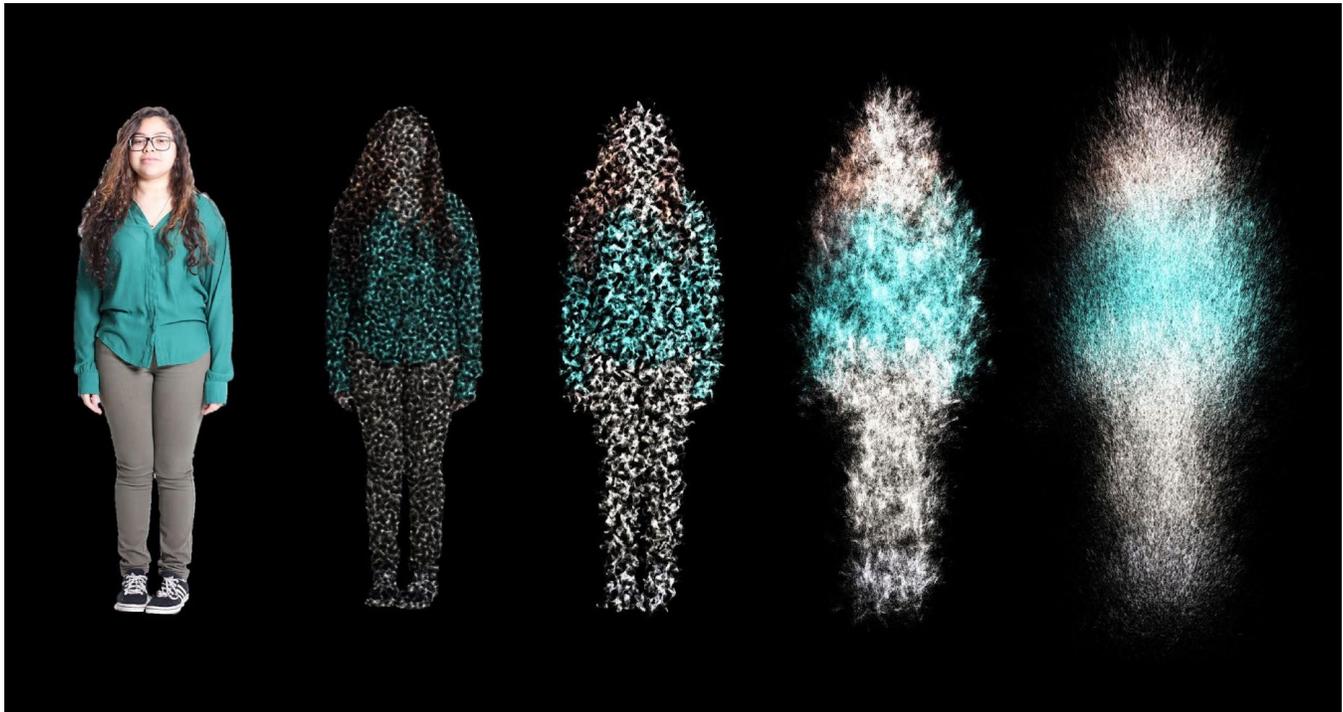


(RE)CREATING THE POSTURE PORTRAITS: ARTISTIC AND TECHNOLOGICAL (RE)PRODUCTIONS OF THE GENDERED (RE)PRESENTATIONS OF BODIES AT INSTITUTIONS OF HIGHER EDUCATION

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Abstract

This article explores the connection of the posture portraits taken at colleges and universities as a part of modern physical education programs in the United States, in relation to the eugenics movement of the late-nineteenth and early-twentieth centuries, and the underlying assumptions of what it means to be “normal.” We examine how the reification of ideologies around health and discipline using a medicalized gaze and photographic technologies led American scientists and academics of this period to pathologize gendered, racialized people, and people with disabilities as “Other.”

In this research we engaged in a recreation of this narrative of pathology and shame by using photography

and the arts — specifically dance — to refocus the gaze as well as to critique the academic discourse at the time by celebrating the body and the participatory process of creating knowledge. More specifically, in our recreation we focused on how transparency, agency and choice render bodies as interactive “performers” and how by engaging thoughtfully posed movements, we can make art from data, from history, and from a process of de-literalizing and de-othering.

Keywords: Art, Eugenics, Gender, Healthism, Modernism, Physical Education, Postmodernism, Posture, Science



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INTRODUCTION

This article examines how bodies have historically been created/made through technological and scientific interventions and surveillance (Foucault, 1977), while simultaneously engaging with the concept of inclusivity of all bodies including those traditionally seen as Other. To do so we trace the development of healthism – the reinforcement of certain norms that construct the “healthy” as moral and pure and the “unhealthy” as foreign and polluted (Skrabanek, 1994; Rose, 1999) – in the modern American university which dates back to the early seventeenth century (Wilder, 2013), and its relationship to the U.S. eugenics movement in the late-nineteenth to twentieth centuries. We explore how these ideologies were mobilized in the service of creating new disciplining and surveillance technologies in higher education by examining the case of what is known as “the posture portraits.” These portraits, taken at colleges and universities across the nation during the 1920s-1960s, were used as a measurement of ability and of good posture, which at that time, was linked to intelligence, beauty, and what it meant to be “normal” (Vertinsky, 2007).

Through selected case studies of colleges that engaged in posture photography, with a specific focus on women’s colleges (Connecticut, Wellesley, and Vassar Colleges¹), and with the use of archival and interview data, this paper discusses how the posture portrait project was undertaken, the responses to the practice, and current resonances. We collected and analyzed this data in order to show how historically produced empirically reliable truth claims affect how we understand and navigate contemporary society as raced and gendered beings (Harding, 2001). Herein, we engage in an intersectional analysis (Crenshaw, 1989), an analytical tool used to demonstrate the inner workings of power and social inequality (Collins and Bilge, 2000, p. 2). We explore how through the guise of normality, defined herein as the effect of “meaning-making through which social behaviors are interpreted [and] held in common” or shared (Kirby, 2015, p. 99), oppressed groups were impacted by the posture portraits practice and its influence on a modern understanding of gender, race, ability, and size.

Additionally, this article examines how we designed an interactive research project through an exploration of the aforementioned posture portraits practice. We did so with a view to (re)creating portraits at our own institution, where this practice occurred, so as to critique the scientific truth claims about healthy bodies activated at the time, which constructed some bodies as Other. We describe how by focusing on a postmodernist academic understanding of the body as socially constructed through discourse (Butler, 1990), and through an interactive photo-taking process which encouraged comfort, agency, and openness, we sought to tease out any culturally historical significance and (dis)similarities between past and present-day student life by recreating the body through technology and dance. We then describe how, through computer technology, we used photo data to create an interactive installation comprised of printed three-dimensional (3D) miniature replicas of these bodies which had Radio-frequency identification (RFID) tags embedded in the base so that the system could detect each model and match it with the corresponding dataset for interactive visualization of a complete body which slowly dissipates on screen. In so doing, we were able to demonstrate how the socially constructed body is/ can be made and remade through science/knowledge production. This process also allowed us to critique the science behind data preservation in the archives as also being a social process in which one gets to decide what is worth preserving and what should be destroyed – as we encountered that some schools had purged their records of mention of the posture portraits. We address the power of archives, and how the aforementioned undertaking occupies the complicated site between voyeurism and archival activism.

