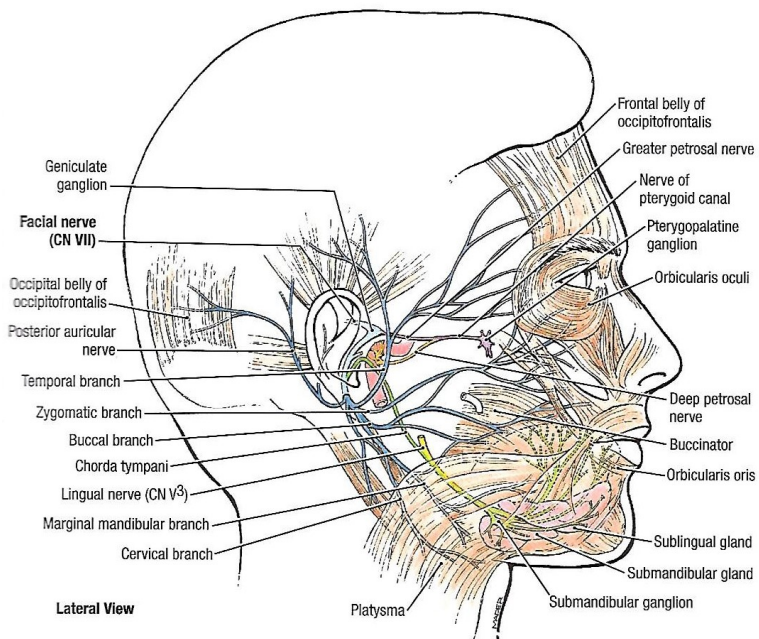


Figure 19. "Cranial Nerves," Agur and Dalley, *Grant's Atlas of Anatomy*, 12<sup>th</sup> edition, 830.

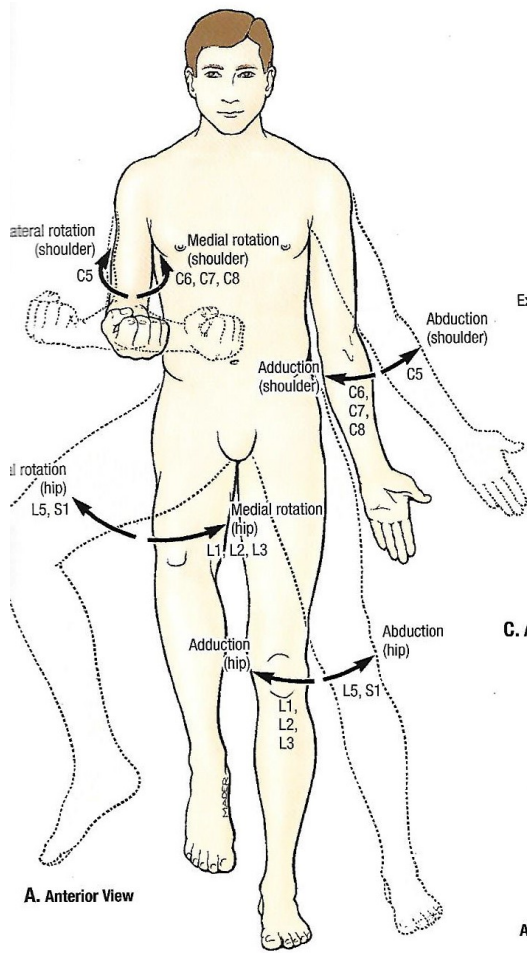


Figure 20. "Myotomes," Agur and Dalley, *Grant's Atlas of Anatomy, 12th edition, 349.*

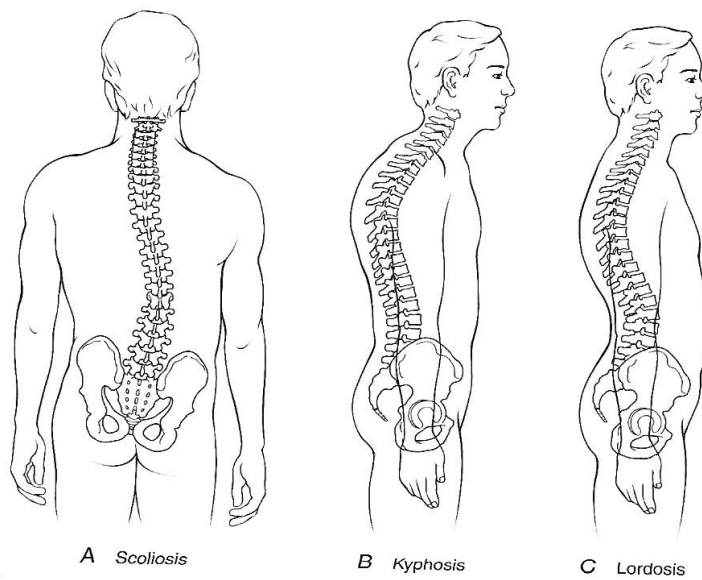


Figure 21. "Abnormal Curvatures of the Vertebral Column," Jenkins, *Hollinshead's Functional Anatomy of the Limbs and Back, 233.*

Case no. \_\_\_\_\_ Name \_\_\_\_\_

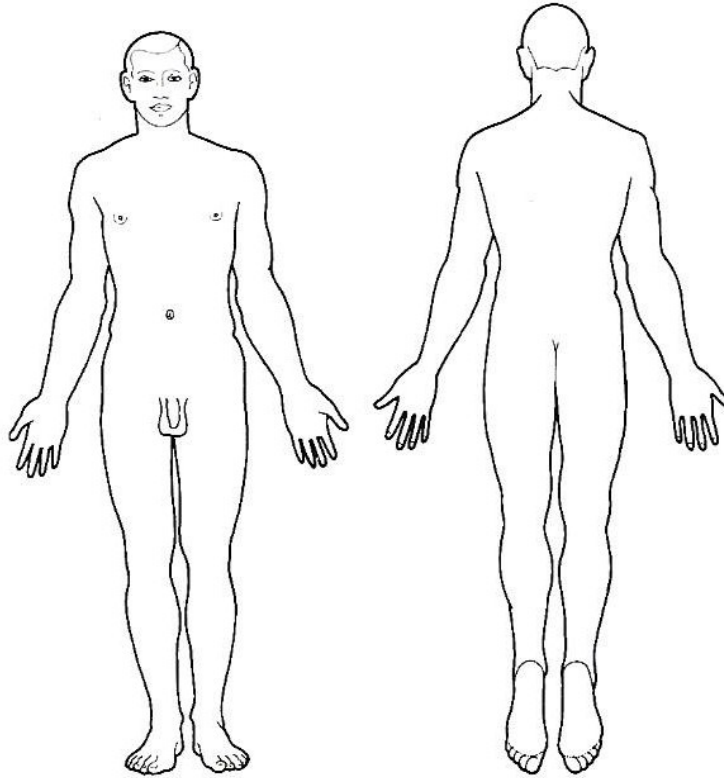


FIG 1.1 Typical body chart for marking injuries, in living or dead. More detailed and different aspects of the body surface can be depicted in a whole range of such charts.

Figure 22. "Typical Body Chart," Knight, *Simpson's Forensic Medicine*, 8.

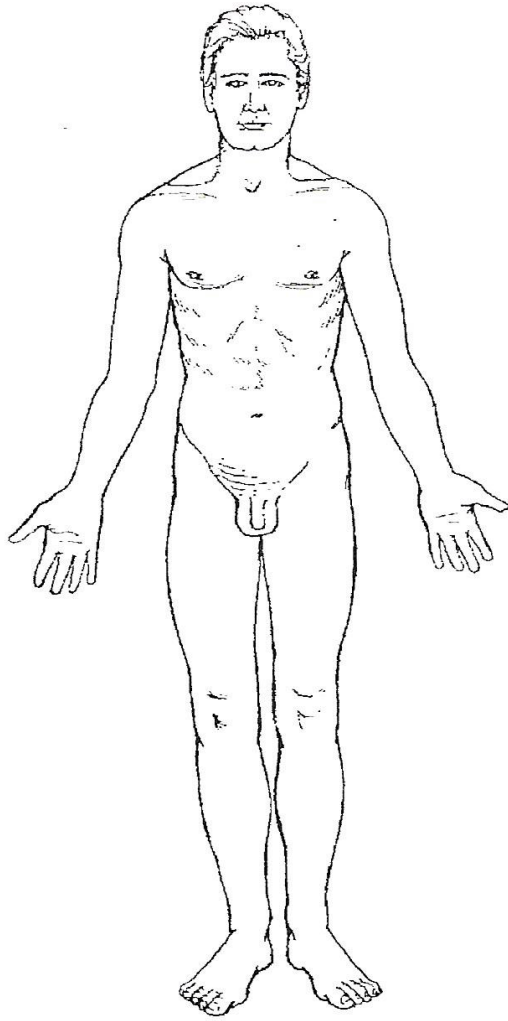


Figure 23. "Forensic Pathology Body Chart," Rothenberg, *Anatomy and Physiology for Lawyers*, 3.



