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Sound Bodies for Sound Minds: Architectural Interventions to Ameliorate the Sedentary Life of Scholars on College Campuses, 1865-2016

By

Caitlin P. DeClercq

A dissertation submitted in partial satisfaction of the

requirements for the degree of

Doctor of Philosophy

in

Architecture

in the

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of the

University of California, Berkeley

Committee in charge:

Professor Galen Cranz, Chair
Professor Linda Neuhauser
Professor Paul Groth

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Abstract

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Doctor of Philosophy in Architecture

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Since the founding of the earliest colleges in the United States, the built campus environment has been designed and modified to foster a healthy student body, a vision long challenged by sedentary study. One building type has served as the focal point of administrative and pedagogical efforts to respond to the perils of sedentary classroom study: the campus gymnasium. Often among the first buildings to populate a new campus, gymnasia housed special apparatuses for physical training and postural remediation, both of which were intended to move, strengthen, and train student bodies to withstand the rigors of scholarly life.

Founded in 1861 as the first women's college and with the explicit goal of educating student minds *and* bodies, Vassar College is an apt case study to understand how shifting ideas about the perils of sedentary behavior were translated to the specific context of college settings and responded to through a host of interventions over time. By analyzing Vassar's spaces of physical education, I demonstrate how gymnasia—from the earliest gyms of the 1860s and 1870s to today's athletic facilities—have both shaped and reflected changing ideas regarding the perils of sedentary study and methods for mitigating its effects on the student body. In particular, I show how the shift from *in loco parentis* to *laissez-faire* and *risk management* paradigms of campus governance mirror a shift in public health approaches, from a focus on broad, environmental and policy interventions to approaches targeting individual behaviors and risk mitigation. At the same time—and stemming from these changes—physical education courses and programs moved from a compulsory part of the college curriculum and experience to a leisure-time pursuit. The result of these shifts can be read in both campus interventions and the built environment as movement (physical education) was relegated—administratively and spatially—to the periphery of campus. Yet the decline of compulsory physical education does not signify the solution to the problem of sedentary behavior: in fact, the problem is largely unresolved today.

We can also see in the example of Vassar College how the still body assumed in spaces of (mental) learning—as opposed to the specialized spaces of bodily instruction epitomized by campus gymnasia—is increasingly problematic as we learn more about the perils of sedentary behavior. Indeed, given what we know today about the limits of individual, compensatory, and leisure-time based interventions to reduce sedentary behavior, it is clear that the solution to reducing the perils of prolonged sitting cannot be found in historical precedents. What is needed instead are new interventions that address the built environment and experience outside of the gymnasium, namely classrooms. Yet interventions must address the persistent problem of control in classrooms: control has long meant still bodies, so injecting movement requires a fundamental shift in culture, pedagogy, and the built environment.

Thus, to respond to burgeoning findings regarding the deleterious physiological and cognitive impacts of prolonged sitting, I introduce design science as way to identify novel classroom interventions. Ultimately, I propose a range of interventions—from modifications in individual behaviors to changes in objects and built environments, to deeper pedagogical and cultural changes—as informed by research on educational environments and adjacent institutions of learning and work.

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extraordinary accomplishments; you have read thousands of pages of writing and listened patiently to hours of impromptu lectures on urban design and architectural history during our travels around the world. I think the only thing harder than being a PhD student is being the partner of a PhD student: I'm not kidding when I say you should get an honorary PhD for having endured this experience with me! I love you (and Oliver and Jack) so much. (Also, what an exciting year we've had!)

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Introduction

Since the founding of the earliest colleges in the United States, the built campus environment has been designed and modified with the intent to foster a healthy student body,[1] a vision long challenged by the perils of sedentary study. In 1855, the president of Amherst College declared: "No one thing has demanded more of my anxious attention than that of the [failing] health of the students;" to blame was "the sedentary life of the scholar ... during which 'physical exercise is neglected.'"[2] This concern for the healthy student body—shared by administrators and health professionals and echoed by larger social anxieties about the health of the *body politic*—shaped the design of the earliest college campuses. In particular, one building type served as the focal point of administrative and pedagogical efforts to respond to the perils of sedentary classroom study: the campus gymnasium. Often among the first buildings to populate a new campus, gymnasia housed special apparatuses for physical training and postural remediation, both of which were intended to move, strengthen, and instruct student bodies to withstand the rigors of scholarly life.

Gymnasia, then, stood in stark contrast to other spaces of learning on campus, namely, the lecture halls in which student bodies were confined to a seated posture. While classrooms and libraries fixed bodies in space and enforced a single posture (Image 1), gymnasia and other spaces of physical activity invited bodily freedoms such as movement and postural variation.[3] The behaviors encouraged in (and circumscribed by) gyms and playing fields were novel to the institution of higher education, if not the lives of the students who engaged in them. Historian Larry Owens explains that "the playing field and the gymnasium were ... vigorous experiments in the shaping of new spaces within the polity of knowledge and in the sanctioning of new styles of behavior in those contexts."[4] Further, as students engaged in daily required exercise, bodily movement became a primary aspect of the collegiate experience, frequently remarked upon in student diaries, letters home, and even scrapbooks featuring gymnasia among

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[1] In this dissertation, I deliberately employ the term *(student) body* to refer to both the physical student body as well as the collective body. As will be demonstrated in this chapter and Chapter 1, the physical student body has long been a source of concern among college administrators and health officials. In the nineteenth century, these groups worried about the strains of sedentary study on the physical development and strength of students and, in response, initiated a host of interventions targeted at assessing, conditioning, and strengthening the physical student body, including posture photos, physical inspections, mandatory physical activity programs, and remedial activities. Additionally, college students were—and are—recognized as a special population: future leaders and soldiers and homemakers and teachers, depending on the era. Thus, the health of students has been equated, over time, with the health of the nation—in short, the body politic. As will be mentioned in Chapters 2 and 3, this blurring between the physical body and the collective body impacted the aims and shape of collegiate physical education programs. Accordingly, I employ the term "student body" in an ambiguous fashion to linguistically mirror the ambiguities evident in how college student health has been discussed and responded to at both individual and national levels. However, in order to aid understanding on the part of the reader, I also at times use a linguistic convention to distinguish the two: "student bodies" refers to the physical body and "the student body" refers to the collective.

[2] Heather Munro Prescott, *Student Bodies: The Influence of Student Health Services in American Society and Medicine*. (Ann Arbor: The University of Michigan Press, 2007), 30.

[3] Not to mention instruction in proper posture: for example, how to sit, stand, walk (also see Chapter 3).

[4] Larry Owens, Pure and sound government: Laboratories, playing fields, and gymnasia in the nineteenth-century search for order *The History of Science Society* 76(1985): 189.

the "indelible memories" of campus (Image 2).[5]

Contemporary readers might find this concern about sedentary behavior familiar, as the perils of prolonged sitting have come back into the fore, as evidenced by recent articles in the *New York Times* and *Scientific American*, as well as academic articles dedicated to the study of sedentary physiology.[6] Indeed, despite more than a century's worth of worry about the strains of study, scholarly work is still a sedentary endeavor and its impact on the student body largely unmitigated. Recent research further suggests that prolonged sitting poses a health risk greater than smoking, and that the dangers associated with sedentary behavior cannot be ameliorated by leisure time physical activity. Thus, in recent years, researchers have begun to emphasize a new definition for sedentary behavior: rather than addressing the perils of "too little exercise," experts have shifted their focus to "too much sitting," which poses unique health risks and thus necessitates the need for new interventions.[7] Yet the original studies articulating this shift are now almost a decade old; few have focused on sedentary behavior in the specific context of college settings; and scant—if any—changes have been made to official recommendations on physical activity. Thus, while students and educators might casually acknowledge the dangers of sedentary behavior with a pithy comment like "sitting is the new smoking," in fact, we face a relative dearth of research on the topic within the context of college student health and even fewer suggestions for how to intervene.

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[5] As will be discussed below and in the following chapters, this dissertation focuses on the ways in which physical movement was conceived of and encouraged for women enrolled in institutions of higher education. Yet physical activity played an important—though distinct—role in the education of collegiate men, too. As historian Roberta Park explains, "on both sides of the Atlantic, nineteenth-century sport came to be forcefully and graphically depicted as the 'natural' province of males; hence, sport contributed substantially to establishing and maintaining ideologies about the proper sphere of women." Additionally, during that time, ideas about manliness and womanliness changed, and so too did the associations given to sporting and other athletic activities. For women, physical education was tied primarily to reproductive health; yet advocates for women's rights also saw physical activity as a means to social liberation. Thus, as Park explains, physical activity was employed toward different ends for women and men. According to Park: "mild exercise was intended primarily to turn inherently weak girls into 'fit' mothers." Yet for men, "vigorous exercise, it was believed, could do much to transform boys into 'manly' men." Further, individual achievement became increasingly associated with men's bodily achievement and expressed through sport, and physical activity was seen as a means to quell "anxieties about masturbation, impotence, illness and a feebleness in the American (read middle-class Anglo-Saxon American) race." Quoting a defense of physical activity given by Yale Professor E. L. Richards in 1884, historian Larry Owens adds that "the force of public opinion created by the sight of [collegiate] men attending to their physical development, and living according to laws and rules, acts upon the college world to encourage regularity of life and obedience to authority." In short, physical activity was seen as "a moral power in the community," yet, as will be demonstrated below, the introduction of PE into college curriculum was not without controversy. Roberta Park, "Sport, Gender, and Society in a Transatlantic Victorian Perspective," *History of Sport*, 24(2007): 1571-1575. See also Owens, "Pure and Sound Government," 186-190.

[6] Cf. James Vlahos, "Is Sitting a Lethal Activity?", *The New York Times Magazine,* April 14, 2011; Olivia Judson, "Stand Up While You Read This," *The New York Times Opinionator,* February 23, 2010; Tara Parker-Pope, "Ask Well: Help for the Deskbound," *The New York Times Well Blog,* January 15, 2013; Travis Saunders, "Can Sitting Too Much Kill You?" *Scientific American*, January 6, 2011; Mark Hamilton, Genevieve Healy, David Dunstan, Theodore Zderic, and Neville Owen, "Too Little Exercise and Too Much Sitting: Inactivity Physiology and the Need for New Recommendations," *Current Cardiovascular Risk Reports*, 2(2008): 292-298; Neville Owen, A. Bauman, and A. Brown, "Too Much Sitting: A Novel and Important Predictor of Chronic Disease Risk?" *British Journal of Sports Medicine,* 43(2009): 81-83; Weimo Zhu and Neville Owen, Eds., *Sedentary Behavior and Health: Concepts, Assessments, and Interventions*, (Champaign, IL: Human Kinetics, 2017).

[7] Owen et al., "Too Much Sitting."

In this dissertation, I argue that, far from being a relic of the past, physical (in)activity remains an important student health concern, given the long hours of sitting that academic study implies, and its ill effects are in dire need of meaningful campus-based interventions. How might we interrupt the sedentary norm of college life today? What can we learn from previous efforts to intervene in this issue about the opportunities for—and limits of—promoting bodily movement on college campuses? How might other institutions of learning and work inform novel solutions to this issue? This dissertation asks these and other questions and, to tackle such varied and diverse terrain, employs a range of methods and solutions from disciplines including architectural history, cultural landscape studies, design science, education, and public health. Above all, what I have learned is the need to recognize sedentary behavior as a complex problem, one that requires changes in epidemiological thinking, pedagogy, design, and the social and cultural underpinnings of each. Thus, in this dissertation, I offer an interdisciplinary take on a long-standing and largely unresolved public health issue; namely, I position sedentary behavior as something more than just a physiological concern: in fact, it is an architectural, historical, and pedagogical problem as well.[8] By reframing this topic broadly, I identify new opportunities for intervention; importantly, these interventions necessarily include and transcend the field of public health and behoove designers, educators, students, and health professionals alike to work toward solutions that ameliorate the sedentary life of scholars on college campuses.[9]

Methods

This study began in the present-tense; in other words, I started researching the topic of sedentary behavior in the context of sedentary learning environments as a contemporary environmental design concern. As a student of architecture and public

Image 1. Havemeyer Hall (1897) at Columbia University, New York, NY. This nineteenth-century lecture hall allows for only a single, seated posture and epitomizes the latent function of bodily control such spaces were meant to facilitate. *Photo by author.*

[8] See in particular Chapters 1 and Chapter 4 where I address historical and pedagogical issues, respectively

[9] As will be discussed below, I see sedentary behavior as something more than a public health concern. Rather, it is an issue that needs to be examined across disciplines to produce multi-pronged solutions.

health—two disciplines dedicated to intervention—I knew I also wanted and needed to consider a second dimension of my work: how I might propose future-oriented solutions to interrupt the sedentary norm of campus environments. Yet what I originally saw as a burgeoning issue—the study of sedentary behavior on college campuses—I soon realized is in fact one with a hundred-year history. Thus, I felt that the best, and perhaps most compelling, way to approach this topic was to think in three time dimensions: future, present, and past. Ultimately, this historical perspective became a primary contribution of this work. Engaging historical thinking enriched the study of this topic in two ways. First, historical research enabled me to articulate a theory of change to illuminate how the problem of sedentary behavior has been conceived of as problematic—or not—over time and responded to through various interventions, especially as seen through a prism of societal and institutional (and organizational, in the case of Vassar College) forces. This historical research, presented in Chapter 1, offers new insights into complexities of the topic of sedentary behavior in the specific context of higher education.