To complete our project and further critique the “scientific” rationale of the posture portraits, we decentered science through the spontaneity of performance art to examine the following questions: how can art emerge from data and from history, from a process of de-literalizing, and how the gender, racial, and ableist abstraction can, through art, lead to a better understanding of being? By curating a dance in which the dancer moves subtly and slowly, without the knowledge of those in the room, reading their structure,



barely moving as she does so, imitating the ways that people stand, as one might try on a new outfit, we use dance to learn physically from being in the body of the Other. This performance uses art to create the body exploring what it feels like to be Other as the dancer performs postural empathy.

MODERNISM, LIBERALISM, NATIONALISM AND THE CONCEPT OF THE CITIZEN

In the early to mid-nineteenth century, the world experienced the development of a number of related and competing ideologies, among these liberalism and nationalism. According to Locke (1960), all men should have a natural right to life, liberty and property, and these rights, based on a social contract, should not be violated by governments. The development of this concept inevitably resulted in the debate regarding the value accorded to certain types of people existing in a nation, which Breuilly (1982) defines as having value for their members and in themselves and hence, because of this value, a claim to political autonomy. Over the centuries, how the value of some people came to be determined in the U.S. defined how the nation was organized and which people could have access to the values guaranteed under the social contract with the government, and other rights that have since come to be defined in the U.S. constitution.

Science was one way used to justify which people would have access by demonstrating that there were inherent differences between people, using these differences as the basis to justify inclusion or exclusion from full citizenship and the rights that stemmed from it. For example, scientists, through the concept of natural selection, worked to prove the inferiority of non-white people and women (Darwin, 1896) and developed physical measures such as craniometry and anthropometric studies to distinguish those in society who were thought to be anatomically predisposed to criminal behavior and the insane from those who could be considered normal (Lombroso, 2006). These types of measurements were also performed on immigrants, gay people, and those with disabilities (Cannato, 2009; D'Emilio, 1993; Clare, 2001). Eugenics was also used to determine whose bodies

were imperfect, sub-human, and therefore unworthy of normal citizenship.

The eugenics movement in the U.S. can be traced to Sir Francis Galton who believed in the superiority of Nordic, Germanic and Anglo-Saxon peoples and selective breeding (Galton, 1869). After meeting Galton, Charles Benedict Davenport, a prominent American biologist, became one of the leaders of the American eugenics movement. He conducted a series of investigations into the inheritance of human personality and mental traits and wrote books such as *Heredity in Relation to Eugenics* (1911), which were used in colleges and universities for many years. In 1912, Davenport was elected to the National Academy of Sciences. His work and that of other eugenicists not only found support in academia but also received extensive funding from corporate foundations such as the Carnegie Institution and, over time, became enshrined in the law. To illustrate, some state laws prohibited anyone who was "epileptic," "imbecile," or "feeble-minded" from marrying (Reynolds, 2003) and authorized the mass sterilization of those considered unfit (Davis, 1983; Landman, 1932).

These people were seen as a detriment to the well-being of the nation-state as a whole, including the institutions that are essential for the running and continued growth and development of that state. Therefore, institutions of higher education, marriage, and others needed to be protected (Wilder, 2013). With regard to institutions of higher education which were set up to educate young men to take on their roles as normal citizens of the nation state, only those who possessed superior Nordic genes and hence were intelligent or came from wealthy families had access to the best of these institutions (Wilder, 2013).

THE MODERN UNIVERSITY AND THE INFLUENCE OF EUGENICS ON PHYSICAL EDUCATION AND HYGIENE

While universities and colleges like Harvard, William and Mary, Yale, Princeton, Rutgers, and Columbia have a long history dating back to the seventeenth and eighteenth centuries, most Protestant denominations, as well as Roman Catholicism, opened institutions of higher educa-



tion in the mid to late nineteenth century (Wilder, 2013). According to historian Michael Katz (1983), in this period the nation's colleges and universities played an immense role in helping young men to make the transition from rural farms to complex urban occupations, in promoting upward mobility, and in priming white men for leadership roles in their communities. Elite institutions like Harvard, attended by the children of the wealthy, played a particular role in the formation of a Northeastern elite with great power. These educational institutions guaranteed the American dream to citizens, with the latter being understood as white males. Most others were denied entry into these institutions and either remained uneducated or attended segregated educational institutions like Mount Holyoke Female Seminary, founded in 1837, or Cheyney University, which opened that same year for Blacks.

At Harvard University in the late nineteenth century, fitness instructor D. A. Sargent, credited with the creation of the modern-day athletics programs, "developed a template of the statistically average American" (Crycle and Stephens, 2017, p. 313). He assessed the physical condition of men using a physical examination and adapted an exercise regimen to develop a complex system of machines and measurements which, when combined, allowed students to reach a universally perfect muscular form (Sargent, 1887). When students arrived at Harvard the standard practice was for Sargent to measure their hearts, lungs, sight and hearing and make a detailed physical examination, taking approximately forty measurements of muscular power and body size.

Based on these measurements, each student received a prognosis detailing which body parts were average, above or below, and was prescribed a regimen of exercise using machines that Sargent developed (de la Peña, 2003, p. 51). After six months, an examination would reveal whether the student had remedied the defects and moved closer to the average. If this were not the case, then the student would receive a modified training schedule (de la Peña, 2003, p. 52).

Sargent referred to his measuring methods as anthropometry, a term that "easily lent itself to racist applications ...

[anthropometric] findings often 'proved' the inferiority of certain groups based on personal criteria masquerading as science" (de la Peña, 2003, p. 59). De la Peña argues that while Sargent's system presented a rigid standard of the normal body, pushing students to adhere to his version of the perfect, he "seems not to have subscribed to the view that physical ability was linked to race" (p. 63). We take a different position. We argue that Sargent's measurements were based on a socially constructed ideal of the normal body that up to this point was based on a racist assumption of Nordic superiority pervasive at Harvard and in the academy. By this time, eugenics was widely accepted in the U.S. academic community (Kimmelman, 1983) with prominent academics holding membership in the American Breeders Association and the Immigration Restriction League, which supported government interventions to promote the health of future citizens. Also at Harvard during this time, Professor E.A. Hooton played a key part in establishing an anthropological framework for the racial stereotypes about black athleticism and black criminality. In his book *Apes, Men and Morons* (1937) he described mental functions as resulting from biological determinist organisms that limit the ability to function beyond a certain capacity.