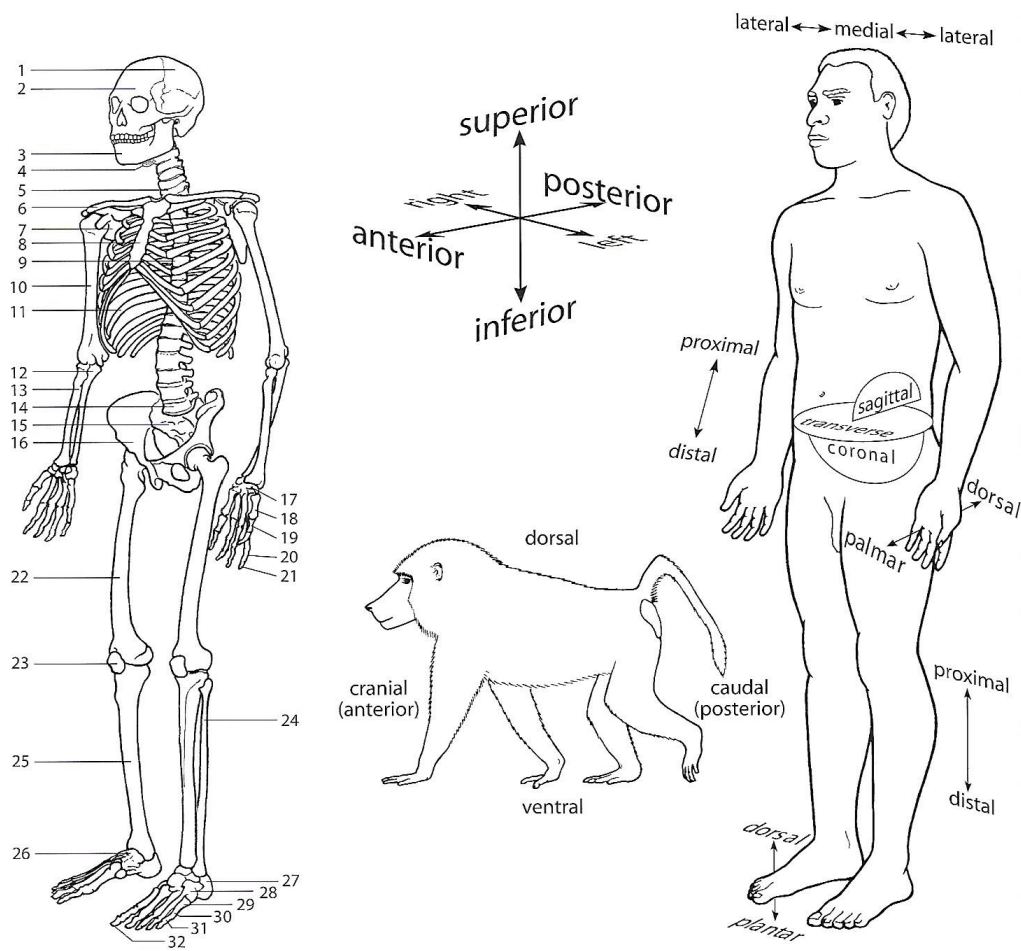


Figure 24. "Directional Terms and Planes for a Human and Quadrupedal Mammal," White, Black and Folkens, *Human Osteology*, 3<sup>rd</sup> edition, 12.

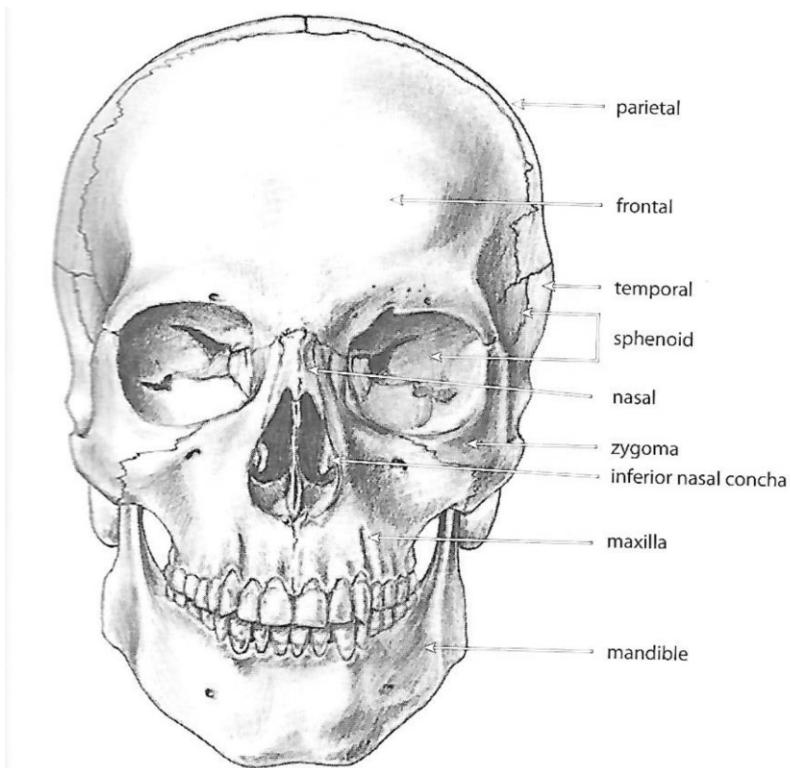


Figure 25. "Skull, Frontal View," Burns, *Forensic Anthropology Training Manual, 3<sup>rd</sup> edition, 27.*

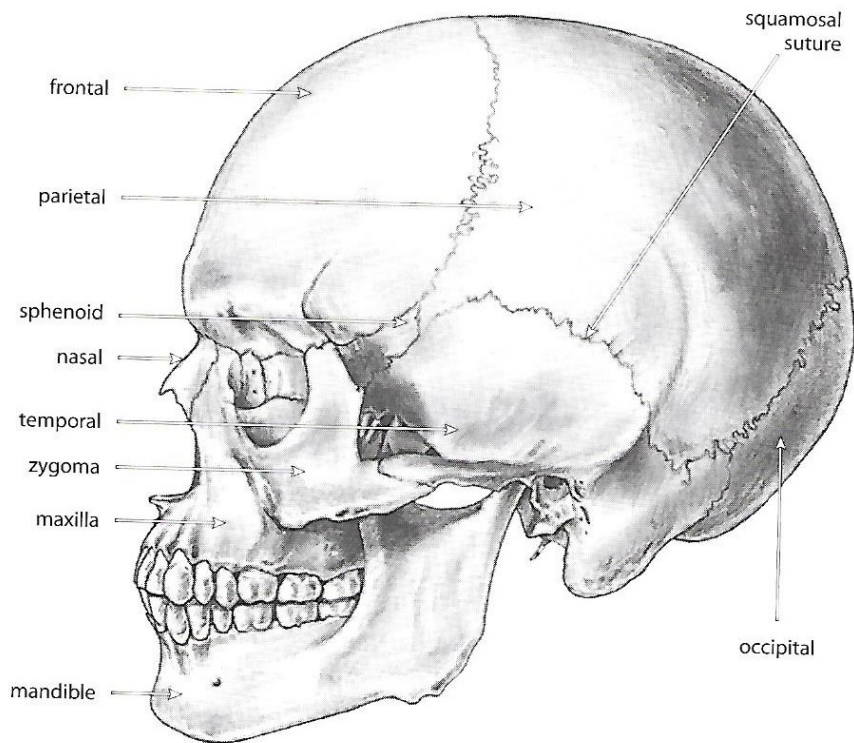
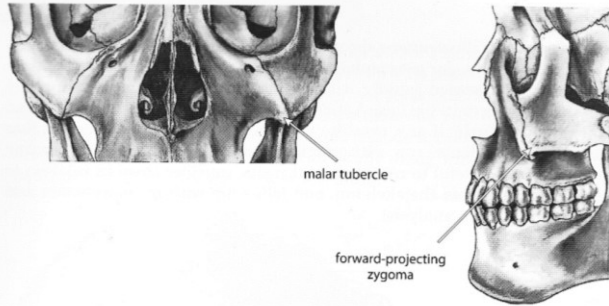
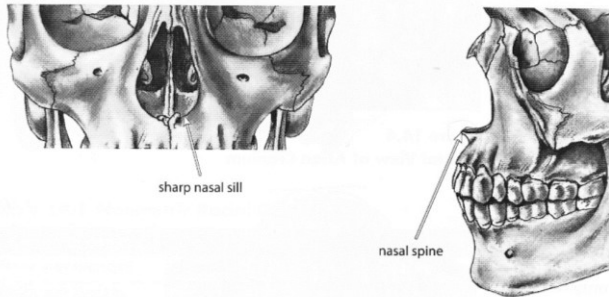