Second, the long duration of this concern—originating in the late nineteenth century and reverberating with renewed energy today—itself says something about the very nature of the problem of sedentary behavior, as well as its persistence. Indeed, throughout my early research on the topic, I kept coming back to what I thought was a simple question: if prolonged sitting is so harmful to student minds and bodies—and its opposite, movement, so beneficial to learning—then why do we continue to design classrooms for a singular, seated posture? After all, we might expect that the logics of evidence-based and user-centered practices—the bedrock of my own discipline, Social Factors in Architecture—not to mention the allure of architectural innovation, would eventually prevail over the inertia of standard classroom design and make room for movement-centered learning spaces. This great disjunction between what we know—that sitting is bad for mind and body—and what we do—design educational spaces around the assumption that all learning is sedentary—motivated my work and dedication to this topic. I had found a problem without a solution, and one that intrigued and frustrated me. It wasn't until I began researching the *historical* role of movement—and its opposite, sedentary behavior—in institutions of higher education, that I came to realize the naïve simplicity of my concern, and the complexity of the topic at hand.

What I realized was this: learning environments are rendered sedentary <u>not</u> due to a lack of knowledge about the perils of prolonged sitting, nor to a lack of inspiration for creative solutions, but rather to their latent but powerful function as instruments of (bodily) control.[10] Classrooms—and indeed, all other components of campus design, including gymnasia and playing grounds, as will be demonstrated below—are ostensibly designed to educate students, or at least house the pedagogical practices that facilitate learning; and indeed they serve this function well. Yet education, at least in the context of educational institutions, is about more than the transmission or creation

[10] Donna Huse, "Restructuring and the Physical Context: Designing Learning Environments," *Children's Environments* 12(1995): 290-310; Daphne Spain, *Gendered Spaces*, (Chapel Hill NC: The University of North Carolina Press, 1992).

of knowledge, and the education of minds. Rather, mass education is predicated on the value of the control of student bodies: their supervision, their protection, their education.[11]

Schooling, then, is "practice on the body" as much as education of the mind.[12] Anthropologist Nancy Lesko noted the presence of a curriculum of the body in institutions of education, and sociologist Tuula Gordon and colleagues built upon this idea by articulating a three-pronged pedagogy of the body, including the official, informal, and physical dimensions of schooling and their associated bodily practices.[13] These bodily practices are, to sociologist Donna Huse, part of a disciplinary pedagogy dependent on making bodily experience subordinate to the Weberian bureaucratic grid by making moveable bodies still, fixing them in space, and subjecting them to surveillance.[14] Yet importantly, the inverse of these techniques of inactivity—the physical activities, bodily instruction, and posture inspections implemented at institutions of higher education over the last hundred years—also serve as mechanisms of control, in this case instituted to shape, protect, and manage the student body.[15] Upon closer inspection, we also see that, beyond responding to the health effects of sedentary behavior and offering novel bodily experiences, concern about sedentary behavior—which physical activity and posture instruction intended to remedy—was in fact a touch point for broader anxieties about the student body and body politic during times of

Image 2. Excerpt from an album (ca. 1890) at Vassar College entitled "Indelible Photos." Images depict the Calisthenium (top), Main (center), and playgrounds (bottom). *Archives and Special Collections, Vassar College Libraries.*

[11] The opening quote in Michel de Certeau's *The Practice of Everyday Life* is apt here: "There is no law that is not inscribed on bodies. Every law has a hold on the body," in Adeline Masquelier, Ed., *Dirt, Undress, and Difference: Critical Perspectives on the Body's Surface,* (Bloomington, IN: Indiana University Press, 2000), 3. Chapter 2 in particular demonstrates how student bodies were supervised, protected, and educated at Vassar College; the physical design of the campus played an important role in achieving these ends.

[12] Tuula Gordon, Janet Holland, and Elina Lahelma, "Moving Bodies/Still Bodies: Embodiment and Agency in Schools," in Linda McKie and Nick Watson, ed., *Organizing Bodies: Policy, Institutions, and Work.* (New York: St. Martin's Press, 2000), 93.

[13] Gordon et al., "Moving Bodies/Still Bodies," 93.

[14] Huse frames this investigation in the Weberian sense of the "larger context of the 'mass institution' of our time, a category which includes not only the school but the factory, prison, hospital, and the public and private bureaucracies." These mass institutions are characterized by the "bureaucratic administration of the assembly-line processing of matter, organisms, people, or symbols." In a disciplinary pedagogy, Huse explains, the "needs of human bodies are also part of the severance of the functioning bureaucratic grid from the organic world" and, according to Max Weber, "the body and the psyche learn to be attuned to a mechanical rhythm through methodological specialization of certain muscles and ways of paying attention." Huse, "Restructuring and the Physical Context," 290-295.

[15] Here I refer both to physical student bodies, which bore the burden of these assessments and interventions, as well as the collective student body, which administrators and health professionals sought to make healthier in order to ensure the health of the nation.

social change: for example, women's entry into institutions of higher education, pre- and post-war, and the transition to coeducation. Thus, at different points throughout the history of higher education, to respond to concerns about the dangers to student bodies (and the body politic)[16] posed by sedentary study, campus administrators, health professionals, and physical educators implemented a constellation of interventions—courses, postural inspections, recreational activities—that changed over time according to shifting administrative paradigms, epidemiological and public health considerations, and professional interests.[17] What this insight reveals is that movement and sedentary behavior are not merely stand-alone concerns in educational settings, but rather nested in larger systems of meaning. Thus, to promote or deter either requires more than the mere hope of individual behavior change: in fact, the entire school ecology is implicated.[18]

Mixed methods. True understanding of the social, architectural, and historical contexts of sedentary behavior on college campuses, then, requires historical methods as well as contemporary approaches. Thus, what follows may seem like an unconventional dissertation in that it is an exercise in breadth as much as depth, of both disciplinary and multi-disciplinary thinking, of many methods brought to bear on a single topic. Admittedly, early on, an advisor warned me about the difficulty of trying to mix methods in this regard; after all, he cautioned: to engage in historical scholarship is simply—and emphatically—*not* to advocate for a change today.[19] Yet I strongly believed—and continue to believe—that the questions I had about sedentary behavior were best answered through a multi-faceted and multi-temporal study. Ultimately, what I hope and believe this dissertation presents is a novel take on a familiar form: a multifaceted—and multidisciplinary—look at the problem of sedentary behavior that offers new, richer insights than a single method or perspective would allow.

In fact, my study is centered on a single topic—the problem of sedentary behavior as realized in the specific context of college campuses—and grounded by several methodological approaches and ways of thinking: an institutional approach to account for large-scale changes that brought bodily movement into the purview of higher education; an organizational-level analysis via a case study of Vassar College to show how these ideas were operationalized into specific administrative, educational, and planning practices and experienced by a range of actors; and a mélange of public

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[16] I refer here to the body politic to echo both the popular fears about the (supposed) harm to women's reproductive capacity posed by sedentary learning and to the idea that students were seen as the future (male) leaders and (female) care-takers of the nation.

[17] See Chapter 1 for an overview of the different ways this concern has been framed and responded to over time.

[18] I use the term "school ecology" to refer to the multi-level influences that affect health. For example, George Kaplan's ecological model shows how social and economic policies, institutions, neighborhoods and communities, living conditions, social relationships, individual risk factors, genetic/constitutional factors, and pathophysiologic factors affect individual and population health over the lifecourse. George Kaplan, "What is the Role of the Social Environment in Understanding Health?" *Annals of the New York Academy of Sciences* 896(1999): 116-119.

[19] I vividly recall as well the look of concern I received from another historian to whom I explained the range of years I sought to investigate in my case study of Vassar College (see Chapters 2 and 3).

health theories and methods to help translate these findings into actionable interventions in the present- and future-tense.[20]

Institutional approach. The popularization of the institution of higher education created, or at least *exacerbated*, the problem of the sedentary body. Along with a host of other social changes in the mid-nineteenth century that changed how and where people worked and engaged in leisure pursuits,[21] the rise compulsory primary education for young people and the encouragement of higher education for men and women fed anxieties about the bodily—and reproductive—harm that came from the long hours of sitting such school work implied.[22] In fact, in the late nineteenth century, sedentary behavior was part of a cluster of ailments under the umbrella term, "school sickness," which provoked worry in health professionals, educators, and the lay public.[23] Concerns about frail, apparently unhealthy, American bodies, and their ability to reproduce healthy, vibrant offspring fed and were fueled by broader social anxieties about changing economic and social conditions in the late nineteenth century, of which education was a significant part.

Though people sat in institutions other than schools—work and home, to name a few—the negative toll of sedentary mind-work in educational settings took special hold over the popular imagination. The work of prominent nineteenth physicians and physical educators demonstrate the tenor—and many dimensions—of this concern and the ways in which physical activity was employed in response. For example, Edward Hitchcock, the first professor of physical education at an American college, saw physical activity regimens (for men) conducive to "the rapid and healthful evaporation of superfluous animal spirits, generated by the physical and mental confinement of study."[24] Meanwhile, and perhaps more nefariously, Dr. Edward Hammond Clarke saw the value of physical education differently for women: in a widely read 1873 book, *Sex in Education, or, A Fair Chance for the Girls*, Clarke cautioned that if women's education was too strenuous or demanding for the nervous system, the reproductive or digestive system would suffer because bodily resources would be diverted to the brain and away from other essential areas. Because he believed that "the brain cannot take its share without injury to other organs"—and in particular, the female "reproductive apparatus"—Clarke was adamant that women's education must take a different form than men's—namely less taxing and with adequate supervision to ensure health, nutrition, and the proper metering of mental work.[25] According to historian Heather Munro Prescott, "these anxieties about the fitness of the female body shaped the design

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[20] In *The Politics of Park Design*, Galen Cranz similarly combined history with social science concepts. Galen Cranz, *The Politics of Park Design*, (Cambridge, MA: The Massachusetts Institute of Technology Press, 1982).

[21] Terry S. Kogan, "Sex Separation: The Cure-All for Victorian Social Anxiety," in *Toilet: Public Restrooms and the Politics of Sharing*, New York, NY: NYU Press, 2010. See also Cranz, *The Politics of Park Design*.

[22] Richard Meckel, "Going to School, Getting Sick: The Social and Medical Construction of School Diseases in the Late Nineteenth Century," in *Formative Years: Children's Health in the United States,* ed. Alexandra Minna Stern and Howard Markel, 185-207. (Ann Arbor: University of Michigan Press, 2002), 185-207.

[23] Meckel, "Going to School and Getting Sick."

[24] Owens, "Pure and Sound Government," 189.

[25] Thus, Clarke proclaimed, "identical education of the two sexes is a crime before God and humanity." Edward Hammond Clarke, *Sex in Education; or A Fair Chance for the Girls,* (New York: Arno Press, 1873), 127.

of women's colleges and the female divisions of coeducational institutions. The earliest college health programs [of which physical education regimens were a part] emerged to address concerns about the impact of higher education on the female body."[26] As these examples show, educational institutions were both a primary focal point of Victorian anxieties and sites for special bodily intervention.