The academy's promotion of the health of the future citizen increased attention to physical education and hygiene as an important part of education, stressing the correlation between health and intelligence inherent in those of superior genetics. In his dissertation (1947), Bruce Lanyon Bennett asserts that the rise of the modern university was contemporaneous with the introduction of departments of physical education and hygiene, largely the result of Sargent's work and initiative. Sargent created prize contests based on the development of the perfect body shape. He stressed grace, poise, accuracy, and beauty and argued that since women had more time for self-improvement, they should develop their own bodies to the fullest extent so that the average mental and physical condition of the masses would evolve. His view was that women should not only prepare their bodies and increase "breeding power" for a better generation but they should also teach their children the principles of hygiene and serve as guides to the "physical endurance and constitutional vigor upon



which depended the hopes and possibilities of the human race” (Sargent, 1988, p. 185).

THE POSTURE PORTRAITS AND ITS INTERSECTION

By the end of the nineteenth century, concerns emerged about a lack of good posture brought on by modern life activities such as school (Yosifon and Stearns, 1998). Good posture, it was thought, was under increasing threat, and could result in “physical degeneration in youth” since

straight limbs and erect stature were necessary to prevent internal organs from being crushed or deformed ... [and a] decline in good posture (associated with a perceived degeneration of correct body habits in general) began to be associated with wider anxieties about character, eugenic practices, and the need for better bodies for improved breeding (Vertinsky, 2007, p. 296).

According to the historian of physical culture Patricia Vertinsky, seeing physique and character as linked to the posture was in fact a way of

substantiating a priori beliefs about class, race, and gender and highlighting the growing ambiguity inherent in the term *normal* ... Posture was applied easily to racial analysis, with the argument that those of European descent had erect spines and straight bones allowing graceful deportment to further the contrast to the stooped posture and flat feet of non-white, less civilized races. Ivy leaguers were exhorted to demonstrate their erect (upper class) carriage and linearity through good posture (2007, pp. 297-298). (emphasis ours)

The scientific slippage linking deformity, degeneration of habits and character to bad posture, and bad posture to people of non-European descent and anxieties surrounding gender and class, justified the seemingly objective exclusion of people of color in general, as well as women, people from the working classes, and those with physical disabilities from higher education. So when during this time Sargent began detailing anthropometric measurements to compare and interpret variability in parts of the

body, including posture, he was in search of normality that was racist, classist, and that discriminated based on gender. As these techniques — including photography as a tool to measure bodies — began to proliferate to other institutions of higher education, the sentiment remained.

According to Vertinsky, the commitment to the normal ideal body saw physical educators at schools collaborate with many in the American Posture League and adopt methods including, nude or semi-nude – side, front, and rear posture photographs and posture measurements (2007, p. 298). At women’s colleges in particular, college officials needed to prove that women could meet the challenges presented by higher education and “endorsed a model of female health that emphasized ... well-aligned posture, and a balanced carriage” (Lowe, 2003, p. 22).

To better understand this practice of taking posture photos at these women’s colleges, we conducted archival research at the Anthropological Archives of the Smithsonian Institution in Washington D.C., and at Connecticut, Vassar, and Wellesley Colleges. To corroborate this archival information, we also interviewed several women who had attended these institutions and had their photos taken as incoming students. We directly recruited these women at a presentation of our archival research findings at the Connecticut College Alumni reunion week in June 2016, as several of the classes present at the reunion week had attended Connecticut College during the time the posture pictures were taken there – the early 1940s to the early 1960s. Once we had contacted and interviewed these women, we engaged in snowball sampling by asking them to suggest others who would be interested in being interviewed face-to-face or over the phone.

In total we interviewed seven women.² Five of the women interviewed attended Connecticut College, one Vassar, and one Wellesley. The interviews took place in the fall of 2017 and lasted between 40 minutes and an hour. Our sample size was small because of the sensitive nature of the topic; and because of the period of time that had elapsed, memories had faded and potential participants passed on. The ages of the women interviewed ranged from 78 to 92 and they were enrolled at their institutions between 1940



and 1956. The majority of women identify as upper class, and all identified as white. As undergraduates, the women majored in a variety of subjects ranging from sociology to economics. While at their institutions they were involved in a number of activities, including the international relations club, badminton, music, and theater. Four of the seven women went on to attain master's degrees and they all built professional careers.

Our research uncovered that posture photos were taken at these women's colleges of all incoming first-year and senior students. Vassar College began measuring students and notating their height and girth in 1884 (*Vassar Encyclopedia*, 2005) for the basic course in Physical Education or Hygiene and Physical Education. By 1919, Vassar had established posture committees and held posture drives that attempted to inspire students to carry themselves more correctly (*Vassar Encyclopedia*, 2005). English Professor Elizabeth Daniels described the method at Vassar:

In your freshman year, you went over to the gym... where ... a pro-tem photo booth [was set up]. You changed into an angel-robe³ before entering the booth, shed the robe temporarily while your nude profile and rear views of your body were recorded, put the angel robe back on, and left (*Vassar Encyclopedia*, 2005)

This process was similar to those processes at Connecticut College where girls wore "angel robes" before stripping down to be evaluated (*Connecticut College Alumni News*, 1928; *Connecticut College News*, 1930) and Wellesley, where the process also recorded whether the student was underweight or overweight (Chen, 1933).

All of our interview participants remembered taking posture photos. Some remembered the process being "all done by the Phys. Ed. Department" (Carol) and they all remembered that this mandatory procedure was to "check our posture" (Angie), to help "improve our posture" (Flo), as "an overall physical exam/health status upon entering" (Betty) and "in order to graduate" (Edith).

Some of the women, while they could not remember all the details of the process, corroborated that they were in various stages of undress when the photos were taken either in the gymnasium or in the athletic department. They remembered being alone with the photographer, and that the process was relatively quick. Some of the descriptions were vivid details of the experience. For example, Grace recalled, "I went into a room in the athletic department building and the person who brought me there was one of the teachers ... and the photographer ... it was ... stark, ... like being arrested". Betty confirmed, "[y]ou stripped down to your bra and underpants and you stood and ... they taped two rods at right angles, little sticks to different places on your back, or on your spine, and then you stood against the wall with sticks protruding to the wall and they took a picture of you that showed if there was a curvature or how straight your spine was in relationship to ... the straight wall and the sticks sticking in your spine." Carol remembered that they "had some kind of white background and I think there was a line, like a plumb line, a string with a heavy lead weight on the bottom so it would hang straight, and I guess we were supposed to stand in front of that and they probably guided us. And they took the picture to see ... how straight you were." Flo too remembered having "to strip down to our panties and our bra" told to "put your shoulders back or tuck your tummy in." Edith corroborates Flo when she states, "we had to stand up straight with our backs to the photographer, who was male, in a bra and ... panties."