Figure 26. "Skull, Lateral View," Burns, *Forensic Anthropology Training Manual, 3<sup>rd</sup> edition, 27.*



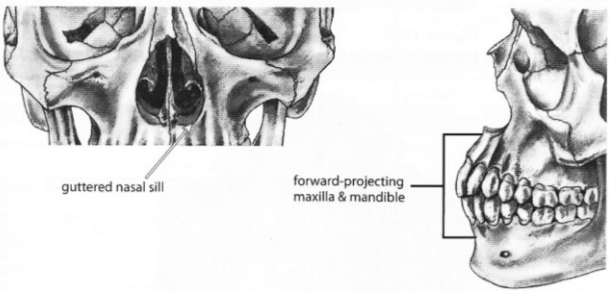
- Asian (and Native American) Origin**
- orthognathic profile
  - moderate nasal spine
  - forward-projecting zygoma
  - tubercle on inferior zygomatic margin
  - sometimes edge-to-edge occlusion

**Figure 14.1a and 14.1b**  
**Frontal and Lateral Views of Asian Skull**



- European Origin**
- orthognathic profile
  - prominent nasal spine
  - narrow nasal aperture
  - single, sharp inferior nasal margin
  - more overbite
  - more crowded dentition

**Figure 14.2a and 14.2b**  
**Frontal and Lateral Views of European Skull**



- African Origin**
- prognathic profile
  - little or no nasal spine
  - wide nasal aperture
  - double (guttered) inferior nasal margin
  - dentition not crowded

**Figure 14.3a and 14.3b**  
**Frontal and Lateral View of African Skull**

**Figure 27. "Racial Characteristics of the Skull," Burns, *Forensic Anthropology Training Manual*, 3<sup>rd</sup> edition, 225.**

BONES OF

PARTS OF

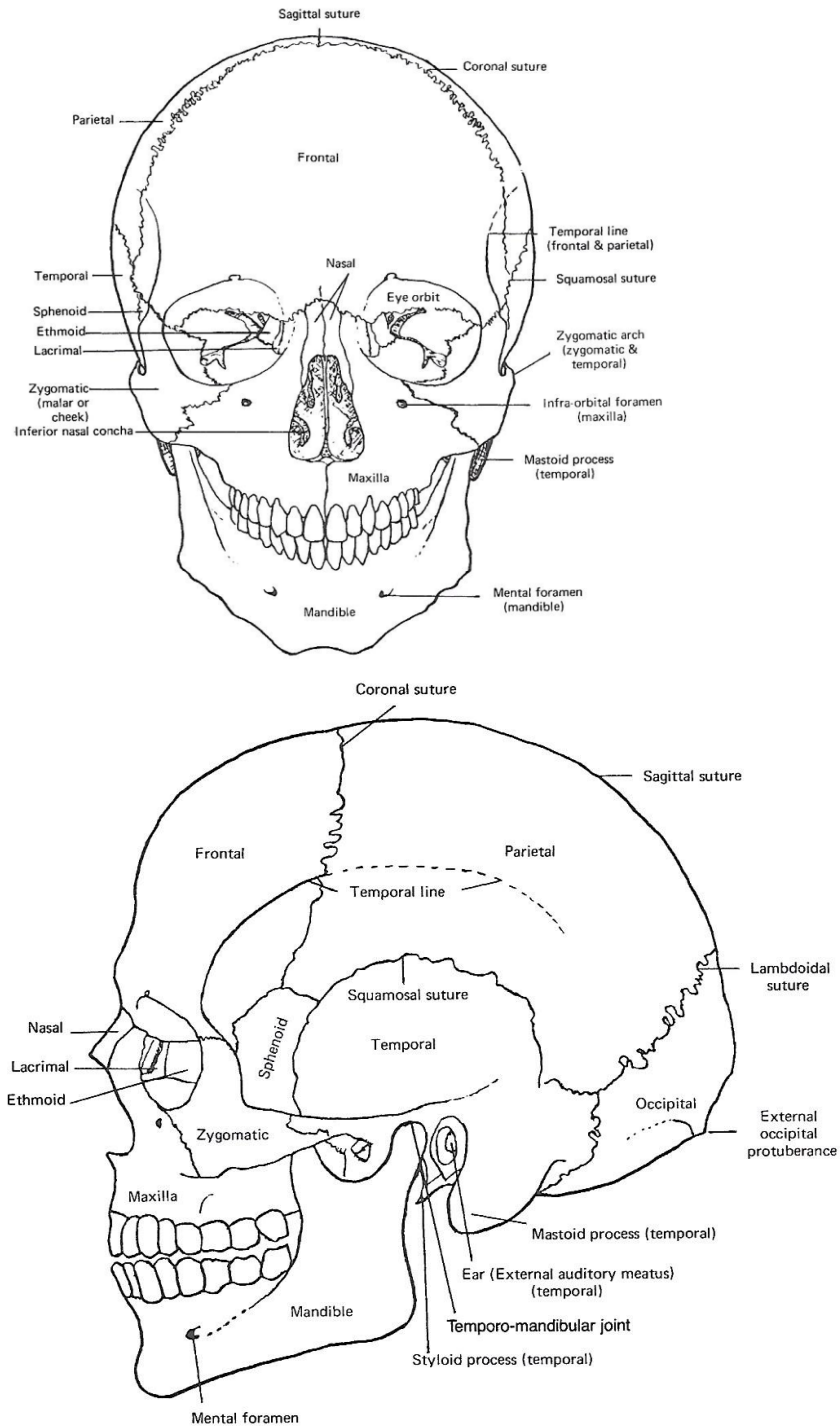


Figure 28. "Cranial Elements," Bass, *Human Osteology: A Laboratory and Field Manual*, 3<sup>rd</sup> edition, 32-33.