Recognizing the problem of sedentary behavior as inherent to educational settings in general and colleges in particular, this dissertation focuses on the institution of higher education. "It is conventional practice in sociology and social anthropology," according to sociologist and architectural theorist Anthony King, "to approach the study of society through a study of its institutions."[27] Similarly, in their study of coeducation, historians David Tyack and Elisabeth Hansot advocate the benefit of "thinking institutionally" to expose both the forces of change and consistency in higher education. To think institutionally in the context of this study is to inquire about and investigate how movement has been integrated into the collegiate experience and to identify places where these efforts have been resisted or neglected; the resulting insights tell us something about both institutional policies and practices and the context in which they arose. Institutions, Tyack and Hansot argue, make exceptionally rich subjects because they possess "goals, organizational structure, boundaries, and legal standing," as well as "internal dynamics" and "relations to their [external] environments."[28] Each of these elements informs the policies and practices that organize society, and, in the context of my study, each shaped how bodily movement in general and physical education in particular were adopted as essential elements in higher education in the early nineteenth century and revised or abandoned in the following decades.

Image 3. Teacher's College, Columbia University, New York, NY (1887). Inscription on façade of the building reads: *mens sana en corpore sano* (sound mind in sound body). *Photo by author.*

[26] Prescott, *Student Bodies,* 14.
[27] Anthony D. King, ed., *Buildings and Society: Essays on the Social Development of the Built Environment,* (London: Routledge & Kegan Paul, 1984).
[28] David Tyack and Elisabeth Hansot, *Learning Together: A History of Coeducation in American Public Schools*, (New York, NY: The Russell Sage Foundation, 1990), 189.

Bodily education was an essential aspect of the goals of nineteenth-century higher education; yet, as suggested above, physical education was leveraged toward different ends for men's and women's education. To educate men to be the future leaders of the nation required not only edified minds, but also strong bodies and control of the baser "animal spirits,"[29] all of which would be accomplished by a regimen of physical activity. Later, the goal to provide women with access to higher learning equal to that enjoyed by men had to be tempered with assurance that women's bodily aesthetic and reproductive powers would not be harmed by the strains of learning and sedentary study; yet again, educators and physicians alike lauded physical, *bodily* education as the means to achieve this vision. This echoed the Victorian emphasis on sound minds in sound bodies, which, according to Vassar College trustees, was "a first truth among educators"[30] of the era. As a result, physical activity was inscribed into the charter and, indeed, the physical fabric, of colleges (Image 3). For example, at Vassar, health was established as a "MAXIM [*sic*] in the college," and, "to carry out this purpose," Matthew Vassar explained in the Prospectus of his namesake school:

> Recreations, particularly in the open air, will not only be encouraged, but regulated and taught, and, to a certain extent, required of all the students .... For this purpose, in-doors the spacious and cheerful corridors of the college edifice, and, without, the beautiful college park, will afford unusual advantages. The play-grounds are ample and secluded; and the apparatus required for the Swedish Calisthenics (or Boston Light Gymnastics), and for such simple feminine sports as archery, croquet (or ladies' cricket), graces, shuttlecock, &c., will be supplied by the College.[31]

Here, we see both the design of the Vassar campus and the organization of student experience taking movement for granted, recognizing it as an essential part of women's higher education. Two decades later, at the 1885 inauguration of Bryn Mawr College, the college president acknowledged that "students at college should have better health than elsewhere" and thus sought to "ensure [this outcome] by carefully limiting the hours spent in the class-room, by instruction in hygiene, by the supervision of an accomplished physician, by outdoor sports, by the best sanitary conditions … and finally, by the use of our excellent gymnasium."[32] Though the merits of its educational prowess were frequently debated on and beyond campus,[33] physical education was

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[29] Owens, "Pure and Sound Government," 189.
[30] Ballintine, Compiled Materials regarding the Physical Education History of Vassar College, Proceedings of the Trustees, June 30, 1863, *Vassar College Archives and Special Collections*, Poughkeepsie, NY.
[31] Matthew Vassar, "Prospectus of Vassar Female College," Poughkeepsie, NY: Vassar College, May 1865, in In David J. Rothman and Sheila M. Rothman, eds., *The Dangers of Education: Sexism and the Origin of Women's Colleges*, Women & Children First: Social Reform Movements to Protect America's Vulnerable 1830-1940, (New York: Garland Publishing, Inc., 1987).
[32] James E. Rhoads, 1885, in "Addresses at the Inauguration of Bryan Mawr College," Philadelphia: Sherman & Co., 1886, in Rothman and Rothman, *The Dangers of Education,* 18.
[33] Owens explains: "Public reaction to the presence of sports on campus was mixed. Some feared that the base motives of competitive sport would infiltrate and corrupt the properly academic pursuits of the college." Owens,

integrated as part of the institutional structure of higher education—assigned space, as the gymnasia that populated nearly all college campuses attest, given Departmental or School status, and populated by faculty and students—and the programs and practices that resulted were justified under the practical and legal role of the institution to stand *in loco parentis:* to do anything in its power to safeguard students in the manner typically afforded by the family unit.[34]

Bodily movement also was a novel campus experience for men and women alike. To historian Larry Owens, the gymnasia and playing fields that began to populate college campuses in the nineteenth century "were vigorous experiments in the shaping of new spaces within the polity of knowledge and in the sanctioning of new styles of behavior in those contexts."[35] As historians Roberta Park and Janice Ross explain, for women in particular, these spaces ushered in new freedoms for female students engaging in dance and sport and for the female faculty who innovated new pedagogical techniques to teach these activities and authored studies to prove their efficacy.[36] Yet importantly, these freedoms were bounded *institutionally*, in space and time: gymnasia bounded students' physical activity by "defining the proper time, place, and manner of exercise,"[37] a delineation also reinforced by the design of these spaces. For example, at Harvard's Hemenway Gymnasium (1879), Owens notes that, though the building's façade conveys a sense of the gymnasium as an academic building at home among all others—and the activities inside sanctioned, if not fully integrated into collegiate life—a vestibule in the building's entryway also "suggested that the world inside needed careful separation from the world without."[38] Meanwhile, students at Vassar College were encouraged to walk the school's ample grounds as part of their daily exercise—the "movement cure"[39] of physical activity taken in the outside air—yet faced a curfew for how late they could be out and were limited by the grounds themselves, which were bounded by tall trees to prevent intrusion from passers-by.[40] Additionally, at Vassar, sporting activities (and bodies) were confined to playing fields and gymnasia, and in the case of the latter, exercising women were removed from public view by the placement of windows high above eye level in Alumnae Hall (1889) (Image 4). Though advocates such as women's rights advocate Elizabeth Cady Stanton and First President of the American Association for the Advancement of Physical Education, Luther Gulick, saw such activities as liberating for women, in fact these freedoms mostly stayed bounded within the borders of the institution of higher education. Thus, we might see

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"Pure and Sound Government," 186.

[34] See Chapter 2 for the "domestic" education and physical corollary envisioned by Matthew Vassar of his namesake college. See also: Prescott, *Student Bodies* and Jonathan Simon, "In the Place of the Parent: Management and the Government of Campus Life," *Social and Legal Studies* 3(1994): 15-45.

[35] Owens, "Pure and Sound Government," 190.

[36] Roberta Park, "The Contribution of Women to Exercise Science and Sports Medicine, 1870-1994," *Women in Sport and Physical Activity Journal*, 4(1995). See also Janice Ross, *Moving Lessons: Margaret H'Doubler and the Beginning of Dance in American Education*, (Madison, WI: The University of Wisconsin Press, 2000).

[37] Owens, "Pure and Sound Government," 189.

[38] Ibid.

[39] Harvey Green, *Fit for America: Health, Fitness, Sport, and American Society,* (New York: Pantheon Books, 1986).

[40] Elizabeth Daniels, *Main to Mudd: An Informal History of College Buildings,* (Poughkeepsie: Vassar College, 1987), 9.

this ambivalence as part of the "unfinished revolution" of women's education and social rights that historian Barbara Solomon writes about in *In the Company of Educated Women*,[41] not only because of the bounds imposed on these bodily freedoms, but also because of their relationship to broader social anxieties that shaped the institution toward conservatism.

To think institutionally is to consider the forces of institutionalization—how institutions change through the adoption of new policies and practices—and its twin force, what David Tyack and Elisabeth Hansot call "institutional socialization"—how institutions conserve themselves, meaning their practices and norms, by the processes through which constituents learn, and thus perpetuate, the values and roles that comprise the institution.[42] This framework allows us to take any theme—say, gender or coeducation—and see how relevant policies and practices governing this idea become, and stay, institutionalized. In this dissertation, I demonstrate what the theme of movement can reveal about institutional changes in American higher education from the nineteenth century to the present day—of which coeducation is one part—as well as what the problem of sedentary behavior in particular can illuminate about the profound conservatism of the institution; namely, its resistance to change. To investigate these twin forces—institutionalization and institutional socialization; change and consistency—I focus on the *experience* of higher education: both the student experience *envisioned* by architects, administrators, educators, and health professionals and the *actual* experience of the students who engaged with the gymnasia and curriculum they created. Ultimately, I demonstrate how the collegiate experience shapes and is shaped by these broader forces of consistency and change.

Image 4. Alumnae Hall, Vassar College, ca. 1889. Notice the height of the first-floor windows in relation to the man's height: windows were designed to prevent passers-by from peering in and seeing women exercising. *Archives and Special Collections, Vassar College Libraries.*

To think institutionally in an architectural context is also to think spatially by considering the spatial dimensions of institutions. Daphne Spain coined the term "spatial institution" to describe the "spatial corollaries of the institutions of the dwelling, the school, and the workplace;"[43] further, applying sociological levels of analysis to the built environment, Galen Cranz extends this idea, noting that the built manifestation of an institution is a building type. If an institution refers to

[41] Barbara M. Solomon, *In the Company of Educated Women,* (New Haven: Yale University Press, 1985), xvii.
[42] Tyack and Hansot, *Learning Together.*
[43] Spain, *Gendered Spaces*, 11.

"general norms for realizing values,"[44] then we might look to the general program of building types (libraries, YMCA buildings, gymnasia to name a few) for clues into both the general pattern of values—namely, the functions of these buildings, how they help manage relationships among patrons, and their relationship to exterior spaces—and processes of change over time.[45] My study is primarily focused on campus gymnasia, a building type that has served as the focal point of administrative and pedagogical efforts to respond to the perils of sedentary classroom study. Sport historians Patricia Vertinsky and Sherry McKay explain that "the college gymnasium was the essential facility for early gymnastic and calisthenic [programs] designed to remediate the health and strength of students in higher education."[46] Due to shifting administrative paradigms, public health concerns, and educational priorities, campus gymnasia underwent several modifications indicative of broader institutional changes. For example, the changing program and architectural form of gymnasia follow shifts in public health concerns and educational priorities, such as an increased emphasis on leisure-time and self-care activities. Additionally, the increasingly peripheral location of campus gyms (both administratively and spatially) mirrors the transition of physical education from the college curriculum to its extra-curriculum.

To root my analysis of these institutional changes in built form, I start with a case study of Vassar College. If an institutional level of analysis is concerned with a general type, then an organizational level of analysis centers on specific buildings,[47] a more specific level of sociological analysis. According to Cranz: "the physical buildings and the social life that goes on in them, which translate general norms for how to do things to more local and functionally specific manifestations of these ideas."[48] In fact, to show the interplay between institutional- and organizational-level factors and their impact on the student body, I engage analysis at many levels, showing first the general norms that give rise to and shape institutional concerns regarding physical activity, and then the ways in which these ideas are translated into action and specific built, pedagogical, and administrative elements within a specific organization: Vassar College. Further, in emphasizing the student experience, I explore how student bodies interacted at the face-to-face level and with technology. What results is a study at the intersection of

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[44] Galen Cranz, "Levels of Analysis in Environmental Design," in *Environmental Design Research: The Body, The City, and The Buildings In-between*, ed. Galen Cranz and Eleftherios Pavlides, (San Diego: Cognella), 542.

[45] Other studies of building types that foregrounded social insights include: Abigail A. Van Slyck, *Free to All: Carnegie Libraries and American Culture: 1880-1920,* (Chicago IL: The University of Chicago Press, 1995); Paula Lupkin, *Manhood Factories: YMCA Architecture and the Making of Modern Urban Cultures,* (Minneapolis, MN: University of Minnesota Press, 2010); King, *Buildings and Society*; and Cranz, *Politics of Park Design*.