The women's memory of the process is consistent with what we uncovered in our archival research as the photos we saw showed women in their underwear or nude. In general, once photos were taken and students received a grade, and based on that grade, the students were either exempt from or had to take a class in "Fundamentals" or "body mechanics" in order to "correct" the deficiencies of the spine. While many reports in the schools' archives suggested that a significant number of the student population had a diagnosed problem or deficiency of the spine, these diagnoses, as suggested by a set of interviews of



students found in the Wellesley College archives, were poorly explained and the students often felt as though they had little progress in making substantial change (Chen, 1933).

At Vassar in the 1930s and 40s, a mandatory fundamentals class was established for all freshmen, which, as one 1946 catalogue described it, taught “theory and practice of fundamental body movements, and provided a standardized system through which the college could teach each student to improve her stance” (Vassar Encyclopedia, 2005). This course was also taught at Connecticut College (*Connecticut College Alumni News*, 1967: 11), and at Wellesley (*Wellesley College Bulletin*, 1945).

As a means of corroborating what we found in the archives, we asked participants to provide any details they could remember about any classes or work that they had to do as a result of their posture photos. On the one hand, Carol shared with us, “I think I had them taken 3 times because I didn’t pass. I didn’t stand up the way I was supposed to stand up or something. They would send me ... back to the dorm with practices and I don’t remember how much time there was between each picture, but I’m pretty sure it was 3 times.” On the other hand, Edith, while corroborating that there were indeed posture classes at Connecticut College, stated, “I know that I passed because I didn’t have to go to posture class. There was no follow up, so guess I passed.” We also asked the participants whether they had seen the photos or remembered whether they had been told the results of the analysis. Five out of the seven women stated that they had not and three out of the seven women said that their posture was graded as satisfactory and the remainder said they could not remember.

We also asked the women whether they had heard about the photos again once their photos were approved, and if so, in what context. Most of them replied that they had not but Grace stated, “It was just a running joke, that that’s how you met guys. How the Harvard guys get dates for girls, is check out the posture pictures.”

Even though students themselves did not like taking the photos it appeared that faculty and staff at these institu-

tions felt that the college was responsible for its students’ health, and posture pictures and courses were seen as nothing more than an exercise to improve health. For example, two editions of *Vassar’s Miscellany News* (Fried, 1977; Reisman, 1995) state that when asked, professors indicated that pictures were taken for health and aesthetic reasons: “one cannot be beautiful if the spine is curved. It will interfere with the ability to walk properly, and very likely the ability to marry properly” (Fried, 1977).

EFFECTS OF THE POSTURE PORTRAITS

To understand the contemporary significance of the posture portraits, one has to consider the historical positioning of physical education and the sciences as sites in which the modern body was made. To do so it is helpful to think through how gendered and racialized cultural values of the time became empirically reliable truth claims and how contemporary knowledges and academic disciplinary inheritances bear “the fingerprints of these eras and the subsequent ones that practice and maintain them in their cognitive core” (Harding, 2001, p. 292).

Bodies have historically been manipulated through the disciplinary mechanisms of the knowledge production process to make them “normal,” a process which itself is a manifestation of social power. Since only certain bodies produce knowledge (Foucault, 1975)⁴ the prejudices of these bodies have no doubt permeated data which then circled back to the same prejudices in a system that gained authority because it seemed to arise from meticulous measurement (Gould, 1981). Furthermore, the power of this prevailing system of expertise not only regulates the subject but also results in self-regulating behavior through normalizing practices, which define the normal in advance, and then proceed to isolate and deal with anomalies resulting from that definition (Bartky, 1990).

These “normalizing effects” in turn shape how generations of individuals understand themselves and their bodies; therefore practices like the posture portraits and the corresponding system of archiving anthropometric measurements are best analyzed through an exploration of how they contributed to the development of bodies



decades after they were taken. How do we understand this process as bound up in the current pressures to radically transform “bad bodies” through diet and exercise, training, drugs, cosmetic surgery and gene manipulation to produce “good”, “normal” bodies (Bartky, 1990)? Consider, too, that most modern-day sports still adhere to and use the machines, measurements and techniques developed by D.A. Sargent, a persistence that underscores how discrimination against those who do not fit into this ideal but who are actually quite healthy, is still perpetuated.

Analyzing these prejudices through an intersectional lens helped us to consider the various marginalized identity positions occupied by some of those who were directly affected by the posture portraits – fat, disabled, gendered bodies, and bodies of color. We live in a society in which the idea of health is typically positioned by the way our bodies look. Through this medicalized gaze, corporeality is judged to be an indication of a health ideal. Developed by Petr Skrabanek (1994) and analyzed further by Nikolas Rose (1999), this view, or healthism, is a theory that investigates the constructed aspect of the concept of “health” in which all human activity is divided into what is said to be “healthy” and that which is “unhealthy,” with the population being judged accordingly since all are expected to pursue “health.” Skrabanek suggests that the state has created and enforces certain norms that are noted to be of a “healthy” lifestyle and that what is “healthy” is defined as moral and pure while what is “unhealthy” is foreign and polluted. The public good, then, is linked with the “health” of individuals within the population. As the history of posture photography and more generally of physical education suggests, there was a desire to expunge what had been defined as potentially harmful to the “health” of the United States and those who were seen as unfit.

Fat bodies were seen as perpetually sick, epidemic and read as signs of cultural decline and threat (LeBesco, 2003) and those seen as unfit because of disability were restricted from general inclusion into parts of the public and removed from the public sphere through acts and imposed standards which were meant to inspire shame and fear (McRuer, 2006). That this ideal is also linked to beauty must not be ignored. Those whose bodies were

deemed unhealthy were also seen as not beautiful.

Considering that inherent in the practice of posture photography are operations of surveillance, it is critical to consider how this might have affected different groups based on their marginalized material realities. For example, we must think of how the white ethnographer’s gaze during the period of enslavement and after produced anthropological photography and photographs of enslaved people to prove their barbarity. The example of the Hottentot Venus, and the “scientific” explanation of her bodily constitution and how her body was photographed and displayed shows that these kind of images created with power imbalances perpetuate racist ideals (hooks, 1992; Dyer, 1997). Even today, black women may not be seen by some to be as beautiful as white women (Winfrey-Harris, 2015). As to other power imbalances, Marilyn Frye (1983), as well as other critics, has discussed the cramped postures in which oppressed groups must hold themselves so as not to be seen as hostile or unbecoming. This response creates a body that is not erect or “well” postured and therefore plays back into the reasoning of racist eugenicists.