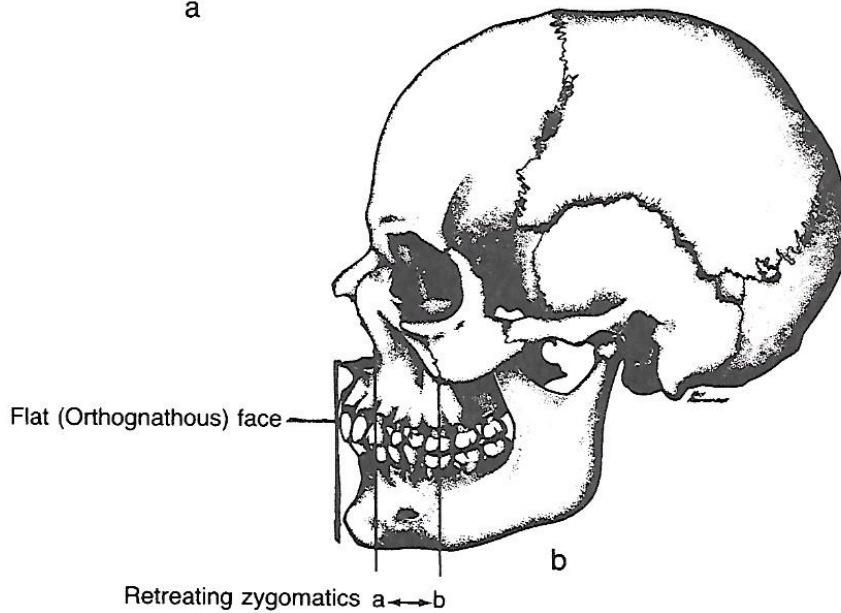
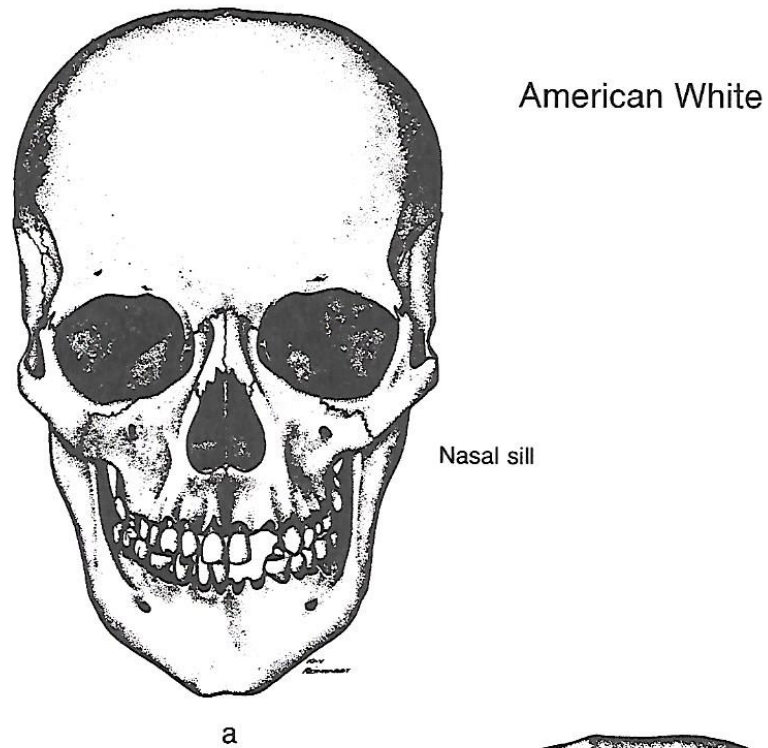


Figure 29. "American White Skull," Bass, *Human Osteology: A Laboratory and Field Manual*, 3<sup>rd</sup> edition, 84.

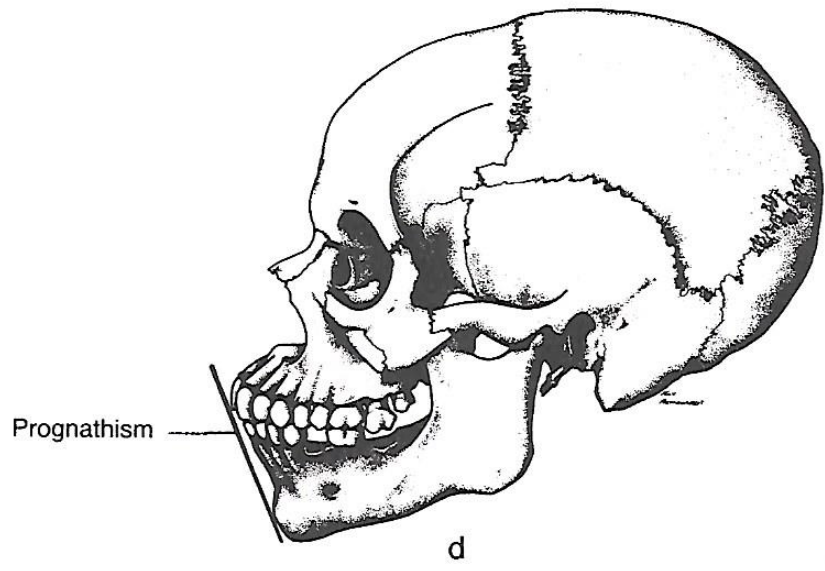
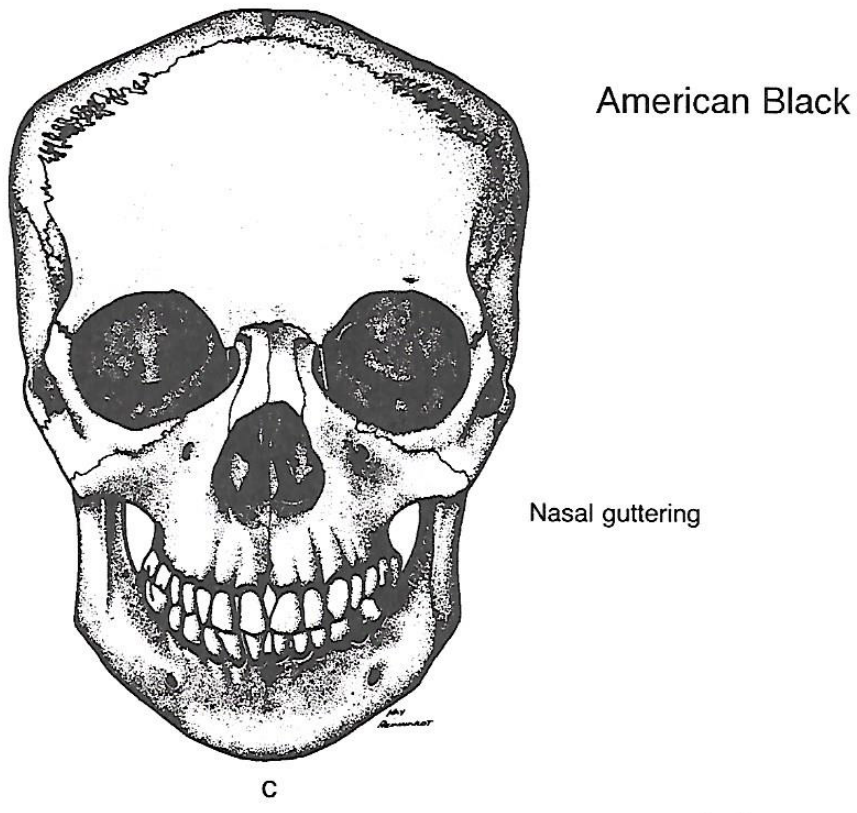


Figure 30. "American Black Skull," Bass, *Human Osteology: A Laboratory and Field Manual*, 3<sup>rd</sup> edition, 85.