[46] Patricia Vertinsky and Sherry McKay, eds., *Disciplining Bodies in the Gymnasium: Memory, Monument, Modernism,* (London: Routledge, 2004). The following quote, regarding the Harmon Gymnasium for men at the University of California (Berkeley) conveys a similar sentiment, though expressed in emic terms: "In reviewing the events of the past year … the most prominent object, and the one that will confer the greatest benefit upon the whole body of the students, is the Harmon Gymnasium. … Every student … feels himself daily growing physically and mentally stronger under is health-giving stimulus." *1879 Blue and Gold, UC Berkeley*, in Roberta Park, "For Pleasure? Or Profit? Or Personal Health? College Gymnasiums as Contested Terrain," in *Sites of Sport: Space, Place, Experience,* ed. Patricia Vertinsky and John Bale, (London: Routledge, 2004), 177.

[47] Cranz, "Levels of Analysis in Environmental Design."

[48] Ibid., 542.

individual, institutional, and organizational agency – as told through (architectural and administrative) intent and (lived) experience.

Finally, institutional thinking offers a methodological entrée into a tacit function of education: social control. Control is an unspoken keyword in this study: not directly discussed in any of the archival sources, but implied in the actions and perspectives they articulate. As explained above, an institution is "a definite, formal and regular way of doing something, an established procedure,"[49] which is codified, operationalized, and enforced (in part) through the built environment. Anthony King thus argues that, because they are constructed to ensure the "proper functioning" of institutional processes, buildings can be seen as a mechanism for social control.[50] Indeed, this dissertation positions institutions of higher education as spatial institutions—to borrow the phrase from Daphne Spain—that order student bodies through a range of spatial, organizational, and behavioral tactics that facilitate (or hinder) movement. Thus, this control is *embodied*—exerted upon and experienced by (physical) student bodies. Quoting Max Weber, Donna Huse explains that in such educational schemes, "the body and the psyche learn to be attuned to a mechanical rhythm through methodological specialization of certain muscles and ways of paying attention."[51] Thus, through techniques of surveillance and control over posture and movement, as still bodies are assigned to a single location within a bureaucratic grid, education is in fact an exercise in bodily control, and its pedagogy one of Weberian (and Foucaultian) discipline.[52]

Yet in attempting to control student bodies, to keep them still and thus easy to monitor and administer, the institution of education created another problem:[53] that of the sedentary body. In Victorian America, concern about the student body was expressed at both individual and societal levels, as critics decried the physical deformities and psychological weaknesses encouraged by a sedentary lifestyle. Conservatives warned, too, of the reproductive consequences of over-worked (female) bodies, whose mind-work would render their sex infertile (or, should they succeed in having children, their offspring sickly and weak). In this way, concern about both the active and inactive student body was not only a pressing popular concern in and of itself but also, to anthropologist Mary Douglas, a metaphor for the body politic.[54] To remediate the student body and ensure successful reproduction, then, campus administrators, architects, and health professionals united to design and implement a constellation of organizational, spatial, and behavioral tactics to promote movement

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[49] Bierstedt et al., 1964, in King, *Buildings and Society,* 1984, 9.
[50] King, *Buildings and Society*.
[51] Huse, "Restructuring and the Physical Context," 295.
[52] Huse, "Restructuring and the Physical Context." See also the work of Michel Foucault, in particular the concepts of biopower and surveillance. For an excellent overview of these ideas, see Paul Rabinow and Nikolas Rose, "Biopower Today," *Biosocieties*, 1(2006).
[53] My thanks to Galen Cranz who pointed out that this is one example of a larger phenomenon common to most social systems: that of unintended consequences. Since everything is linked in social systems, interventions often have a number of affects, some intended, others not.
[54] Mary Douglas has theorized the body as a metaphor for society; in Bryan S. Turner, ed., *The Body and Society,* 2nd ed., (London: Sage Publications, 1996), 26-27.

among the student body, informed, of course, by popular anxieties, notions of proper activities for men and women, and theories of health promotion. Historian Susan Cahn argues that interventions like physical education courses, examinations, and other mechanisms to "strengthen the student body," though ostensibly well-meaning, in fact created "new forms of discipline and control for the modern female body."[55] In this way, the framework of social control enables a more critical, nuanced understanding of the rationale for and mechanisms to enforce bodily movement in institutions of higher education, and also offers insight into unresolved challenges that confront schools today. Despite more than a century of worry about the sedentary life of the scholar and renewed calls for college campuses to safeguard student health,[56] sedentary behavior continues to pose an urgent threat to student health, yet little is being done to address the perils of prolonged sitting. Seeing this disjunction through the lens of social control provides a compelling explanation for the persistence of this problem and a cautionary tale for the type of deep, multifaceted change needed to reintroduce bodily movement and education into the curriculum of higher education.

My focus on experience offers an important counterpoint. Users who inhabit these environments do not necessarily passively accept the means of social control they imply; thus, user needs and behaviors frustrate larger (institutional or social) mechanisms of control.[57] This dissertation considers both the mechanisms of control imposed on student bodies in the name of health, intellectual gain, and national interest, as well as the spaces for resistance they created.

Cultural Landscape Studies

My emphasis on experience guided the theories and methods I brought to bear upon this study and ultimately enriched my study of the built campus environment by "peopling" the spaces I studied and illuminating the bodily experiences—imagined and realized—that gave buildings their shape and significance. Experience, then, as a methodological imperative lent agency to both user and designer, student and administrator; made explicit desired ends and thus illustrates social perspectives in built and administrative form; and served as an entry point into the topic of movement, a facet of bodily experience. These ideas in mind, I owe a profound debt to cultural landscape studies, a perspective that has shaped my work as both student and scholar.

As Paul Groth explains, cultural landscape studies is not so much a method as "a way of thinking—one with inherent contradictions and multiple approaches—that

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[55] Susan K. Cahn, *Coming on Strong: Gender and Sexuality in Twentieth-Century Women's Sport,* Cambridge, MA: Harvard University Press, 1994. Yet historian Helen Lefkowitz Horowitz reminds us that the very campus spaces designed to foster surveillance—in her example, the cottage-style dormitory buildings made famous at Vassar College—in fact afforded opportunities for privacy and led to the development of a robust student culture; see Helen Lefkowitz Horowitz, *Alma Mater: Design and Experience in the Women's Colleges from their Nineteenth-Century Beginnings to 1933,* (Amberst, MA: University of Massachusetts Press, 2nd ed., 1984).

[56] Neither, of course, are in the exact mold of their nineteenth-century origins.

[57] King, *Buildings and Society*. See also Thomas Gieryn, "A Space for Place in Sociology," *Annual Review of Sociology,* 26(2000): 463-469, and Herbert Gans, "The Sociology of Space: A Use-Centered View," *City & Community,* 1(2002): 329-339.

Image 5. Thompson Memorial Library (1905), Vassar College. The detailing around the windows includes crests of men's colleges such as Harvard and Yale. *Photo by author.*

people have readily adapted to new questions and social developments."[58] A cultural landscape approach to this study allowed for methodological flexibility on my part because, as geographer Don Mitchell suggests, it aligns with my interest in the historical, social, and built environment context of sedentary behavior: "Landscape is…best understood as a kind of produced, lived, and represented space constructed out of the struggles, compromises and temporarily settled relations of competing and cooperating social actors; it is both a thing (or a suite of things), as [Carl] Sauer would have it, and a social process, at once solidly material and ever changing."[59] My attempt in this dissertation, and particularly with my interest in the student experience of movement-centered interventions in institutions of higher education, is to consider the built forms of the campus environment, especially the campus gymnasia designed in response to concern for the sedentary student body. Ultimately, I demonstrate how gymnasia were and are products of a particular social and institutional moment, designed (and re-designed) according to shifting social concerns, administrative and scientific paradigms, and pedagogical innovations. To that end, I make several assumptions in this study, all reflective of my education in cultural landscape studies: first, that both people and buildings are significant; second, that experience is an essential component of and complement to design in both scholarship and social life; and finally, that buildings are cultural objects, making this an architectural thesis as well as one with sociological and anthropological roots.

Case Study Approach

Above, I explained how institutional thinking guides my interest in both the role of movement in higher education as well as the spaces—building types—designed to accommodate physical activity. Ultimately, however, my interest is in the organizational policies and practices designed to work on—*remediate*—the physical

[58] Paul Groth and Chris Wilson, "The Polyphony of Cultural Landscape Study: An Introduction," in *Everyday America: Cultural Landscape Studies After J.B. Jackson*, ed. Chris Wilson and Paul Groth (Berkeley: University of California Press, 2003), 3. Geographer Carl Sauer, whom Don Mitchell quotes below famously explained the field in this way: "The cultural landscape is fashioned from the natural landscape by a cultural group. Culture is the agent, the natural area is the medium, the cultural landscape is the result," in Wilson and Groth, *Everyday America,* 5.
[59] Wilson and Groth, *Everyday America,* 17.

student body. A case study approach is an ideal method to be able to demonstrate how values and goals at the institutional level—and their expression in general building types—became operationalized at an organizational level through policies and practices and translated into specific built forms to shape the bodily experience of students. Additionally, a case study approach lends depth to an admittedly broad survey covering more than 150 years; in this way, I am able to explore both the general societal trends and popular anxieties that link mind and body in American institutions of higher education and the specific organizational factors that shaped students' experience of bodily education.

My case study centers on Vassar College, founded in 1861 by the wealthy brewer and philanthropist, Matthew Vassar, who envisioned his endowment for a women's college to be of great social benefit and "more lasting than the pyramids."[60] Vassar is by no means the only women's college—and in fact it has been coeducational since 1968—rather, its significance is due to its distinction as the first college for women. Careful readers might recall that Mount Holyoke, a fellow Seven Sisters college, was founded in 1837, prior to the opening of Vassar, but it was established specifically as a seminary; meanwhile, Oberlin College also offered opportunities for women's education in 1837, but in a coeducational setting; thus, both colleges offered something different than what Vassar strove to create.

Image 6. View of the wide corridors in Main Hall, Vassar College (January 1962). Wide corridors accommodated physical activity in inclement weather, but meant that one bedroom in each suite had its only window facing the hallway (not outdoors). *Archives and Special Collections, Vassar College Libraries.*

The founding of a novel institution like Vassar illuminates the inherent contradictions of educating women at the time.[61] Unlike many of his contemporaries, Matthew Vassar believed that men and women were essentially similar in intellectual capacity, and thus he

[60] Milo P. Jewett, friend of Matthew Vassar, who encouraged the philanthropist to invest his wealth in an educational institution for women, in Horowitz, *Alma Mater,* 31. Horowitz adds that Vassar, the first college for women, thus grew "not from the educational impulses of the day, but from a self-made man's wish to ensure his immortality in a great building," Horowitz, *Alma Mater,* 29.

[61] As Horowitz explains, Vassar intended to give a full liberal arts education to women. This was a bold academic plan, but it was tempered by fears that taxing mental work or prolonged sitting—perils assumed in the pursuit of higher education—would render women frail, sickly, or, worse yet, infertile. In response, Vassar looked to the "seminary for its system of female protection" and chose a site away from the city ("with its immoral influences") and with grounds for physical activity in "open air." In addition to these spatial mechanisms employed to protect students, Vassar also employed faculty under the charge of the Lady Principal to supervise students in dormitories. Horowitz, *Alma Mater,* 28-36.

sought to ensure they could obtain the same liberal arts education men enjoyed, "an experiment of liberal education for that sex to which liberal education has…been hitherto denied."[62] Yet at the same time, the physical education he insisted on for women echoed and responded to popular anxieties about the bodily effects of women's education. Both of these ideas—the innovation and the conservatism of Vassar—were literally inscribed into the built campus environment: for example, adorning the façade of Vassar's library are shields of prominent men's colleges, a visual reminder to all who enter that Vassar strove to be a peer to these institutions otherwise reserved for men (Image 5). Additionally, the corridors of Vassar's Main Hall were imbued with uncommon width for the purposes of housing physical education activities in inclement weather (Image 6).[63] Thus, Vassar College was and is important precedent because its founders had to articulate clearly a vision for this new type of educational institution and, in so doing, confront prevailing ideas about gender, social roles, and public health, all of which were tied up with the debate about education in the late 1800s.[64]

Public Health Methods

Public health, too, plays an important part in this dissertation. Ultimately, what follows is part historical study and part design thesis, but also, importantly, one that makes use of a variety of theories and methods from the field of public health and, in so doing, offers new insight into the problem of sedentary behavior and suggestions for how to intervene.