With regard to the gender bias inherent in these photos, Naomi Wolf in her book *The Beauty Myth* (1990) critiqued men’s appropriation of women’s bodies through posture photographs. The underlying idea or normalcy developed by male scientists and instituted through these photos upon women’s bodies was based on a patriarchal notion of beauty and the value of women as wrapped up in their bodies. There is an important power dynamic in that these photographs were taken in women’s colleges by men and thus any analysis of them must factor in the effect of the male gaze (Mulvey, 1999). As such, it can be assumed that many girls during the first few weeks of freshman year may well have been extremely self-conscious about being photographed and subsequently having their bodies evaluated for defects. This much was stated to us by our interview participants. For example, Betty shared that she remembered feeling “mildly uncomfortable” and thinking that “[m]aybe some students had not ever stripped down in front of strangers before and that’s embarrassing. And then maybe some were embarrassed



by their weight or their bad posture or maybe a rash or something.” She continued, “we weren’t given an option, we were told this was part of the procedure.” As Angie reports, it “was one of these things that you grit your teeth and you grin and bear it and it wasn’t a choice.” One particularly odd thing about this process, as corroborated by some of our interview participants who also mentioned that they did not like that the person photographing them was male, is that semi/nudity was even required.

The underlying reasoning that these photos were taken as a way to examine these women’s fitness to take on their roles as white women in society as mothers, submissive wives and secretaries is also an important critique to grasp both the male gaze and the resulting gendered panopticon: one in which these women needed to be constantly thinking about holding themselves up with correct posture for the inspection of others, always ensuring that they were well-fitted for their role (Frye, 1983; Bartky, 1990).

The indifference to all of it was also quite astounding, as is evidenced by a comment made by Connecticut College president Katherine Blunt in 1931: “[n]o attempt will be made unduly to influence the girls, but the usual means of furthering health, such as the personal hygiene and nutrition class, medical advice, posture tests, etc. will be continued” (*The Day*, 1931). Blunt’s interpretation of undue pressure appeared very shallow because, as one professor pointed out to a student interviewing her in 1977, “swimming shorts would not have undermined the effectiveness of the procedure. The intentions behind this program were probably good, but the experience itself was doubtlessly rather upsetting” (*The Day*, 1931).

Our interview participants reported feeling the same way. For example, Angie explained that,

in speaking with friends and talking about it again now ... it gives me this awful feeling — a feeling of panic. I have a feeling that although I don’t specifically remember what happened, I remembered the feeling that I had. Otherwise why would I be feeling this now? ... It was a dehumanizing thing ... And actually

knowing what I know now I would be furious because I feel that it’s a violation.

In our interview with Edith, she was very clear about the way she felt at that time and how that feeling has remained with her. She states, “we’ve had a long time between then and now. You know, I can hardly remember what I did yesterday [but] [t]hey (the posture portraits) made an impression. The fact that I remember that, so vividly...” Other participants shared being “annoyed ...Tense, tense, like I wasn’t going to measure up” (Flo), “odd” (Dolly), and “somewhat embarrassed” (Grace). All of the women told us that they had not thought about the process until we had contacted them for the interview, and some reported that they had even erased it from their minds.

One of our last interview questions for the women was whether with the passing of time they felt differently about the process than they did before. Besides Carol, who said she thinks there is nothing “wrong with checking people’s posture,” all the other women stated that after talking about it they had an evolved view. Betty said, “I think now in an age where people need much more understanding, they shouldn’t and they don’t just do things automatically, they question teachers more and want the reason more. And so I think then it was just sort of blind obedience and now I’m glad that people question things more.” Flo says she thinks about it as “an invasion of privacy. I probably didn’t think of those things at the time, but looking back ... it’s nobody’s business.” Edith explains,

Oh, I’m horrified! More than the practice, is the fact that we never said “no.” The fact that we were standing there literally in our underwear in front of a man taking pictures and none of us ever said “I’m not gonna do this” blows my mind. I can’t imagine any of you holding still for that ... I can’t believe that we accepted that ... [It] [c]ertainly didn’t fit into any activity. It didn’t make us better tennis players or soccer players or, pick anything you like, dance, maybe dancers, I don’t know. They didn’t have dance.

Hearing these women’s experiences made us think about our own work as academics and how we might be com-



PLICIT in producing empirically-based research that is othering and discriminatory. As was mentioned earlier, the normalization of knowledge around physiognomy has lived on to remain central today for our understanding of self; it has embodied practices and relations, and remains critical to our perceptions of otherness, which are linked to appearance and identity. This feeling of being complicit with a system that was set up specifically by and for a specific group and that to this day still excludes the bodies and voices of those considered Other (Collins, 2000), ignited in us a desire to disrupt these knowledges; as a part of this work we sought actively to disrupt this legacy by (re)creating the posture portraits.

RECREATING THE POSTURE PORTRAITS

One of the final interview questions to our participants addressed how they felt about the reason which had been provided at that time for the taking of these photos. Most of the women responded similarly to Angie who said,

I feel that the reason that was provided was to check our posture, and possibly there was that element in it, okay! But it was also a denigrating kind of experience. It made us into objects, and in thinking about it now, I'm furious. But if it were done to me now – I was much younger... I hadn't turned 18 quite yet. I didn't have the nerve to speak up for myself, and that's changed. It's those who had us doing it was the authority figures. There was no question of questioning authority. It just wasn't done ... now, looking back, it was not appropriate. You know, you didn't have a choice, you had to do it. It was not an appropriate thing.

Angie's sentiment captures the motivation for this project perfectly. Given the sensitive and intensely personal nature of these files, we were forced to think about the level of access granted to the archivist and to us as researchers, as well as about the power that it bestows, especially when understanding that in most cases these photos were taken involuntarily. In fact, we felt we became voyeurs during this archival research as we

looked at photographed naked bodies. We also understand that for our research participants we brought up some traumatic memories. As such, we recognize that the most responsible thing we could do as researchers was to consider our methods, how we work to include previously excluded personal narratives into the historical record and how we seek to use this power to amplify the voice of the Othered.

Bearing this responsibility in mind, our primary aim for this project was to recreate the narrative of racism, sexism, sizeism, ableism, pathology, and shame through use of posture photography; we wanted to do so, moreover, in order to refocus the scientific male gaze and to critique the academic discourse at the time that linked body types to personality, characteristics, and ability. To do so, the first step utilized a postmodern theoretical lens that understands the body not simply as literally a biological entity but also as a social construct that can be manipulated by society.

Utilizing this postmodernist lens meant that we were able to in some ways escape the trappings of the modernist discourse that seeks to make scientific truth claims about some aspect of our existence toward developing some coherent worldview. Instead, we focus on the postmodern approach, which advances that there are "no eternal truths" (Faigley, 1992, p. 8) and that science itself is rooted in relations of power. Being able to focus on these relations of power that occur through interactions instead of a purely medicalized, health-focused analysis, meant that we could be attentive to all types of ongoing relations throughout this research process rather than have that eclipsed by any particular search for some conclusive finding. By doing so we were free from the perceived historical and present necessity of having to be inhibited by measuring the body.