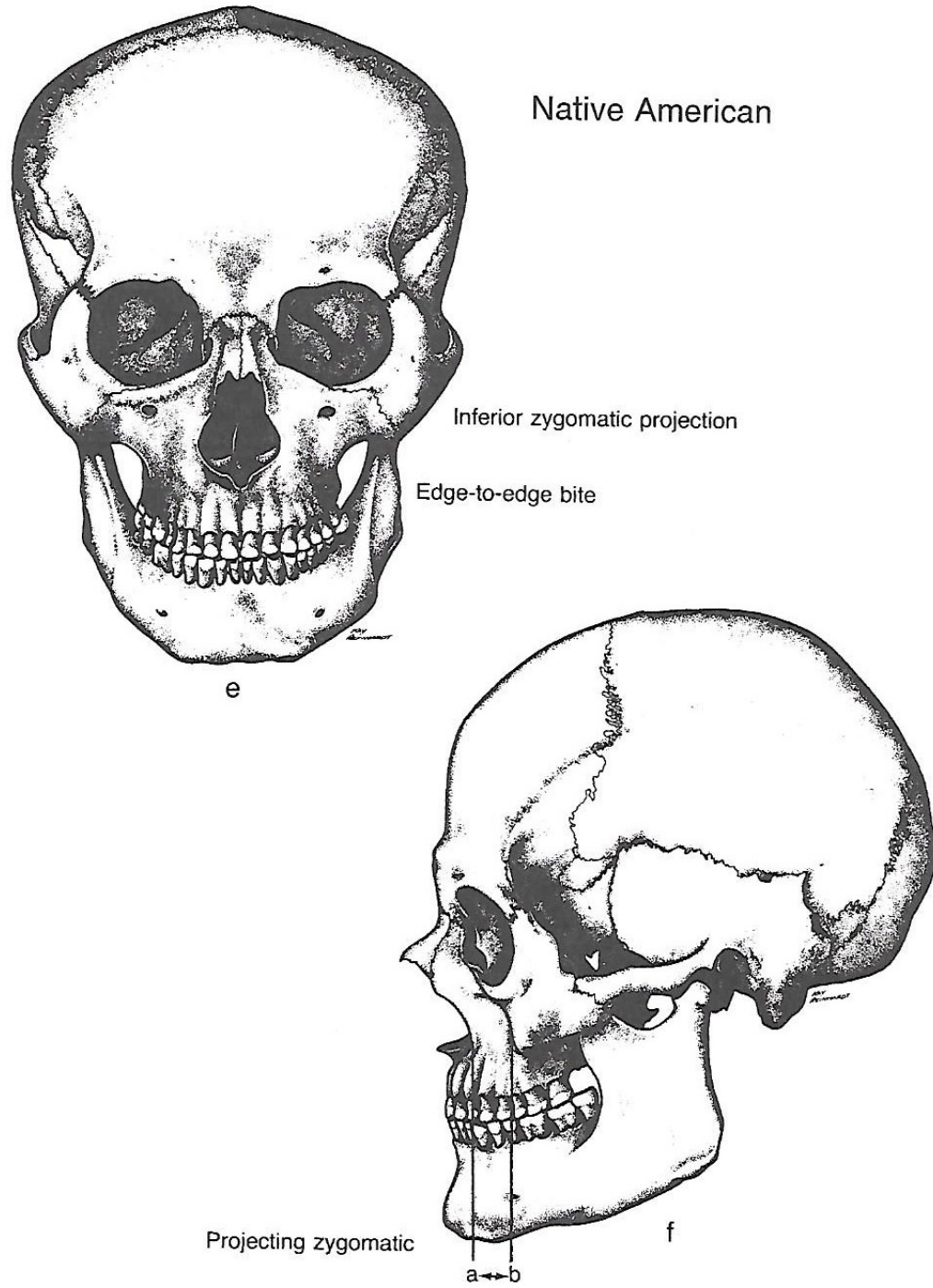


Figure 31. "Native American Skull," Bass, *Human Osteology: A Laboratory and Field Manual*, 3<sup>rd</sup> edition, 86.

## Chapter 5: The Fiction and Faction of Race

So, since race does not have a legitimate biological claim and it has been constructed with the collusion of cultural convention and scientific myopia, why should it matter that racially identified, non-white bodies are not represented in contemporary anatomical illustrations? If we argue that race is a product of socio-cultural and scientific construction, then when we demand the inclusion of non-white bodies in anatomical illustration and biomedical pedagogy are we not once again arguing that those Other bodies are somehow different and therefore need special representation to explain those differences? And would not the employment of a variety of racially identified non-white bodies as illustrative representations serve, as Michael Root suggests we consider, to conserve racial categories that have been acknowledged as biologically illegitimate, contributing to a continuance of racial divisions?<sup>248</sup> It is in this final chapter that I want to consider answers to those questions.

### 5.1 Fictions

Before we can answer those questions we need to take stock of what the proceeding chapters have revealed and consider just where this examination of anatomical illustration has brought us. As we have seen, it has been acknowledged in contemporary biological sciences that race cannot be accounted for in purely biological terms. Scientifically we know there is no gene for a given race, no one blood type for a given race, and no one phenotypical characteristic that is found only in one racial group. Race began as a way to divide ourselves. Science did not invent race out of naturally occurring and observed phenomena, but once the social and philosophical categories were put in place, science was able to attach biological meaning to those already established categories.<sup>249</sup> So yes, race is accepted as a socially constructed phenomenon in scientific circles but race is also a social system of classification that is dependent upon physical manifestations for its foundations, and those classifications are embedded deeply into the fabric of the entire discipline of biomedical science and in our social consciousness.

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<sup>248</sup> Root, "How We Divide the World," S637.

<sup>249</sup> Ibid, S630. See also Stepan, *Race and Gender*, 266.



It is important to understand that hundreds of years of colonialism and white supremacy have carved out a largely inescapable hierarchical intellectual discourse that frames most human interactions and determines the place of individual bodies within that discourse. Racialization is constituted through the construction of morphological distinctions and classifications, and the Caucacentric normative body, one that is unreflexively idealized and often positioned as race-less, contributes to such a programme by situating the non-white body as a marginal object that marks out the difference between normal and deviation from the norm. As Frantz Fanon notes, there is more to colonialism and white supremacist discourse than just its economic and historical circumstances, there is also a collective unconscious element that systematizes relations of identity between “the colonized and the colonizer” making racism not an individual phenomenon but rather a structural and inherited one.<sup>250</sup> This ‘collective unconscious’ is passed on through representational strategies, like the Caucacentric normative illustrations, and is “purely and simply the sum of prejudices, myths, collective attitudes of a given group.”<sup>251</sup> Thus, I think it fair to say, in light of the pervasive use of Caucacentric normative bodies in anatomical illustrations, that the contention that biomedical scientists have forsaken the racial essentialism of their different discipline’s colonialist origins is more often sociological conjecture than an empirically documented set of findings.

Institutional memory in the biomedical sciences is long and deep. And as we have seen, these are sciences that are built from a fundamentally visual system of pedagogy. These are also disciplines whose primary pedagogical goal is the development of the clinical gaze--the art of seeing in order to know. When what a student sees repeatedly in anatomical illustrations is reflective of only one type of body, then the clinical gaze learns to operate with blinders on. The continued exclusion of non-white bodies in anatomical illustration and anatomical texts, as Fanon argued, is an inherited and structural type of racism. It has become part of the collective unconsciousness of biomedical disciplines and it is so pervasive and so deeply entrenched in the pedagogical systems that it has become normalized. And, as bell hooks succinctly argued, the

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<sup>250</sup> Fanon, *Black Skin, White Masks*, 83.

<sup>251</sup> *Ibid*, 188.

colonialist white supremacist dialogue that dominates and shapes the epistemologies of our institutions, as well as our cultures and bodies, is constantly maintained and reinforced by the visual systems we internalize and those “regimes of visibility enforce racism...[and] literally hold it in place.”<sup>252</sup>

Racial models and concepts saw their origins in a discourse invented by natural philosophers, anthropologists, philosophers and medical scientists at the same time that professionalization of the biomedical sciences was taking place. The statistics and ‘facts’ about race that were collected, analyzed and disseminated provided an essential supplement to already established prejudicial leanings and were crucial in the formulation, justification and enactment of government policies, legislative decisions and educational pedagogies.<sup>253</sup> The ‘prejudices, myths and collective attitudes’ of the white supremacist discourse strategically forgets and occludes those non-white bodies, and when biomedical scientific disciplines like forensic pathology, forensic anthropology and functional anatomy do not acknowledge them, those non-white bodies are often relegated to the status of deviation from the norm. Modern biomedical sciences may have been forced to abandon antiquated biological essentialist claims for race, but they have been less quick to slide the Caucasian male body down from its top spot on the hierarchal ladder of classification. This resistance to inclusion of a diversity of human bodies within their pedagogies is, in some ways, it seems to me, less about re-inscribing racial meanings to bodies and more about reinforcing antiquated colonial racial understandings of non-white, and by extension, white bodies.

One of the most potent ways that racism affects the lives of people of colour is through social exclusion. Racism creates a dynamic whereby there is a substantive disconnection from civil society and political participation due to the material and social isolation imposed upon people of colour through systemic forms of discrimination based on race.<sup>254</sup> Non-white racial groups that experience social exclusion due to discrimination sustain higher rates of health risks, lower health status and health service utilization, poor

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<sup>252</sup> bell hooks, *Art on My Mind: Visual Politics* (New York: The New Press, 1995): xii, quoting Michele Wallace.