As noted above, one of the primary challenges in undertaking this multi-method study of sedentary behavior was the need to bridge the divide between historical and contemporary methods. Public health, in addition to being a primary *topical* focus of this study—as sedentary behavior is a pressing epidemiological concern—also offers theoretical insight and methodological approaches to mediate between the many tenses of this work: after all, in public health, historical scholarship regarding how theories of disease and interventions have changed over time does not preclude the need for articulating and advocating interventions in the present-tense. In fact, the adoption of a public health lens offers an appropriate methodological toolkit as well as an analytical framework to understand institutional change over time. Regarding the latter, in the first part of my study, I look at movement-centered interventions in the institution of higher education—by which I mean pedagogical, administrative, and built methods to reduce the perils associated with prolonged sitting—as the basis of my analysis to

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[62] John Raymond, "Vassar College, a Sketch of Its Foundation," 1873, in Rothman and Rothman, *The Dangers of Education*, 5.

[63] Vassar, "Prospectus of Vassar Female College," 5.

[64] For example, Vassar "established…as a MAXIM in [the] College, that the health of its students is not to be sacrificed to any other object" and ensured, through mandatory physical activity, the construction of a Calisthenium, and instruction in health, hygiene, and physiology, that women would "go forth physically well-developed, vigorous, and graceful women, with enlightened views and wholesome habits as regards the use and care of their bodies." Vassar, "Prospectus of Vassar Female College," 1-5. Importantly, with this proclamation, we clearly see the student *body* under the jurisdiction of the college, as well as echoes of paternalism, and a desire to safeguard women's bodies.

explain how and why interventions have changed over time, but with little effect in ameliorating the sedentary life of scholars.

History of public health. Indeed, recognizing the power of historical analysis to help uncover how illnesses have been conceived of and responded to over time, medical historian John Duffy explains that the social response to an illness has a great deal to do with its classification (or not) as an epidemic.[65] Thus, the (historical) study of disease is necessarily interpretive, requiring that the social context—which I argue includes the social *conception*—of the disease, its classification, and interventions proposed therein, must also be considered. This insight gave rise to one of the intended contributions of this dissertation: recognition of how the social conception of sedentary behavior, classified as an urgent health concern at several points throughout history, was always leveraged toward ends other than—though in addition to—mere epidemiological concern for the physiological consequences to individual health caused by prolonged sitting. For example, educational debates, the eugenics movement, post-war conservatism, and coeducation advocates all had something to say about the sedentary student body and proposed interventions to fit their needs and interests, if not to mold student bodies. Thus, we have much to gain by raising the question of what is actually considered problematic about sedentary behavior at any given time. Ultimately, what this study demonstrates is that concerns have changed over time, with beauty, reproduction, racial stock, and the risk of cardiovascular disease called out at different periods in history. Thus, because there is something larger—or at least additional—at stake means another reason sedentary behavior remains a problem: it is a history of incomplete solutions, in which interventions succeeded in responding to underlying (social) anxieties, but did little to remediate the associated (sedentary) behavior.

Epidemiological study. Another aspect of public health essential to this study is epidemiology. Epidemiology is the "study of the distribution and causes of health outcomes in specified populations and the application of this study to control health problems,"[66] and epidemiological concerns and methods have changed over time. Early observations by Louis René Villermé (1782-1863) in France and Rudolf Virchow (1821-1902) in Germany "emphasized the association of diseases in urban conditions, poverty, and hazardous occupations." Frederich Engels (1820-1895) extended these observations with his own of "a doubling in death rates between families living in the best and the worst housing" in Manchester. During an 1864 outbreak of cholera, John Snow (1813-1858) famously observed (*mapped*) a higher prevalence of cholera among

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[65] Duffy explains, for example, that in the late nineteenth century, though Asiatic cholera was less of a threat than yellow fever, its inordinate coverage in newspapers and journals throughout the U.S. lent the disease the "capacity for creating panic and brutalizing decent citizens." John Duffy, "Social Impact of Disease in the Late Nineteenth Century," in *Sickness and Health in America: Readings in the History of Medicine and Public Health*, ed. Judith Walzer Leavitt, and Ronald Numbers, (Madison: University of Winconsin Press, 3rd ed, 1997), 421.

[66] Howard Frumkin, Arthur M. Wendel, Robin Fran Abrams, and Emil Malizia, "An Introduction to Healthy Places," in *Making Healthy Places: Designing and Building for Health, Well-being, and Sustainability,* ed. Andrew L. Dannenberg, Howard Frumkin and Richard J. Jackson, (Washington: Island Press, 2011), 15.

people living near the Broad Street water pump and, with this data, convinced London officials to disable the pump, thereby abating the epidemic in that area.[67]

Table 1. Prevailing ideas about disease causation in epidemiology, from "Four centuries of epidemiologic research: Evolution of ideas about the causes of disease in populations," *reproduced from A.J. McMichael, "Prisoners of the Proximate," Table 1.*

Period	Protagonists	Perspective
1600s	Graunt and Ramazzini	Basic description of patterns of disease mortality
1700s	Casal, Lind, Pott, and Baker	Specific causation of diseases
Early 1800s	Villerme, Virchow, Farr, Chadwick, and Engels	Social-environmental etiology Holistic ideas of the sanitationists
Mid-1800s	Semmelweiss, Snow, Holmes, Panum, and Budd	Transmissible "particulate" agents
Late 1800s – early 1900s	Pasteur and Koch	Germ theory: specific etiology (Henle-Koch postulates)
1920s –1930s	Takaki, Goldberger, and Funk Rehn et al. Galton and Pearson	Micronutrient deficiencies as specific causes Specific causes of occupational diseases Ideas of specific "genes" (and eugenics) appear
1950s – 1960s	Doll, Hill, Wynder, Kannel, Keys, et al.	Specific, multiple causes of chronic (noncommunicable) diseases
1980s – 1990s	Susser, Rose, Pearce, Krieger, et al.	Emphasis on social causation of disease, population perspective

Importantly, epidemiology encompasses both the surveillance of the patterns of health in populations and the identification of "associations among risk factors, disease, and preventive strategies."[68] As A.J. McMichael argues, epidemiologic consideration of the role of the built and social environment in disease etiology has waxed and waned over time (Table 1). In the early history of epidemiology, the social and built environment were seen holistically in the context of disease, yet over time, prevailing epidemiologic paradigms shifted from a broad conception of distal etiologic factors like the built and social environment to a more specific perspective of proximal determinants of population health (e.g., individual risk factors).[69] Further, with the

[67] Frumkin et al., "An Introduction to Healthy Places."
[68] Ibid., 15.
[69] A. J. McMichael, "Prisoners of the Proximate: Loosening the Constraints on Epidemiology in an Age of Change," *American Journal of Epidemiology* 149(1999): 887-897.

confirmation of the germ theory in the late nineteenth century, disease was "understood in terms of a single causal infectious agent," and this emphasis on individual risk factors was further elaborated with discoveries in genetic science.[70] Each of these developments served to obscure the role of the environment in public health and emphasize instead "a growing preoccupation with the role of multiple proximate (individual) risk factors."[71] These general trends shaped the development of college health services, of which efforts to stem the deleterious impacts of sedentary behavior were a part.[72]

Within the specific context of higher education, the earliest campus health programs began with the establishment of departments of physical education; in fact, the nineteenth-century physical educators who inspected student posture and led students in daily required activity were typically trained medical professionals. By the early twentieth century, the rise of pathogenic and hygienic medicine began to obscure the role of the environment in health.[73] Meanwhile, college health programs and professionals, looking to distinguish their professional expertise, began to transition in 1920 from a "gymnastic" theory of student health emphasizing physical education, anthropometry, and the need for apparatuses to encourage physical activity, to a "health promotion" perspective that focused on interventions such as curative medicine, hygiene, and physical fitness. With this rise of sanitary medicine on college campuses, historian Catherine Gidney argues that "health experts and educators saw their role as identifying and separating the contagious; grading students and providing advice on physical exercise; and inspecting … proper living conditions, dining, clothing, and behavior."[74] Proper living required, among other things, sufficient physical activity and impeccable posture—yet importantly, both assumed an *individual* rather than environmental intervention, and thus presaged a general shift away from the gymnasium and playgrounds as the focal points for mediation and toward individual interventions. Each of these phases showcases a specific, prevailing idea about the nature of illness; and these paradigms inform both the theories made about disease etiology (and distribution) and the methods employed to investigate and intervene into population (student) health in college settings.[75]

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[70] McMichael, "Prisoners of the Proximate," 889.
[71] Ibid., 887.
[72] At least until 1920s, when health services and physical education split. See Prescott, *Student Bodies*.
[73] This mirrors the disciplines of public health and city planning in general, which share a long history, but largely function as separate entities today. See Frumkin et al., "An Introduction to Healthy Places"; McMichael, "Prisoners of the Proximate"; and Jason Corburn, *Toward the Healthy City: People, Places, and the Politics of Urban Planning*, (Cambridge: The MIT Press, 2009).
[74] Catherine Gidney, *Tending the Student Body: Youth, Health, and the Modern University,* (Toronto: University of Toronto Press, 2015), 4.
[75] Regarding the latter, present-day risk factors for prolonged sitting prove a challenging topic of study because sedentary behavior is still a largely hidden health topic in the context of higher education: unaddressed by the National College Health Assessment survey, unremarked upon in the American College Health Association's HealthyCampus 2020 initiative. Additionally, my literature review yielded only one peer-reviewed article on the subject of sedentary behavior among college students: Janet Buckworth and Claudio Nigg, "Physical Activity, Exercise, and Sedentary Behavior Among College Students," *Journal of American College Health* 53(2010): 28-34.

As this study indicates, the topic of health is endemic to institutions of higher education, part of their very founding and institutional structure; similarly, sedentary behavior is shaped by the context in which it occurs. The field of social epidemiology arose from such efforts to consider health in broader social context. Social epidemiology, "the branch of epidemiology that considers how social interactions and collective human activities affect health," makes explicit two assumptions relevant to my thesis: first, states of health occur in a social context and thus are *socially distributed* across space and time; second, the social distribution of risk is not random and therefore social risk factors cluster.[76] Regarding the former, I assert in this dissertation that sedentary behavior is not only a physiological issue, but also one developed in a broader socio-institutional-historical context. To prove this point, I highlight the specific risks and resources related to prolonged sitting that were—and are—embedded in the institution of higher education over time. As discussed above, the resulting contextual epidemiological insight informed the recommendations I articulate (in Chapter 4) for the specific context of higher education institutions. Additionally, this insight helped me frame the urgency of this topic: I realized early on that I had the dubious fortune to have found an urgent health need to study.

Schools have long been given particular import due to their safeguarding of the nation's future citizens and leaders,[77] and seen as essential sites for intervention into public health. The same is true today: due to the length of time that students spend at school, the World Health Organization (WHO) has recognized that "schools have a significant impact on both learning and health,"[78] and, as such, educational environments are still considered primary sites for health interventions. In fact, in 1997, the WHO proclaimed that "schools could do more than any other single institution to improve the well-being and competence of children and youth."[79] Colleges in particular are important environments in which to intervene in diet and exercise to achieve both short-and long-term health impacts.[80]

Public health and design science. Design science theory and design thinking methods originated in the mid-1900s to guide socio-technical sciences like engineering and architecture.[81] More recently, this thinking and approach has informed the design

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[76] Principles of social epidemiology from: Amani Nuru-Jeter, Public Health 255A: Social Epidemiology, (University of California, Berkeley, Spring 2014).

[77] As noted above (and will be demonstrated in greater detail in Chapters 2 and 3), in the nineteenth and early twentieth centuries, a particular emphasis was placed on the education of women *as* future mothers and homemakers.

[78] World Health Organization, 2003, in Anne C. Bell and Janet E. Dyment, "Grounds for Health: The Intersection of Green School Grounds and Health-Promoting Schools, *Environmental Education Research* 14(2008): 77-90.

[79] Jessica Ruglis and Nicholas Freudenberg, "Toward a Healthy High Schools Movement: Strategies for Mobilizing Public Health for Educational Reform," *American Journal of Public Health* 100(2010): 1565-1571, 1565.

[80] Eva Leslie, Neville Owen, Jo Salmon, Adrian Bauman, James F. Sallis, and Sing Kai Lo, "Insufficiently Active Australian College Students: Perceived Personal, Social, and Environmental Influences," *Preventive Medicin,* 28(1999): 20-27.