Using this lens we set out to recreate photos that were also freeing for our participants and which engaged with ideas of agency, choice, and inclusion – in direct opposition to the original concept of the posture photos. Prior to and after the photo-taking we interacted with par-



ticipants, having a conversation about what we already knew and did not know about the posture portraits, asking participants about their own knowledge, inviting and not instructing participants to take photos if they so chose, allowing them to pose in the way they felt most comfortable, asking them about their feelings about being photographed, and answering any questions they had. After taking their photos some of the participants even stayed around with us talking, expressing interest in the project and watching others engage in the process they had been through only moments before. In addition, student researchers were integral to the project from the inception and played an active role in designing research that involved them and their peers.

This participatory method of research using photography is not new. Researchers have addressed the need to engage with interactive, collaborative, and artistic methods (Bode, 2010; Sherry and Schouten, 2002; Leavy, 2009), known as arts-based research, that is, adapting “the tenets of the creative arts in a research project in any discipline” during any phase of the project, “problem formulation, data generation, analysis, interpretation, representation, or multiple phases of a project, or as the entire research act” (Leavy, 2019, p. 2929). The purpose of this type of research is to underscore that knowledge is not simply cerebral, but also bodily, sensory and emotional. Using methods such as the ones we employed – photography and dance – do not require answers to research questions that correspond to a “true” reality but aim to engage participants as complex people (Pink, 2015; Ozanne, Moscato, and Kunkel, 2013), and to describe contextual and perceived realities. These methodologies seek to tease out the discursiveness and aesthetics of lived experiences. According to Meyer et al. (2013), photography in particular can provide knowledge that is not linear and sequential, but rather holistic. It allows us to address the multi-sensory human life that is wrapped up in experiencing this world as composed of interconnected beings, developing a deeper engagement with knowledge (Pink, 2015). So, too, does performance, and as described later, the dance component of this research allowed bodies to be in conversation with each other, whereby the dancer’s

body sought to embody the posture of those in the room in a bodily, sensory approach to research.

Bearing the above in mind, in spring 2017 we set up a booth in a semi-open space and put out an invitation for students of all genders, faculty, and staff across campus to be photographed. We recognized the importance of including everyone and not just female students as well as using relatively open space to signify inclusivity, as opposed to othering, and stressing freedom from pressure and the utilization of choice. We accept that there are some limits to a full and true recreation when it comes to the use of photography, understanding that we are already conditioned to surveil our own bodies, and grant that in some sense we are always and already posing. However, by encouraging interactivity, comfort, agency, and openness in the picture-taking process, we were able to create a relaxed environment, and in what follows we outline the process we undertook to recreate the posture portraits.

We had a total of fifty participants respond to our call. Prior to being photographed, the participants were asked to fill out a consent form to allow us to use their images. This formalized consent was all the more necessary and significant given that the initial photos taken, as reviewed in the archives, were primarily without consent, so, by extension, our project, too, was complicit in archival voyeurism made possible in the name and work of science. After participants consented, they were invited to the open space with a blank white background and encouraged to stand in a way that they felt most comfortable. Our only instructions for the photo-taking process were that the participants be as free and uninhibited as they possibly could in the circumstances, understanding that our own cameras could be a source of discomfort and because our work was approved by the institution, could be interpreted as panoptical surveillance devices. In our conversations immediately prior to the photo-taking with participants about the genesis and purpose of the project and the process, we emphasized that it was about celebration and not shaming bodies. Through dictating what images people saw, instead of having the decision made for them,



it was also the participants' opportunity to make their own bodies (Schroeder 2002). We celebrated the variety of styles and clothing, and in keeping with the discursive, participatory nature of this project, as researchers we also had our photos taken, stepping away from the top down, God-like practice of research shrouded in secrecy,

making it vulnerable to critique through openness, visibility, and soliciting real feedback from those whom we asked to cooperate with us on the project as participants.