<sup>253</sup> See Katya Gibel Azoulay, “Reflections on ‘Race’ and the Biologization of Difference,” *Patterns of Prejudice* 40, no. 4-5 (2006), 353-379 for an interesting perspective on race and biological difference.

<sup>254</sup> Grace-Edward Galabuzi, “Social Exclusion” in *Social Determinants of Health: Canadian Perspectives*, 2<sup>nd</sup> edition, ed. Dennis Raphael (Toronto: Canadian Scholars’ Press Inc., 2009), 253.

socioeconomic conditions, decrease in educational opportunities, labour market segregation and low occupational status.<sup>255</sup> The social exclusion of specific racial groups from the knowledge production, and a lack of representation in our academic, civil and political systems leads to very real marginalization resulting in powerlessness and loss of voice in all aspects of society. The racialization of poverty due to social exclusion is directly linked to the deepening of oppression, segregation, in adequate access to health and social services.<sup>256</sup>

So while on the surface the exclusion of non-white bodies in the pages of anatomical texts may seem like a benign form of neglect, in reality it contributes to very real effects. When you are not seen you cannot be heard. It is in this universalizing process of Caucaentric representational iconography where peoples of non-white status lose all representation. Racialized meanings surrounding the non-white body gain particular purchase from the type of representation they are given within the invented space of the normative body. The lack of whole body representation would seem to signal that non-white bodies have little to no place in knowledge production and their role is one of supportive bit player, used in the white supremacist narrative as way to define and tool biological understandings of the white body.

These are meanings that render the stealthy re-categorizations that race has undergone, like ‘identity’ in forensic pathology, or ‘ancestry’ in forensic anthropology, useless. It is a concept that allows racialized meanings to be strategically tempered in normative body illustrations to fit and legitimize the specific narrative of white supremacy. The invented space of the normative body creates binary opposites of the non-raced (white) and raced (non-white) bodies. Within the binary there are no equal partners, and the raced body remains defined by the dominant binary, the non-raced body. The non-white body is encapsulated into a suppressing negative space, a space of silence. The silence and absence of the non-white body becomes their own agents of power within the white supremacist discourse, which uses its dominant voice to reinforce the parameters which bind the non-white bodies.<sup>257</sup> The lack of representation of non-white

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<sup>255</sup> Ibid, 252.

<sup>256</sup> Ibid, 262.

<sup>257</sup> Foucault, *The Birth of the Clinic*.

bodies in anatomical illustration contributes effectively to the new myth of a non-racialist conception of humankind that has become the voiced position of the biomedical sciences even though connections between race and science still abound in biomedical research. Thus, the absence of non-white bodies in anatomical illustration has become both a forum for the denial of race and a continuation, but re-figuring, of the antiquated colonialist white supremacist normative discourse that has been ongoing for hundreds of years.

The absence of non-white bodies in biomedical illustration only serves to solidify and empirically root colonial hierarchies, even in the face of steady contemporary push back from non-white bodies trying to claim their right to equal footing alongside white bodies. That the choice of illustrations may not consciously be intended to endorse a white supremacist discourse highlights just how significant the power of factional narratives are at work in medico-science. The persistence of depictions of the Caucasian male as the dominant normative universal body in medico-scientific texts and manuals is a particularly potent method of transmitting the surreptitious message that the non-white (and female) body depends upon the Caucasian male body for its definition-- scientifically, socially and politically. The non-white body is continually forced to explain its differences within the confined space of meaning that surrounds the white body, like the pieces of racialized skull morphology in forensic anthropology which are revealed after the Caucasian skull is positioned are the normative skull or the racial features that are layered onto the typical body chart of forensic pathology. The non-white body is accepted without much disagreement, in the pervasive white supremacist discourse of biomedical science, as an object that is *not white*. It remains, as a result of that designation, a body that cannot ever enjoy the privilege that comes with whiteness.

Bodies from the margin are acknowledged only when they prove to be functionally interesting enough to do so. The factional narrative singles out the female body as a sexed body, highlighting its ability to reproduce as one of the most interesting things about it. Non-white topographies are factionally positioned as bodies that do not stand on their own but rather serve as comparative models with interesting points of phenotypical deviation from the Caucasian norm like skin colour or cranial bone morphology.<sup>258</sup> Non-white anatomies can also be interesting when they show a

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<sup>258</sup> Curran, *The Anatomy of Blackness*.

propensity, for one reason or another, to disease processes that deviate in statistically significant ways from the norm. What remains consistent across all three of the medico-scientific disciplines examined in this thesis is the uniformly unreflexive and unacknowledged presumption that the proper normative universal body is that of the Caucasian male. And for over twenty years the concept of race as a biological entity has been challenged as a legitimate biological process while at the same time still being investigated as a possible biological agent in scientific research. This suggests that the highly racialized white supremacist dialogue that was such a significant factor in the formation of much of the medico-scientific epistemology for the last several hundreds of years still holds an iron grip on the pedagogical systems of medical knowledge production.

In functional anatomy, race is a concept that remains largely ignored because it rarely offers up any sort of relational relevance in the movements of the human machine. Race is ultimately considered distracting to the anatomical project of defining the human structural apparatus. Non-white racialized features like epicanthic folds or flared nostrils provide no functionally useful data and are therefore unnecessary additions to a line drawing that is intended to depict invisible abstract anatomical concepts. So it is fair, on one level, for anatomists to claim that phenotypes equated with non-white bodies do not need to be represented for functional anatomy purposes. The colour of one's skin or the shape of one's mouth does little, if anything, to change the way the underlying body systems function.

Except that phenotypical characteristics associated with the Caucasian male *are* included on the image, indicating that phenotypical diversity of the human form is either deliberately or unreflexively ignored in favour of those features associated with the Caucasian male. This allows the white male body to remain standing, virtually unchallenged, as the normative body, which is as much about universalism and as it is about its status as the body by which all Others are measured. The lack of representation of non-white bodies in functional anatomy teaches students that the white body has a symmetry and perfection of form it has no legitimate biological claim to. The constant representation of a Caucasian male body in functional anatomy consistently reinforces racialized meanings and, in turn, racism. Colonialist sentiments regarding non-white

bodies run deep in functional anatomy, the normative universal body has always been Caucasian male, and as Fanon noted the prejudices, myths and collective attitudes remain as entrenched as ever.

In the typical body charts used in forensic pathology race is often absent because scientists can argue that it is the *form* of the body that is relevant. The body on paper serves as a manipulable object, it is a surface upon which important data can be marked. The Caucasian male body has historically always assumed a centralized position in the didactic dialogues of anatomical pathological science because it has always been believed to display the “universalist dimensions” of perfect proportionality and symmetry.<sup>259</sup> In a contemporary setting, the Caucasian male body in these schematised body charts maintains these universalist dimensions precisely by presenting a form free from variation and thus ostensibly expunging its own racial status. The Caucasian male body, in terms of racial representation, can be representative of the whole of humanity, white and non-white, specifically because it is viewed in medico-scientific discourse as a raceless body.<sup>260</sup>

The ‘typical’ body of forensic body charts can only communicate its typicality and universalism through a “segregation of non-white phenotypical features that,” notes Pugliese, “tautologically code for race.”<sup>261</sup> The white supremacist discourse that undergirds these Caucacentric representations has no need to qualify race as non-white, to do so would be an exercise in redundancy. Race in forensic pathology, because it is connected, unlike the cranial morphology in forensic anthropology, to almost entirely visible surface phenotypical traits, is looked upon as an extrinsic phenomenon, one where non-white features are ‘racial’ specifically because they are extrinsically disconnected from the universalized Caucacentric body chart. The non-white body, as a result, is decorporealized into piecemeal parts which, when necessary for purposes of identification, can be layered onto top of the Caucasian body chart. This treatment of race, as an alteration from the norm, means that racialized phenotypical characteristics are “scripted symptomologically” on the body chart in a manner similar to that of the

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<sup>259</sup> Pugliese, “Demonstrative Evidence,” 292.

<sup>260</sup> Ruth Frankenberg, *The Social Construction of Whiteness: White Women, Race Matters* (Minneapolis: University of Minnesota Press, 1993).