[81] As will be further elaborated in Chapter 4, Linda Neuhauser and colleagues describe design sciences as a branch of scientific inquiry which "are considered one of three major categories of the systematic study of knowledge (epistemology) that also include natural sciences and human sciences," Linda Neuhauser, Gary L. Kreps, and S. Leonard Syme, "Community Participatory Design of Health Communication Programs: Methods and Case Examples from Australia, China, Switzerland and the United States," in *Global Health Communication Strategies in the 21st*

and evaluation of public health interventions. This is another area in which my work intersects with the field and practice of public health. Design science models "focus on the challenges of simultaneously defining problems, studying them, and developing solutions … [and] include guidance for continuous evaluation and revision, rather than the traditional 'before and after' approach of traditional health research."[82] As the work of Linda Neuhauser and colleagues shows, these empathic, user-centered, iterative processes provide an important model for designing effective health programs, by guiding "researchers and practitioners to focus on engaging multiple user and stakeholders to define problems iteratively, and carefully develop, test and revise solutions over time."[83] Similarly, in the final chapter of my dissertation (Chapter 4), I looked at three institutions of work and learning to help identify possible, *novel,* interventions into sedentary behavior on college campuses. Design thinking methods proved helpful to that end because, in proposing movement-centered interventions for the sedentary college campus, I strove to conceive of something new but without having an exact precedent to look toward. Thus, the other contexts—an office setting, a design thinking educational program, and a museum—aided in creative ideation by offering an opportunity to engage in empathetic research and apply findings to traditional college settings.[84] Of course, a true design science approach would include many additional steps, including the selection of context-specific approaches for a specific community, the validation of ideas with community members, the design and implementation of the intervention, and the continuous evaluation and refinement of the intervention over time. Though what follows is not a complete design thinking approach, it is intended to demonstrate the benefit of leveraging this methodology in creative ways to identify novel solutions to a complex problem.

Data Collection Methods

As befits any historical study, archival sources provided the foundation upon which my thesis rests. In particular, I made extensive use of the Special Collections Archive at Vassar College. The Buildings and Grounds, Physical Education, Students, and Costumes collections in particular offered rich sources regarding both the design and experience of Vassar's numerous gymnasia, spanning more than 100 years. Additionally, the digital archive of Student Letters and Student Diaries shed important light on the experience of Vassar women in the early decades of the institution's founding. Still, a challenge posed by my insistence to work on such a long period of time was the varying access to archival sources I had for different eras. To understand and describe buildings from 1865 and 1965, for example, required me to exercise analytical agility, attempting to infer equivalent data from vastly different source

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Century: Design, Implementation and Evaluation, ed. D. K. Kim, A. Singhal, and G. L. Kreps, (New York: Peter Lang Publishing, 2013), 229-230.

[82] Neuhauser et al., "Community Participatory Design," 229-230.

[83] Neuhauser et al., "Community Participatory Design."

[84] Empathetic research is that which attempts to understand the perspective and experience of the user. In design science, this empathic insight is used to inform novel solutions that embrace and support user needs.

types.[85] Thus, to create a coherent and balanced narrative and to complement these sources, I referenced books and other publications contemporaneous with the era in which each gymnasium was conceived and designed in order to demonstrate the broader social ideas—and anxieties—about gender, health, and physical activity and their influence on Vassar's built forms. Sources ranged from primary texts such as E.H. Clarke's wildly popular (if controversial) 1873 *Sex in Education* to Janet Lane's 1934 book about posture and body mechanics, *Your Carriage, Madam* – which, incidentally, was among readings assigned to Vassar women as part of their physical education courses in the 1930s and '40s—to a recent pamphlet (ca. 2016) published by Vassar's Department of Athletics and Dance aimed at promoting the campus' many sport programs befitting the "scholar-athlete."

Throughout my study, I had the good fortune of making numerous site visits to the Vassar College campus, where all buildings I discuss in Chapters 2 and 3 still stand in some form. Interestingly, Vassar's earliest spaces of physical activity have been renovated to serve different purposes, thereby leaving just an echo of the large corridors in Main visible to casual visitors, only the original façade of Avery (neé Calisthenium) is visible in front of César Pelli's modern Vogelstein Center for Drama and Film (2003) (Image 7), and few traces of the original function of Alumnae Hall, now called Ely Hall and dedicated to a faculty "aula" and museum of the Department of Geography where Alumnae's pool once stood. Still, being able to see these buildings in person, to inspect their façades, and to walk the same corridors as those ambulated by the subjects of this paper, proved an invaluable experience: it was, in short, a form of embodied learning, a chance to witness the buildings I studied, to provoke new questions through my own experience of their physical forms, and to suggest new insights regarding the meaning and legacy of these spaces as they stand on campus today. Though the design and function of each of these original buildings has changed since its initial construction, what their new forms convey is in fact a message of resilience: by offering bodily freedom in spaces unconstrained by chairs and desks, the open spaces of these buildings make them open to new uses and able to accommodate different functions.

Image 7. Vogelstein Center for Drama and Film, Vassar College. The new renovation (2003) incorporated the historic façade of Avery Hall (Calisthenium, 1866). *Photo by author.*

While on the Vassar campus, I also took the opportunity to meet with

[85] While visual and written sources were particularly rich for Vassar's later gymnasia, Kenyon Hall (1933) and Walker Field House (1984), I had to rely more on inference for the earlier gymnasia, Calisthenium and Alumnae. Also, archives for Walker and AFC available at Vassar (collections not yet ready); thus, I hope to return to this facet of my research once the collections become available to articulate (and test) my hypotheses further.

three members of the faculty in the Department of Physical Education and Dance—two long-time members and one new—in order to both complement what I had learned in the archives and extend my analysis and understanding of Vassar's gymnasia and bodily education programs into the present-day. I asked the same questions in these conversations that I asked of the archival sources: How did the newest gymnasia, Walker Field House and the Athletics and Fitness Center, come to be? What were the processes of design and construction like for the two spaces? What activities do they house today, and do they meet the needs of Vassar's student body? What is the purpose of athletics and physical education on campus today? What kind of support does the department receive from campus administration? All three faculty members were gracious and insightful, and helped provide background knowledge of Vassar's athletic program, and tours of the campus' newer athletic facilities: Kenyon Hall (1933), Walker Field House (1984), and the Athletics and Fitness Center (AFC, 1999).

The aforementioned data collection methods are common to architectural and historical scholarship; yet when applied to public health research, they take on new relevance and import. Sedentary behavior has long been treated in scientific literature as a physiological factor best researched with sitting logs and accelerometers and understood via complex regression analyses. Yet this study serves as a reminder that seeing sedentary behavior in *context* means inviting new methods to illuminate new facts about how, why, and where people engage in prolonged sitting.[86]

In the second half of my dissertation, in leveraging design sciences to envision a new approach to movement in higher education, I employ and discuss the need for data collection techniques both common and uncommon in public health. I began my investigation of the topic of sedentary behavior with a literature review of articles relating to the physiological, psychological, and educational implications of sedentary behavior. This was an essential, if common, step in my research to understand the state of the science of sedentary physiology and the range and efficacy of school-based interventions to promote physical activity. Importantly, in this literature review, I was interested in publications aimed at scholarly *and* lay audiences, the latter as indicative of the reach of this topic to the general public. Yet I also knew I could learn a great deal directly from people: both the designers and users of these settings; after all, observation and interviews can be used to understand health behaviors in various contexts.[87] Thus, I conducted informal observations and interviews at the Airbnb office in San Francisco, California, and at the d.school at Stanford University. I was interested in understanding the extent to which the social norms and spatial design of the d.school

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[86] For example, above I demonstrated the value of historical methods to understand sedentary behavior and movement in the context of college campuses, in particular, factors that have contributed to prolonged sitting in educational contexts, the ways in which sedentary behavior has been conceived—or not—as problematic, and the interventions designed in response.

[87] Charles Kerr, Richard Taylor, and Greg Heard, eds., *Handbook of Public Health Methods*. (Australia: McGraw-Hill, 1999). An example of how observation and interviews have been used to understand the context of sedentary behaviors is explained in greater detail in Chapter 4, where I discuss a post-occupancy evaluation (POE) of a campus library at the University of California, Berkeley.

Image 8. Collaborative work area at the d.school, Stanford University. The table height is designed so that people standing or perching on stools could maintain eye contact, an essential component of collaboration. *Photo by author.*

and Airbnb office allow for deviations from a sedentary norm of working and learning; in this way, these case studies provide a comparison with my primary case study of university gymnasia and classrooms. At each location, I interviewed a person involved with the design and management of the space to understand the intended functions of the site with regard to movement and postural variation. Using grand tour questions and probes,[88] I asked my informants about organizational priorities (in particular, the vision for successful work and/or learning outcomes and the role of the body in each) and their assessment of the intended outcome and efficacy of these interventions. In my observations, I paid careful attention to affordances for postural variation (e.g., furniture) (Images 8 and 9), regulators of behavior (e.g., signs) (Image 10), and enacted behaviors; together these demonstrate intended and actual use, all of which helped illuminate cultural practices and values that impact health behaviors and thus informed my proposal for more effective interventions.

In design thinking methodologies, *empathy* refers to the findings that come from careful research to define a problem: to walk in the proverbial shoes of users, to understand their experience, needs, and way of seeing the world. To achieve these insights, one can employ a variety of methods, some of which are described above: interviews, observation, even archival research. Perhaps one of the greatest lessons I learned is the insight offered to me by architectural historian William Whyte: that to be a good historian—or any scholar interested in human experience—requires one to live a life, to be able, then, to understand the feelings, experiences, and realities that confront the very people we study; in other words, to empathize with their experience.[89]

Major Themes

Experience is as good a place as any to begin a brief introduction to the major themes that define this study. As mentioned above, campuses were designed with bodily experience in mind. Therefore, the lens of experience offers rich insights into

[88] John Zeisel, *Inquiry by Design: Environment/Behavior/Neuroscience in Architecture, Interiors, Landscape, and Planning,* (New York: W.W. Norton & Co., revised ed., 2006). See also Galen Cranz, *Ethnography for Designers,* (New York: Routledge, 2016).

[89] This insight was shared in a personal conversation at Oxford University, March 2016.

sedentary behavior, as well as other related themes, explored below, including gender, the body, and power.

Reflecting on architecture and experience, William Whyte points out that what appears to be two ideas—*architecture*, that which is solid and stable, yet problematic to define nevertheless, and *experience*, "an equally intractable idea," —in fact suggest a third: *architecture and experience*. To Whyte, "the relationship between both these perplexing categories … presumes some sort of agency; a sense that architecture is somehow constituted by experience and experience somehow shaped by architecture; an inter-relationship, in other words, which implies that both are somehow affected by the other, and that exploring each will tell us something about both."[90] Evidence of this idea is Annmarie Adams' seminal study of a modern house designed by Joseph L. Eichler in the 1950s. By considering not only the intent of the architect and the building he constructed—how it was *supposed* to function and for whom—but also the experience of the space and its occupants, the "actual life" that took place within its walls, Adams illuminates how an Eichler home represents a "zone of contention between builders" and that people do not "simply follow blindly the architectural instructions spelled out by their house."[91] To read a building purely on intent, then, obscures a larger truth about the significance of the building in everyday life and precludes the possibility for multiple, contradictory readings and uses. Historian Helen Lefkowitz Horowitz employs a similar experiential focus in her history of the Seven Sisters Colleges, and extends her analysis by linking the topic of experience to power. As she explains in the introduction to *Alma Mater,* her interest as a cultural historian looking at the built environment is not only in those who possess and exercise "the power to create, to name, to shape places and spaces" —architects, administrators, and faculty to name a few—but also in those who exert subversive power in re-creating, re-naming, and re-shaping these same spaces and forms.[92]

Image 9. The "Standing Landing" (left) at the Airbnb Office, San Francisco, CA. The desk is at standing height and can be used as a work station, though typically workers go elsewhere to work. *Photo by author.*

By highlighting how Vassar's gymnasia were experienced by students, faculty, and the general

[90] William Whyte, "Experiencing Architecture in the Nineteenth Century: Theories, Methods, Problems, Opportunities," in *Experiencing Architecture in the Nineteenth Century: Buildings and Society in the Modern Age*, ed. Horatio Joyce and Edward Gillin (London: Bloomsbury Press, in review).

[91] Annmarie Adams, "The Eichler Home: Intention and Experience in Postwar Suburbia," *Perspectives in Vernacular Architecture* 5(1995), 171.