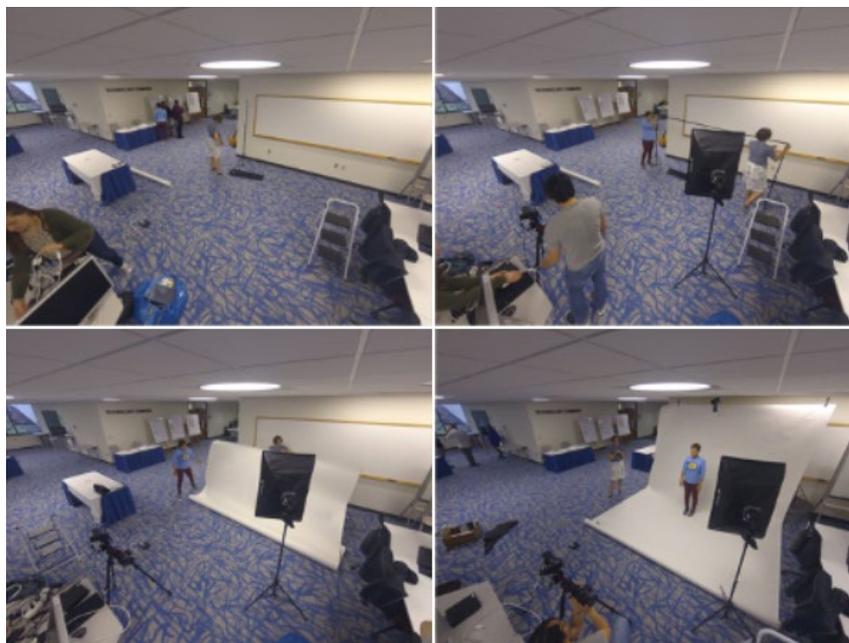


Figure 1. Setting up the space

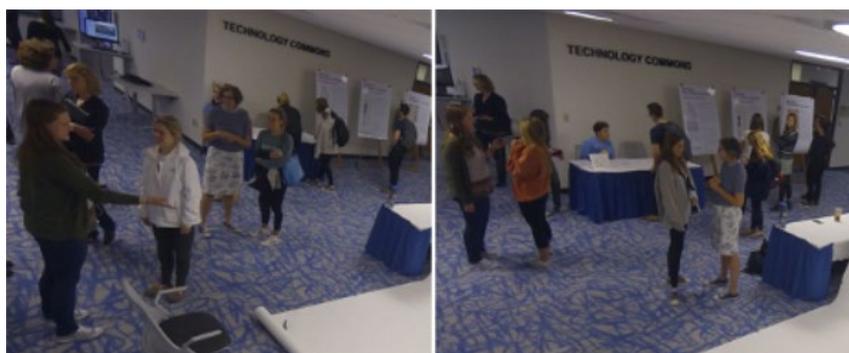


Figure 2. Interactive knowledge sharing prior to taking photos



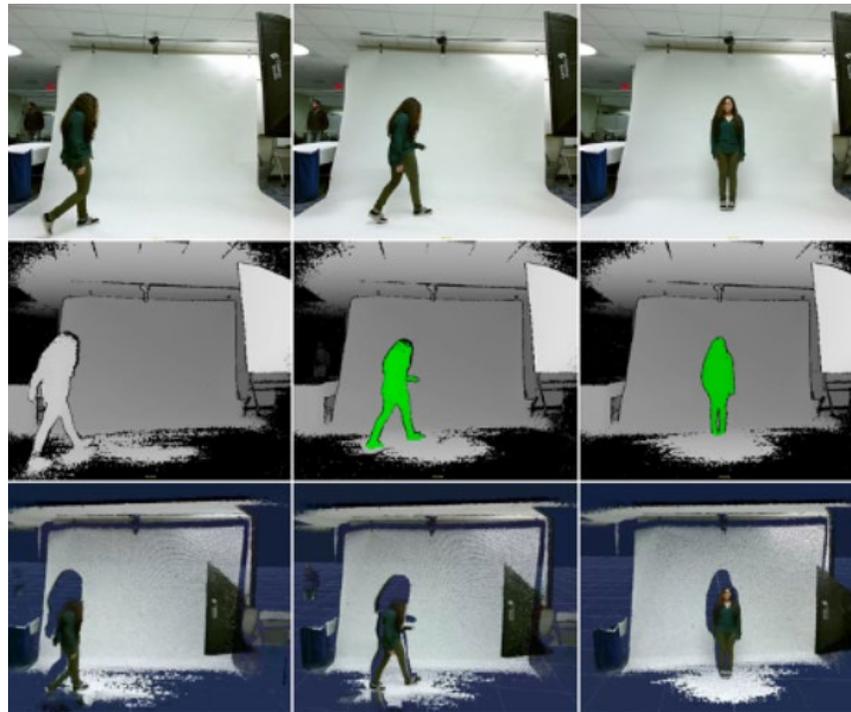


Figure 3. The photo-taking and abstraction process

Throughout the photo-taking process we emphasized that participants could retake photos, that what we captured could be viewed by them, and that they could determine what we used for the project, explaining to us any meaning behind their pose – they had agency. This component was essential to prioritizing the participants as essential to the knowledge co-creation process. It forced us to be reflexive throughout the research process (Scotti and Aicher, 2016) especially because we understood that once we sought to discuss and analyze the photographs using traditional academic approaches – conference presentations for example – the participants’ voices and representation could become completely lost if they did not have the agency to choose their own representation from the very beginning (Seregina, 2015). In addition, being able to retake the photos indicated a type of oppositional gaze to that of the male gaze of the original photos.

Participants could gaze upon their own image and decide whether what was being seen was in line with what they wanted to be seen.

Once we concluded the photo-taking process, we commenced the process of recording 3D point cloud data to generate abstract visualizations of the photo-taking experience of the participants’ bodies (see Figure 3 above). In taking still photographs as well as point cloud data of the participants’ bodily gestures, movements, and expressions, we were capturing and presenting their body motion as both a posed and spontaneous image; the posed movement we posit, occurred near the shutter release for the photo whereas spontaneous movement happened before and after. We wanted to capture the still image to demonstrate the actual frozen moment of time as a way to comment on the importance of data collection and cu-



ration while also critiquing that these frozen movements, while telling us a lot about the photographer and what they intended to capture, have very little to tell us about what the participants were thinking and experiencing in the moment. Still photos are especially silent about the lives of photographed when these materials become part of the archives without more. What is more, after interviewing the women who had their posture portraits taken decades before our project, and then connecting their stories about their experiences of discomfort to the archival material we consulted years after they experienced them, we thought our process needed to account for and show how disconnecting the body from emotion and thoughts in an attempt to create knowledge has lasting negative impacts. Accounting for this disconnect in our own work, and in an effort to avoid creating work that silences and creates discomfort, meant engaging full sensory and bodily interaction (Leavy, 2009). Engaging in discussions with participants about how they felt prior to and after the photo-taking process, and being transparent about what we were doing with their photos – a direct contradistinction to the posture portraiture of the past – was important to include as cloud point data to represent a permanent materialization of the fullness of the momentary experience, which was then materialized into physical 3D shape at 1/10th scale.

Crucial to this materialization of the experience was allowing the participants the ability to speak, to “illuminate human life as it is lived through moving to new forms of representation” (Seregina, 2015, p. 18). Participants could comment on what they thought of the project, in opposition to modern subjects who were silenced as science spoke for and through them. Science is regarded as truth because of the use of empirical evidence; however, a postmodernist theorizing espouses multiple truths and as such the process of allowing participants to speak their own truth was powerful. When we asked participants to describe how they felt about their photo-taking process the answer ranged from exposed and awkward on the one hand to inclusive and fun on the other. However, while there was a range of responses, it is important to note that the majority of the participants stated that

they felt self-conscious. This is very important to note since even though we took pains to create an experience that was open and agentic, the participants still felt self-conscious. This co-creative process helped us think about how we should be more deliberate in incorporating the varied experiences shared in the final project presentation, to ensure that anyone viewing this work does not try to draw conclusions from the photos alone, but also listens to the participants’ experiences for a fuller, more nuanced picture.

Using all the data collected, we constructed 3D polygonal surface models to create a thin 3D shape and then created physical sculptures through 3D printing technology. These sculptures had RFID tags embedded in the base so that the system could detect each model and match it with the corresponding dataset for interactive visualization. We created these models so that once the interface was triggered it presented the participant’s full photo-taking experience to those viewing it. Presenting the data this way allowed us to continue to engender sensorial interactivity even at the presentation stage of the research (Leavy, 2009). It allowed us to be attentive to how we presented knowledge that was co-created, not necessarily by speaking, but with the active involvement of our research participants to an audience that was also actively involved.

Once triggered, the interface would project the experience of the participant shown first through a complete image on the screen while a recorded voice-over played with both positive and negative body image words; words our interview participants used and which represented the bodily struggles existing within us regarding our image. We then used a particle simulation design to represent both the social construction and destruction of the body through science, juxtaposing it with educational institutions’ destruction of the historical records of the past. As the digital abstraction is realized as dissolving particles from the photo, it symbolizes how institutions of higher education sought to recreate their histories and themselves by purging their historical records of the practice.



Each photo has about eight million pixels in 4k resolution. The simulation initiates particles from pixels and drives them based on a turbulence simulation using 3D Perlin noise. The resulting images were the emergence of a whole, transitioning into a magnificent kaleidoscope of

colors signaling a slow movement toward the postmodern, an understanding of the body as social, the engagement of the arts in a co-creative knowledge production process that works artistically and yet deliberately to denounce racist, sexist, classist, and ableist science.