<sup>261</sup> Pugliese, “Demonstrative Evidence,” 313.

wounds and traumata that the pathologist records on the body charts.<sup>262</sup> Race is, in this manner, only a non-white phenomenon, one that is positioned as an insult upon the normative, race-less white form.

In forensic anthropology, the race of the non-white body is all too relevant since its perceived asymmetry helps turn an investigator's eye away from the default identity of 'white male' that every bone is initially accorded and redirects it to a face with much different phenotypical characteristics. Illustratively, the Caucasian male skull is separated out from all the other alternate forms and presented as a fully complete and symmetrically perfect exemplar. The skulls that display racially identified features like prognathic profiles, wide nasal apertures, malar tubercles and hyperbolic or elliptical dental rows are rarely shown as complete specimens and when they are they tend to be over exaggerated in an effort to make their race stand out loud and clear. The pieces a reader is exposed to of these types of skulls are the areas of contour or shape that deviate in any significant way from the exemplar Caucasian male skull. The colonialist science of anthropometry never really went away in forensic anthropology, and the result is a racially-based system of measurement and identification that has no choice but to fall back on its Caucacentric roots when assigning identity to the bones.

Race in forensic anthropology is intrinsic--an alteration at the foundational level that informs the surface level. However, unlike forensic pathology where race can be written upon the skin, this type of race is hidden from view, and is seen as silently deviating from the parameters of form set down by the Caucacentric normative body. It is not until death that these deviations can be revealed by the expert interpreter, the forensic anthropologist. The alterations in contour, size and shape of the different points on the skulls of non-white bodies fundamentally challenge the idealized symmetrically rendered dimensional coordinates of the Caucasian male skull. Race, in this form, is treated as a disturbance of the idealized white norm, one that requires statistical explanation for justification.

Race, many would have us believe, no longer has any place in the laboratories and pedagogies of its scientists. This claim, I believe, is a fiction of great magnitude constructed to justify the continual exclusion of non-white bodies in the pedagogies of

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<sup>262</sup> Ibid, 314.

their disciplines. The persistent use of the Caucasian male body, and the lack of awareness and acknowledgement of its racialized state speaks volumes about just how crucial race is to the epistemology of medical science. In the 1500s, at the beginning of the explosion of anatomical studies and atlas production, the prioritizing of European bodies over non-European could almost be forgiven. Isolation from Other bodies was geographical and the religious and legislative proscriptions against the use of bodies for anatomical study limited the supply of bodies to convicted criminals. And most criminal bodies taken from the hangman's noose were white and male. But by the late 1700s, isolation from other bodies was no longer the reality and instead of incorporating non-white bodies into the anatomical discourse, they were deliberately set aside in an attempt to cement the Caucasian body at the top of the hierarchal pedestal. And the continued prioritizing of the Caucasian male body in anatomical illustrations in a contemporary and highly globalized world can no longer be defended on isolationist grounds.

The Caucasian male body is positioned in medico-scientific illustration as a universal, racially neutral form. This is a practice of implicit racialization, insofar as the pervasive use of a Caucacentric male body does not speak of race explicitly, but it nonetheless conjures meanings that are identifiably linked to a historical white supremacist discourse of race. Racialized discourses are those that, even when the non-white body is absent, still intertwine concepts of phenotypical characteristics, ancestry and biological essentialism together with the classical racialism produced by colonial and postcolonial domination. Thus, the medical sciences can still treat non-white bodies much in the same manner they always have, as mutations or deviations from the norm. The absence of racially defined phenotypes in favour of the 'race-less' Caucacentric illustrative body allows medico-scientific disciplines to make claims about their acceptance of contemporary understandings of race all while reinforcing the colonial white supremacist hierarchies of classification that were responsible for the creation of race in the first place.

## **5.2 Factions**

This leaves us with the question of race essentialism. If we demand the exclusion of non-white bodies in anatomical texts and illustrations, are we not running the risk of



highlighting racial difference? Will increased inclusion of non-white bodies in medico-scientific texts contribute to a continuance of racial divisions and conserve racial categories? To answer these questions we need to consider again how our factional narratives function and we need to consider our role in maintaining them.

Factional narratives about bodies, particularly racial ones, are powerful because they tell stories about bodies that are congruent not only with our cultural expectations of them but because they are also seemingly congruent with the way those bodies look to us. When we create a vision of Other bodies we turn them into witnessable objects, and it is through our witnessing those Other bodies where the factional narrative begins to become immutable and inevitable in our minds. We invest those bodies with essences of difference, thus privatizing the condition of being different, of being ‘non-white,’ which allows us to ignore all the social circumstances that have contrived to create the ideas of ‘difference,’ ‘white’ and ‘non-white’ in the first place. More importantly, as Martha Minow points out, this sense of difference or deviance when it is seen to reside in given individuals or in their own acts or characteristics rather than in the social context with which they are surrounded, allows those of us who stand in witness to completely disregard our role in the creation of it in the first place.<sup>263</sup>

Consequently, race is one of society’s most powerful factional narratives. It is the historical rooting of that narrative in obvious phenotypical differences like skin colour and even more compellingly in the other ‘racial’ differences uncovered by the dissection and obsessive measuring of the body’s interior parts that ostensibly showed race to be natural and foundational which has made dislodging that narrative so challenging. Black people have darker skin and white people have lighter skin. The historical fictions that were built from that simple realization, which were in turn investigated with great vigour by scientists, continue to influence our contemporary understandings of racial identification. Yes, our categories of racial classifications are indeed invented, argues Michael Root, but “invented does not mean optional or arbitrary”<sup>264</sup> and it is important to remember that “whether a social category is real is separate from whether it is

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<sup>263</sup> Martha Minow, *Making All the Difference: Inclusion, Exclusion, and American Law* (Ithaca: Cornell University Press, 1990), 174. See also Sherene Razack, *Looking White People in the Eye: Gender, Race, and Culture in Courtrooms and Classrooms* (Toronto: University of Toronto Press, 1998), 20-21.

<sup>264</sup> Root, *How We Divide the World*, S630.

legitimate”<sup>265</sup> because inclusion in that category and inheriting the factional baggage that comes with it is rarely chosen by those included in it. The divisions those categories of meaning have created have tremendous weight in society--factional narratives explain bodies and give them meaning. They define the space occupied by those bodies and they determine how those bodies are allowed to conduct themselves. And while one can claim some level of individual autonomy over their own body, the divisions created by factional narratives mean that whether one agrees to the classification or not the restrictions, regulations, and definitions invested in that factional narrative still have the power to determine where one’s body gets to belong.

It is because of the power of these factional narratives, the rooting of them in the biology of the body, that non-white bodies are still excluded from the pages of anatomical texts. The question that now needs to be answered is will the call for the inclusion of non-white bodies in anatomical texts not effectively conserve illegitimate racial categories of difference? Anti-realists would prefer to see the complete elimination of race and race related talk, the intuition behind this being that continued talk of race does ultimately ends up reinforcing those categories of difference.<sup>266</sup> I disagree and side with Paul Taylor, who argues that “race is a matter of social facts, not of biological essences”<sup>267</sup> thus “very real and important ethical concerns can no longer hide in the shadow of metaphysical speculations.”<sup>268</sup> I see no contradiction between seeing race as a construction of factional narratives and still maintaining that there are groups of people who are nonetheless oppressed by those narratives.

If we confront the Caucentrism of anatomical illustration in anatomical atlases and the pedagogies they support, we cannot hide behind claims that race is socially constructed so therefore focusing on the exclusion of non-white bodies and demanding the inclusion of them runs the risk of race essentialism. To do so suggests that recognizing race as socially constructed means that race does not matter. In doing this we are denying the impact that white supremacy, and the factional narratives that sustain that

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<sup>265</sup> Ibid, S637.

<sup>266</sup> See K. Anthony Appiah, “Race, Culture, Identity,” 30-105; as well as Naomi Zack, *Race and Mixed Race* (Philadelphia: Temple University Press, 1993).

<sup>267</sup> Paul C. Taylor, “Appiah’s Uncompleted Argument: W.E. Du Bois and the Reality of Race,” *Social Theory and Practice* 26, no. 1 (2000): 125.