[92] This is derived from a quote by Horowitz, who explores in *Alma Mater* not only those who have the power to create campus forms, but also those who exert the "subversive" power to "re-create, re-name, [and] re-shape" campus spaces through use. Horowitz, *Alma Mater,* xix.

public, in this study I, too, demonstrate not only the ways in which Vassar's numerous spaces of physical instruction were shaped with a particular experience in mind, but also how women's experiences of these spaces subverted or confirmed these ideals. Since Vassar's nineteenth-century founding, its students have been subjected to persistent fears that higher education might compromise women's social and reproductive status, and as a result the gymnasium became a primary component of the student experience: a place for daily instruction, periodic bodily assessments, and both compulsory and recreational physical activity. Yet the actual use of these buildings and the social and bodily significance created therein were in fact more complex and ambivalent than their built forms suggest, at times confirming or embracing the designer's intent, and at other times subverting it. Indeed, the same spaces and programs borne of conservative criticisms of women's education also made room for women to participate a range of new sports and exercises at educational institutions across the United States.

Still, Vassar's gymnasia were designed to shape student experience and, in particular, student bodies. Movement played a key role to that end; thus, movement central to the experience of higher education and a primary focus of this dissertation. Using the lens of experience opens a new perspective into: how buildings were designed to be inhabited, used, and experienced; how these spaces were actually experienced and how their significance was (re)created through use; and disjunctions between these two forces and what they reveal.

Further, each of these ideas can be extended yet again, to demonstrate how experience in each of these dimensions is *embodied*: collegiate experiences were imagined (or exerted upon, more forcefully, by design and administrative intervention) and lived *through physical body*—the creation of the proverbial sound bodies upon which sound minds could rest. This fact was not lost on the Victorian educators and administrators who sought to protect the student body from the perils of sedentary study and other dangers attending collegiate life: to protect and remediate student bodies necessarily required their control, the latter of which was achieved through a host of administrative, pedagogical, and spatial interventions mentioned above. The control of the student body is another theme that echoes throughout this paper; as I demonstrate in Chapters 2 and 3, its aims were twofold: first, bodily control was a necessary prerequisite for establishing institutional norms such as curfews, regular exercise, and bodily comportment at Vassar;[93] second, controlling student bodies on campus became, to many, a way to control the larger body politic by ensuring strong, healthy graduates capable of producing and raising healthy children. Indeed, according to historian Heather Munro Prescott, college health services, originating in response to concern about vulnerable female bodies, have long been a mechanism to

[93] Matthew Vassar looked to women's seminaries as a model for protecting and sheltering female students at the college. In particular, the daily regimen of activates at Vassar was seminary-like. According to an 1875 article in Harper's Magazine: "One day at Vassar beings by the simultaneous chiming of the bells for rising" as well as time for exercise and, in the evening, the hour of rest hour for rest. Anna C. Brackett, "Vassar College," *Harper's*, 1875: 356-358. This careful metering of time and activities served as a form of surveillance and mechanism to safeguard female students.

cope with a diversifying student body,[94] and Catherine Gidney further suggests that "the development of physical training and health services on university campuses emerged as one response to the perceived negative effects of a rapidly changing society," [95] including the sedentary nature of modern life, the observed pallor and weakness of American bodies, and the profound social changes brought about by women's entry into a more public sphere. Physical education and health services—a twin endeavor in the nineteenth century—functioned as mechanisms of control, manifested through the discourses and programs employed to create the "ideal" student body, such as regimes of self-care, self-education, and grading; the measurement and classification of student bodies, whose statistical averages eventually became ideal norms;[96] and the ordering and enclosure of new forms of bodily movement and expression in sanctioned spaces, namely, the college gymnasium and playing fields.[97]

Given my focus on the body—a gendered social object—within the context of the first women's college, gender is another important theme that informs this study. Bodies are not the only social objects that are gendered, however: indeed, as my dissertation demonstrates, the regimes of bodily (and mental) instruction designed in response to concerns about sedentary behavior at Vassar were gendered: designed and implemented with a certain gender ideal in mind.[98] Though Matthew Vassar saw "the intellectual faculties of men and women being essentially similar" and sought with the 1861 founding of his namesake college, "to accomplish for young women what our colleges are accomplishing for young men,"[99] he was not immune to popular critiques about women's education. Thus, Vassar sought to safeguard the student body through mandatory physical education, "a regular medical examination," and "regular instruction" in the School of Physical Training "in the arts of Riding, Flower-gardening, Swimming, Boating, Skating, and other physical accomplishments suitable for ladies…and promotive [*sic*] of bodily strength and grace."[100] We see in this quote an explicit desire to enforce gender norms alongside bodily education. Additionally, posture training and body mechanics courses, which began in the late 1800s and lasted until the 1960s, taught women how to sit, stand, and act in accordance with societal expectations of women. As historian Roberta Park notes, women's physical activities

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[94] Prescott, *Student Bodies*, 3.
[95] Gidney, *Tending the Student Body,* 5.
[96] Jennifer Terry and Jacqueline Urla, ed., *Deviant Bodies: Critical Perspectives on Difference in Science and Poplar Culture,* (Bloomington, IN: Indiana University Press, 1995).
[97] Patricia Vertinsky and John Bale, eds., *Sites of Sport: Space, Place, Experience,* (London: Routledge, 2004); see also Owens, "Pure and Sound Government."
[98] The very concern about the perils of sedentary behavior followed gendered lines: it was believed that sedentary men would grow frail and unable to fulfill leadership roles or fight in times of war, while sedentary women would suffer lack of beauty and an inability to reproduce. See for example Park, "Sport, Gender, and Society" and Owens, "Pure and Sound Government."
[99] Vassar, "Prospectus of Vassar Female College," 3, 7.
[100] Ibid., 4-5. These interventions were emblematic of sanitary science and gendered theories of health common at the time, yet their particular iteration at Vassar resulted in the deliberate ordering of student bodies in space and time; for example, through prescribed hours of activity and rest, the obscured views to Noyes Circle (playgrounds), and limits on where women could go unaccompanied. See also Daniels, *Main to Mudd*.

were organized away from public view—ensconced within the confines of gymnasia or secluded playing fields—whereas men's were performed in public view, often for a crowd of spectators.[101]

I return, briefly, to William Whyte's definition aforementioned definition of *architecture and experience* as "an inter-relationship…which implies that both [architecture and experience] are somehow affected by the other, and that exploring each will tell us something about both."[102] Another way to see this transaction is through the parlance of *context*: experience requires its students to see buildings in their social context, and architecture requires its audiences to recognize the environmental context in which social relations occur. One implication of this idea is that a helpful unit of analysis may not be architecture, or experience, but of what I call *context*, the amalgam of people-in-space now referred to more precisely in social science and public health literature as a *relational* perspective.[103] Yet to study context in this way requires novel theories and research methods: some, the purview of the field of person-environment studies; others more novel blends of social and architectural history; and yet others derived from the field of public health. Indeed, it is this contextual approach to prolonged sitting in education settings that I see as the primary contribution of my study to the literature on sedentary behaviour.

Chapter Overview[104]

Chapter 1 presents the topic of the perils of prolonged sitting in college campuses in historical context and in so doing makes two important contributions to the literature on sedentary behavior. First, I demonstrate that the sedentary student body is a long-term health concern on (and I argue, intrinsic to) college campuses. Second, I articulate a theory for how this issue has been framed and intervened upon over time in response to organizational and institutional (contextual) factors. In particular, I show how the shift from *in loco parentis* to *laissez-faire* and *risk management* paradigms of campus governance mirror a shift in public health approaches, from a focus on broad, environmental and policy interventions to approaches targeting individual behaviors and risk mitigation. At the same time—and stemming from these changes—as noted above, physical education courses and programs moved from a compulsory part of the college curriculum and experience to a leisure-time pursuit facilitated though not encouraged or mandated by administrative practices. The result of these simultaneous shifts can be read in both campus interventions and the built environment as movement (physical education) was relegated—administratively and spatially—to the periphery of campus. Yet the decline of compulsory physical education does not signify the solution

[101] Park, "Sport, Gender, and Society," 1594.
[102] Whyte, "Experiencing Architecture in the Nineteenth Century."
[103] The relational perspective recognizes a "mutually reinforcing reciprocal relationship between people and place." Steven Cummins, Sarah Curtis, Ana V. Diez-Roux, and Sally Macintyre, "Understanding and Representing 'Place' in Health Research: A Relational Approach," *Social Science and Medicin,* 65(2007): 1835.
[104] Portions of Chapter 4 and the Theoretical Overview section of Chapter 1 were previously published (citation follows); their inclusion in this dissertation was approved May 2017 by the Graduate Division, University of California, Berkeley. Caitlin DeClercq. "Toward the Healthy Campus: Methods for Evidence-Based Planning and Design." *Planning for Higher Education Journal* 44(2016): 86-96.

to the problem of sedentary behavior: in fact, the problem is largely unmitigated today.[105]

In Chapters 2 and 3, I extend this analysis about the historical, social, and built environment contexts of sedentary behavior—and its opposite, *movement*—in the specific context of Vassar College. Founded in 1861 as the first women's college and with the explicit goal of educating student minds *and* bodies, Vassar serves as an apt case study to understand how shifting ideas about the perils of sedentary behavior were translated to the specific context of college settings and responded to through a host of interventions over time. By 1900, Vassar constructed three spaces to develop sound minds and healthy bodies: Main Hall (1865), the Calisthenium (1866), and Alumnae Hall (1889). Chapter 2 explores how these buildings were shaped and experienced by: the public, whose interest in Vassar's student body can be read in building designs and written accounts of the new institution; female physicians and educators who, by implementing regimes of bodily instruction and assessment, asserted their professional expertise to navigate gendered contradictions in Victorian society; and students, whose new bodily experiences complicated popular ideas about the college and its gymnasia. These groups experienced Vassar's spaces of physical instruction—built manifestations of conflicting ideas of women's health—as ambivalent spaces that both constrained and freed female bodies. This chapter offers novel insight into the imagined and lived experience of nineteenth-century collegiate architecture by taking as its subject gendered, *moving* student bodies. Shaped by distinctly Victorian ideas about science, women's health, and architecture, college gymnasia were not merely peripheral buildings,[106] but central to the mission of higher education.

Image 10. Sign at the d.school, Stanford University. This sign reminds users to "reset" the furniture in the space to a default position, evidence of the common practice at the d.school to rearrange furniture as needed depending on the activity or desired interaction. *Photo by author.*

[105] The historical overview I present—and later convey in the specific context of Vassar College—can be applied to other campuses as a framework to investigate architectural, pedagogical, and administrative responses to the sedentary student body. Indeed, future studies might look at how institutional-level factors (such as administrative paradigms, by which my model is organized) were adopted or resisted at the organizational level on other campuses. For example, the University of California, Berkeley, a land grant college, could offer an interesting counterpoint.

[106] Administrative peripherality and centrality, which I discuss in more detail in Chapters 2 and 3 also correlate to physical/spatial location; for example, the location of gymnasia in relation to the "central campus" area (see the Conclusion chapter and Image 65, Conclusion).

Chapter 3 follows many of the same themes into the twentieth century and explores how sedentary behavior, though increasingly obscured in favor of other health topics, nevertheless offers a means to witness a profound rethinking of the body amidst a host of new social anxieties and institutional changes. At Vassar College, this era saw the construction of three new spaces of physical activity—Kenyon Hall (1933), Walker Field House (1984), and the Athletic and Fitness Center (1999)—which represent new paradigms of student management, physical education, and health.

We can also see in the example of Vassar College how the still body assumed in spaces of (mental) learning—as opposed to the specialized spaces of bodily instruction explored in Chapters 2 and 3—is increasingly problematic as we learn more about the perils of sedentary behavior. Though Vassar was founded on principle of mind and body, the latter is largely obscured today (indicative of college health in general). Indeed, given what we know today about the limits of individual, compensatory, and leisure-time based interventions to reduce sedentary behavior, it is clear that the solution to reducing the perils of prolonged sitting cannot be found in the historical precedents presented in Chapters 1 – 3. What is needed instead are new interventions that address the built environment, and experience outside of the gymnasium (e.g., classroom, libraries, social spaces), and therefore affect a majority of students. Yet interventions must address the persistent problem of control in classrooms, where change is needed the most. Control has long meant still bodies, so injecting movement requires a fundamental shift in culture, pedagogy, and the built environment.[107]

Chapter 4, then, takes seriously the question of how to respond today to burgeoning findings regarding the deleterious physiological and cognitive impacts of prolonged sitting. I introduce design science as way to identify novel possibilities for intervention; in so doing I shift the temporal and epistemological focus of my work to leverage design science to envision change in the present- and future tense. This chapter also emphasizes a more contemporary definition of what it means to be sedentary: whereas a sedentary person was once defined as someone who exercised too little, today we call someone sedentary if they sit too much, *regardless of how much they exercise*.[108] Thus, in Chapter 4, I explore the contemporary context of sedentary behavior, proposing that we need to rethink our designs for educational settings in general and classroom settings in particular. Indeed, integrating movement into classroom settings can broaden somatic experiences, promote comfort, encourage engagement and participation among students, facilitate interactive learning, and achieve student-centered teaching practices. Yet doing so requires simultaneous change in several dimensions, including pedagogy, design, and social function. Thus, below I propose several dimensions of change, informed by research on educational environments and adjacent institutions of learning and work and sensitive to a range of interventions needed, from modifications in individual behaviors to changes in objects and built environments, to deeper pedagogical and cultural changes.