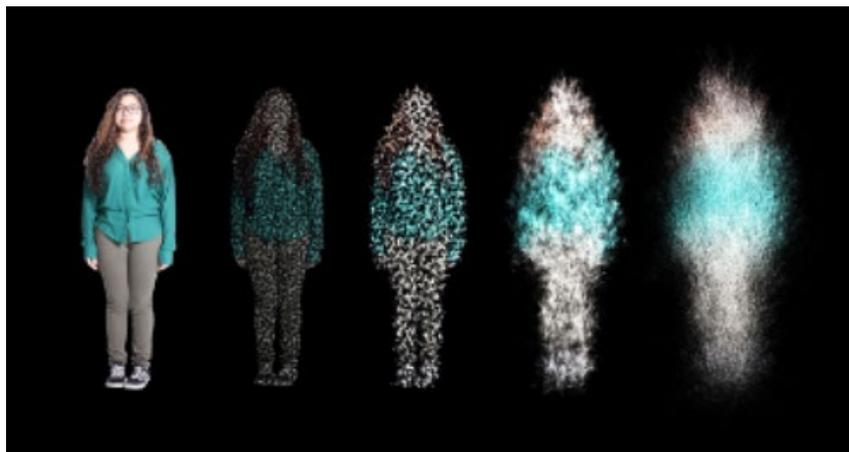


Figure 4. Photo simulation process



Figure 5. 3D sculpture with RFID, activated to display photo image on the screen in the background



The movement and mixture of the colors on the screen were important to the creation of the final component of the project, an improvisational dance performance. The attention to co-creation of sensorial interactive knowledge brought us back to the physical human body, its unposed movements, emotions, and how even in the co-creation of knowledge there are “expression and interactions that ... never had nor fully could [be] verbalise[d], yet ones that [we needed to be]... extremely aware of in other forms of understanding” (Seregina, 2015, p. 3). The purpose of the dance was also to disrupt completely the notion of the uses of data as “hard” empirical evidence as well as to emphasize the discomfort of the scientific male gaze. Using dance, we sought to distill our co-created knowledge in a more spontaneous way, making the audience more aware of their bodily, lived experience, while watching the performance of their own bodily data creatively unfold before them. The dancer’s interpretation of the audience was played out slowly before them, provoking some measure of consciousness of what it meant to be observed, processed, and then interpreted, and the dance as an artistic practice pushed us to wonder and question while at the same time helping us to “think and experience differently” and more relationally as one realized that the dancer was embodying oneself, and therefore evoking a sense of body empathy for others (Seregina, 2015, p. 23).

While we understand that dancing bodies have undergone a measure of discipline to be able to perform these movements, we created a dance piece that was based on spontaneity and reflection, which was emancipatory. In the dance, the performer stood quietly in the gallery. Her costume was a white work coverall, which had been embroidered with lines depicting her postural bones. Each bony protuberance was circled and graphed in thread. As she scanned the room and saw the other people in the room, she adopted their standing posture. She was subtle and slow; the people did not know that she was reading their structure. She looked to be barely moving. In this way, she was trying on the ways that people stood, as one might

try on a new outfit. In this dance, she was reading the ways in which others inhabited the space. How did she feel in each postural structure? What could she learn physically from being in the body of the others? In essence, what did it feel like to be Other and performing postural empathy? As she moved, slowly, in the room and people were puzzled by her presence. Their eyes glided by without even noticing, and then scanned back, having realized that something was out of the ordinary. Some were uncomfortable and the discomfort and power equation was flipped from the original posture portraits as the performer/researcher was gazed upon. In this case, the mover was creating discomfort by being slow, focused, and unspeaking in a room full of people who were moving at a reception in a more normal fashion.



Figure 6. Posture portrait performance – credit Bill Peresta



Our final work was installed at the Intersections symposium in 2018, in a gallery that measured 13' wide by 20' long. It was comprised of a 65' OLED display in the center of the wall for data visualization, with custom shelving on each side of the screen to display 50 sculptures, quad speakers at each corner of the space to render 3D spatial sound, and a small podium in the middle of the space for a user to place a sculpture on top of the podium to trigger interactive visualization for the sculpture. This podium was equipped with an RFID tag reader and a microcontroller. Three Phillips hue light bulbs were used for interactive lighting effect. The dance piece was performed at the symposium during the opening gathering in an art gallery, and also at the Newport Art Museum, with a changing audience seated in chairs around a square platform.



Figure 7. 2018 Intersections symposium installation

CONCLUSION

According to Faulkner, “[t]he past is never dead. It’s not even past.” This project exemplifies that position by highlighting the effects of how bodies have historically been created through technological and scientific interventions and surveillance. By recreating the posture portraits of the early to the late twentieth century through the creation of 2D and 3D replicas of refocused un-posed and yet posed movements, we are critiquing the making of bodies to be normalized to a particular time period and social mores. Our intentionally reflective, creative, and critical research process engaged with the concept of the inclusivity of all bodies, including those traditionally seen as Others. Then, by the slow dissolution of the image on the screen, we simultaneously made visible how this same scientific understanding and measurement may change over time. The dissipation of the particles of the co-constructed digital body from the screen into the universe invokes a long overdue therapeutic reconciliation

of the past and modern science as the location of truth and perfection with a postmodern understanding of all bodies as beautiful, malleable, and complex. With the use of bright colors and the slow movement of the pixels, we aimed to examine how a deliberate yet vibrant engagement with the arts helps to deconstruct scientific truth claims about bodies and the bodies themselves as Other. This type of co-creative, transdisciplinary research has the potential to free our bodies.

Finally, in critiquing the “scientific” rationale of the posture portraits, we sought to decenter science through performance art — specifically dance — to examine how the arts can come from data and from history, from a process of de-literalizing; specifically, we wished to explore how making visible gender, racialized, and ableist abstractions through the arts can lead to deeper connections with other bodies, which in turn can lead us to developing a greater connection with those around us and to a better appreciation of how we are all more similar than different.

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END NOTES

1. We chose to focus on women's colleges because there is not a lot of scholarship that focuses specifically on the history of women's colleges. In addition, at the time all three of the co-authors were teaching at Connecticut College, which was formerly a women's college. This posture portrait practice also took place at other women's colleges including Barnard, Mount Holyoke, Radcliffe and Smith Colleges (Rosenbaum, 1995). We focused on Connecticut, Wellesley, and Vassar Colleges because these are the colleges for which we found sufficient archival data and participants whom we could interview.
2. All names have been changed to protect the participants' identities.
3. We were unable to find a description of the Angel robe but believe it may have been a colloquial term for robes made for and worn by women.
4. In his 1975 text *Discipline and Punish: The Birth of the Prison*, Michel Foucault explains that power is inherent in everyday social relationships as well as rooted in a network of practices, institutions, and technologies. He makes clear that identities created by modern discourses induce people to discipline themselves to engage in forms of self-policing that regulate their behavior in keeping with the normative guidelines of these discourses. The production of scientific knowledge, which results in a discourse of norms and normality to which individuals desire to conform, means that people voluntarily control by adhering to cultural norms dictated by those who are sanctioned by the said discourse as bodies that produce knowledge.



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