<sup>268</sup> Ibid, 126.

supremacy, has on the lives of people of colour and, frankly on the lives of those who are white. Also, to address another possible objection, requiring statistical proof that non-white representation in anatomical pedagogy has demonstrably and negatively impacted non-white lives would be a case of behaving as if the social construction of race also means racism is imagined. Arguments that anti-racist projects such as this thesis are essentializing race can only be brought by those, as Paul Gilroy suggests, who have been “insufficiently alive to the lingering power of specifically racialized forms of power and subordination.”<sup>269</sup>

Accountability cannot proceed if we hide behind claims of social construction and therefore operate under the assumption that that type of acknowledgement allows those of us who have benefitted from white privilege to claim that we are now somehow uninvolved in the subordination of others. Claiming that we understand race is not real without owning up to our part in the social and historical subordination and enslavement of non-white bodies means we do not have to recognize our contemporary habits of dominance and our continued complicity in those systems of domination.<sup>270</sup> Refusing non-white bodies equal inclusion in anatomical texts and pedagogy by lopsidedly featuring only one type of body in illustrative demonstrations is to deny entire groups of people a voice in knowledge production. That is racism. Racism is the oppression and suppression of Other bodies and their voices.

The white body is a body ‘with race’ so the claim that featuring other racially identified non-white bodies illustratively would serve to perpetuate racial divisions and essentialize race are without weight. The reason Caucasian people are so resistant to see these types of exclusion as racism is that white supremacy and white privilege makes them blind to the fact that ‘whiteness’ is also a constructed factional narrative. So powerful is the factional narrative of whiteness that when we talk about race being socially constructed, we mean non-white bodies and we think that deconstruction of those categories is simply a matter of acknowledging that non-white bodies are as good as or equal as white bodies. But this kind of deconstruction or ‘denial of race’ costs us nothing

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<sup>269</sup> Paul Gilroy, *The Black Atlantic: Modernity and Double Consciousness* (Cambridge, Mass: Harvard University Press, 1993), 32.

<sup>270</sup> Razack, *Looking White People in the Eye*, 160.

because it still privileges ‘whiteness’ and ‘being white’ and suggests that equality between the races can be achieved by white people agreeing to finally share in the spoils of the race wars we have been raging since the 17<sup>th</sup> century.

The white factional narrative that has been evolving in the face of push back from non-white voices has led to the sense that agreement to share space with non-white bodies on the upper levels where white supremacy has placed the white body is something that is ours to give. The impact of the racism perpetuated by white supremacy and white privilege is not felt only by people of colour. For those of us who enjoy a place on the top tier there always lingers a sense of superiority and authority because our position renders the non-white world below invisible and irrelevant. The factional narratives that define white bodies are constructed from and maintained by the narratives of inferiority and subordination that surround non-white bodies. In order for one to be powerful, one must have power over others and white supremacy places those who are white in a position that allows them to focus on being on top and in control, and creates a dynamic whereby one needs to exert their power in order to be understood as powerful.<sup>271</sup> What needs to be realized is that the repeated representation almost exclusively of the Caucacentric normative body across all three disciplines-- functional anatomy, forensic pathology, and forensic anthropology—is reflective of this dynamic. Exclusion of the non-white body under the claim that universalization of the human form is an avoidance of race essentialism does more to perpetuate racial divisions than the potential showcasing of non-white bodies in equal measures ever would.

The final question that remains to be answered is what is the solution? Here I have no easy answers. Certainly the simplest changes, but frankly the smallest ones, are to diversify the bodies being illustrated in anatomical texts to reflect a more realistic representation of the population. Neutralizing the bodies represented in the text should not be the goal. It is time for the concept of universalization and the universal exemplar to be abandoned. I acknowledge that by moving away from universalization we run the risk of subscribing to a type of particularization which could ultimately be more

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<sup>271</sup> See Toni Morrison, *Playing in the Dark: Whiteness and the Literary Imagination* (New York: Vintage Books, 1992), 10 and 35. Also see Razack, *Looking White People in the Eye*, 20-21.

exclusive and narrowly drawn.<sup>272</sup> Indeed, discussions surrounding the need for a new mode of expression that moves away from universalism often warn about the risk of particularism, but most scholars seem to agree that the pervasive destruction wrought by racism whose foundations owe an allegiance to the idea of a universal form must be dislodged, and the risks are therefore worth chancing.<sup>273</sup> Paul Gilroy goes even further, suggesting that there is actually “a particularity that lurks beneath the universalist claims of the Enlightenment project which was, in theory, valid for humanity as a whole” a humanity which rather, than being universal, was “rather restrictively defined.”<sup>274</sup> In this light we can see that universality and “the act of universal inclusion is always at the same time an act of exclusion.”<sup>275</sup> Consequently, the normative universal body is a myth that serves only one master, the Caucasian male.

In the hands of the forensic pathologists the universal exemplar remains the Caucaentric ‘typical body chart,’ an object that makes applications of race to its form an insult analogous to those of the wounds leading to death. In the hand of the forensic anthropologists the Caucaentric universal exemplar is often the only one that enjoys intact status and the exemplars of non-white bodies are caricatures that make difference seem grotesque and deviant. And in functional anatomy the universal exemplar is active, robust and a polyglot who can speak in a universal language that is capable of explaining all bodies, leaving the non-white body to passively accept those explanations without ever getting to voice their own. This is a language which conjures and imposes concealed symbols of white supremacy, cultural hegemony and a trivializing Othering of bodies by relying on the credibility of the factional narratives it has created out of blood, bone and dissection. It is time, to quote Toni Morrison, “to free up the language from its sometimes sinister, frequently lazy, almost always predictable employment of racially informed and determined chains” and alter the lines of the illustrations that support it.<sup>276</sup>

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<sup>272</sup> Razack, *Looking White People in the Eye*, 167.

<sup>273</sup> See Razack, *Looking White People in the Eye*, 167-170; Stuart Hall, “New Ethnicities,” in *Stuart Hall: Critical Dialogues in Cultural Studies*, ed. David Morely and Kuan-Hsing Chen (London: Routledge, 1996), 444-445; and Gilroy, *The Black Atlantic*, 31-34 and 43.

<sup>274</sup> Gilroy, *The Black Atlantic*, 43.

<sup>275</sup> Stepan, “Race, Gender, Science and Citizenship,” 29.

<sup>276</sup> Morrison, *Playing in the Dark*, xi.

In the end these issues are issues of institutionalized racism, which this thesis has hopes to help dismantle. What this thesis argues for is an acknowledgement of our role in the perpetuation of racialization and racist practices. My project is an anti-racist one, which is designed to, as I borrow from Morrison again, “avert the critical gaze from the racial object to the racial subject, from the described and the imagined to the describers and the imaginers; from the serving to the served.”<sup>277</sup> It argues that the narratives of difference that have encased and defined all the bodies in each racial classification cannot be brushed away as fiction. Rather, I believe they need to be understood as powerful fictions--stories that have been woven into believable histories, which are congruent with our expectations of the bodies they explicate and which have visible and invisible biological roots that make them seem natural. These fictions are inherently racist. Stories about whiteness reinforce the power and supremacy of those bodies and stories about blackness, yellowness, brownness and redness reinforce the subordination and inferiority of those bodies. If we are to begin to rewrite those narratives we need to do so with all voices participating in the process. Excluding those bodies which do not fit the white narrative from the pages of anatomical texts means non-white bodies are silenced and do not get to tell their own stories. It is in those silent spaces where racist dialogues exert their power. My aim in this thesis was to discipline our eyes to bear witness to those silent spaces and to *see* that racism is present even when the bodies are not.

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<sup>277</sup> *Ibid*, 90.

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## Appendix

### Percentage of Illustrations in Anatomical Texts and Atlases

Title	W Male	W Female	Non-W Male	Non-W Female
<b>Clemente</b>	64%	30%	6%	0%
<b>Hollinshead's</b>	75%	0%	25%	0%
<b>Grant's</b>	65%	24%	11%	0%
<b>Moore</b>	40%	30%	15%	15%
<b>Palastanga</b>	82%	0%	18%	0%
<b>Pocket Atlas</b>	63%	37%	0%	0%
<b>Melloni's</b>	89%	11%	0%	0%

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