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[107] Said another way, without changing classrooms, the benefits of exercise can be "undone."
[108] Hamilton et al., "Too Little Exercise and Too Much Sitting."

A Note About Language

From my advisor, Galen Cranz, I learned the value of applying semantic ethnographic methods to archival sources, and in particular of paying close attention to the words people use. As she explains in *Ethnography for Designers*: "even established fields like architectural history can benefit from learning to 'listen ethnographically'; the documents and texts left to us in various archives can be treated as conversations with specialized vocabulary and an underlying hierarchy of meaning."[109] This in mind, I chose to use the following terms due to their emic (internal to the context of study)[110] meaning in the earliest era of archival sources I worked with—the nineteenth century—and continued to use them in describing later years as well for internal consistency of my dissertation. Below is an explanation of the terms' emic meanings as well as insight into their significance in the context of my dissertation.

"Students" is just one way that women were referred to in the nineteenth century; also in archival sources from this period are references to the "pupils" and "inmates" of the university. I chose to use the former, students; yet also employed a modification of "student bodies" to refer both to the bodily emphasis that arose in the nineteenth century as well as the broader campus population.

The body was a subject of intense focus in Victorian America, as the phrase *sound minds in sound bodies* suggests, as was the topic of bodily education. In the Prospectus for Vassar College, Matthew Vassar proclaimed that at his namesake institution, "bodily health is not to be sacrificed to any other object whatever."[111] To achieve this end, Vassar wrote that through the School of Physical Training, "regular instruction will ultimately be given, to such as desire it, in the arts of Riding, Flower-gardening, Swimming, Boating, Skating, and other physical accomplishments suitable for ladies to acquire, and promotive of bodily strength and grace."[112] These efforts in mind, an 1871 article in *Scribner's* magazine reassured a curious public audience that "Vassar College is educating women, in the true sense of the word—in leading out their own powers, bodily, mental, moral."[113]

The body was a concern beyond Vassar College as well. Physician and physical educator Mary Taylor Bissell wrote in 1891 that "dress, school-life, [and] lack of proper exercise" were "largely responsible for [women's] unsymmetrical and undeveloped bodies."[114] The rise of anthropometry, the study of physical bodies, cast additional focus on the body. As Roberta Park explains, the physical body was a subject discussed frequently among physical educators in the late nineteenth century. For example, "in his 1887 annual address before the [American Association for the Advancement of Physical Education], [physical educator and AAAPE President Edward L. Hitchcock] declared that educators needed information about the proper and normal proportions of the body so that they might 'develop the most perfect type of man and woman in

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[109] Cranz, *Ethnography for Designers,* xii.
[110] An *etic* term's meaning, in contrast, is derived from external contexts. See Cranz, *Ethnography for Designers,* 38.
[111] H.H. McFarland, "What are They Doing at Vassar?" *Scribner's Monthly* 2(1870-1871): 9.
[112] Vassar, "Prospectus of Vassar Female College," 5.
[113] McFarland, "What are They Doing at Vassar?" 2.
[114] Mary Taylor Bissell, *Physical Exercise and Development for Women,* (New York, NY: Dodd, Mead and Co., 1891), 16.

body, soul, and spirit.'"[115] Additionally, in an 1885 study administered by the Association of Collegiate Alumnae to assess the health impacts of education on female students, the authors wrote that the data obtained demonstrated that the "graduates, as a body, entered college in good health, passed through the course of study prescribed without material change in health, and since graduation, do not seem to have become unfitted to meet the responsibilities or bear their proportionate share of the burdens of life."[116] This final quote demonstrates how the student body was discussed as not only a physical entity, but a collective one as well. Thus, throughout this dissertation, I use the term "student body" to highlight the ambiguity evident in archival sources between the physical and collective body. Yet to aid understanding, I at times use "student bodies" to refer specifically to the physical (individual) body and "the student body" to refer to the collective entity.

"Female" is a term emic to the nineteenth century (and beyond) and the specific context of Vassar College, which was originally named Vassar Female College ("Female" was dropped from the name in 1867, two years after Vassar's founding).[117] Yet also used interchangeably at this time were "sex" and "woman," which I have also chosen to employ variously throughout this dissertation in the spirit of nineteenth-century usage.

"Concern" is also emic to the nineteenth century, used along words like "problems" and "disorder"—I prefer the former in this paper because it conveys a more general sentiment, not wholly negative or problematic as the others may connote. Finally, at times I refer to "regimes of surveillance," which echo Michel Foucault's concept of *truth regimes* and mechanisms of *surveillance*; yet I employ the phrase here to refer to a constellation of interventions including sanitary regulations, personal hygiene, activities, physical regimens, "personal regimen and care of their health."[118] Each of these served as instruments of surveillance over the female student body.

My intention in employing these terms is to achieve a balance of linguistic precision—a certain semantic truth to the hundred-plus years I survey in this dissertation—and internal consistency through the use of terms general enough to both the nineteenth and twentieth century that help to tie my chapters together into a coherent whole.

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[115] Park, "Sport, Gender, and Society," 1585.
[116] Carroll D. Wright, "Health Statistics of Female College Graduates: From the Sixteenth Annual Report of the Massachusetts Bureau of Statistics of Labor," 1885, in Rothman & Rothman, *The Dangers of Education,* 77.
[117] Harriet Ballintine, Compiled Materials regarding the Physical Education History of Vassar College, Communications from M. Vassar to Trustees, February 26, 1861, *Archives and Special Collections, Vassar College Libraries.*
[118] Ballintine, Compiled Materials regarding the Physical Education History of Vassar College, Excerpts from the First Catalogue of Vassar College, 1865-1866, *Archives and Special Collections, Vassar College Libraries.*

Chapter 1
The Sedentary Student Body:
Administrative, Pedagogical, and Built Environment Interventions

Introduction

"Sitting is the new sugar," proclaims a sign at the College of Environmental Design (CED) Library at the University of California, Berkeley, "[so] we have standing workstations with electrical outlets." The word is out, or so it seems: sitting is bad for us; worse, even, than the sugars and fats we have long vilified, and more dangerous than smoking. Simply put, our sedentary lifestyles are killing us, and the CED Library is taking note. Befitting a design school, the solution they propose is a designed object—standing-height desks (Image 11)—rather than, for example, a simple statement encouraging patrons to sit less (an imperative difficult to achieve, as students spend most of their waking hours in learning environments designed for sitting). Though laudable, this is an incomplete intervention: the rest of the school remains unchanged, still enforcing a singular, *seated* posture in classrooms and common areas, and the aforementioned opportunity for respite from this norm—the standing library furniture—is ensconced in a location of the library few wander by without purpose.[119] Thus, only the most motivated users will make use of this furniture, leaving the perils of sedentary behavior—physiological and cognitive—largely unaddressed.

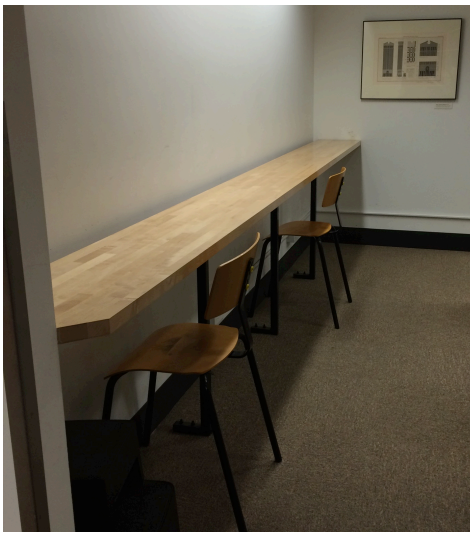

Image 11. Standing-height desks at the CED Library, UC Berkeley. *Photo by author.*

Still, this sign—and the furniture it advertises—highlights the link between physical health and prolonged sitting, and suggests, by its location in an academic institution, the particular relevance of this topic to education. Indeed, postural variation—and movement, more broadly—not only interrupts the deleterious health consequences of prolonged sitting, but also reduces back pain and eye strain and promotes creativity, cognition, and reflection.[120] These outcomes all directly impact learning, meaning that movement and postural variation would ideally be part of, *designed into,* educational settings.[121] One glance at any classroom, library, or common area on college campuses, however, illuminates how far we have yet to go to

[119] The library also possesses a *chaise longue* designed by Charlotte Perriand and LeCorbusier, which also affords users an opportunity to assume a posture other than the ubiquitous seated pose. However, it, too, is hidden in a corner of the library, behind a row of stacks.

[120] Eric Jensen, *Teaching With the Brain in Mind*, (Alexandria, VA: Association for Supervision and Curriculum Development, 2nd ed., 2005). For more on the effects of chair-sitting, see Galen Cranz, *The Chair: Rethinking Culture, Body, and Design,* (New York: W.W. Norton, 2000).

[121] Taking a lifecourse approach to this topic, the best educational intervention would ideally begin in preschool, extend through K-12, and into college environments. In this way, students would learn that movement is

translate findings in the field of sedentary physiology into meaningful change. Aside from being outfitted with the latest technologies and updated with new lighting, upholstery, or other cosmetic changes, classroom design is largely unchanged since the advent of mass education, and libraries similarly assume a singular, seated posture.

Yet the sedentary student body is not a new concern. As early as 1855, campus administrators named the "sedentary life of the scholar" a primary concern,[122] and "school sickness"—including the physiological consequences of too much sitting—preoccupied the minds of health professionals in the nineteenth century.[123] Indeed, this concern for the student body, shared by administrators and health professionals and echoed by larger social anxieties about the health of the *body politic*, shaped the administration and design of college campuses. For example, gymnasia were constructed alongside other academic buildings, students were expected to enroll in mandatory physical education courses, and their bodies were inspected to monitor progress. Still, despite more than a century's worth of worry about the strains of such study—and numerous architectural and pedagogical interventions to enable the student body to withstand and counteract its impacts—scholarly work is still a sedentary endeavor and its impact on the student body largely unmitigated.

In this chapter I ask: Why is sedentary behavior still a problem more than a hundred years later, and one that is largely overlooked in contemporary student health programs? In response, I first demonstrate the long history of this public health concern in institutions of higher education and explore the various ways in which the sedentary student body has been conceived of and responded to over time in response to shifting administrative and public health programs. Since the founding of the earliest colleges in the United States, campus designers and administrators have shaped, designed, and modified campus environments according to administrative interests in the healthy student body. Though the character of these interventions has changed according to shifting definitions of health and administrative paradigms, the link between health and education is a consistent theme in the history and practice of campus planning and design.[124] By exploring the various forms this relationship between institutional practice and concerns about the sedentary student body, I expose how and why this topic has been largely obscured in recent decades.

Second, in light of new research regarding the deleterious health impacts of sedentary behavior, I argue that these historical precedents are not sufficient to address this urgent health concern today. Instead, the existing literature illuminates the need to

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fundamental education, and continually engage in movement and postural variation throughout their educational careers.

[122] "In a report to the Amherst College board of trustees in 1855, newly appointed president William Augustus Stearns declared, 'No one thing has demanded more of my anxious attention than the health of the students.' Stearns observed numerous cases of students who had broken down, left school, or met untimely deaths while at college. He blamed the students' failing health on the sedentary life of the scholar, during which 'physical health is neglected, the laws of health are violated, the protests and exhortations of instructors and other friends are unheeded.' Stearns told the trustees that the circumstances of campus life at Amherst called for 'immediate and efficient action.'" Prescott, *Student Bodies,* 30.

[123] Meckel, "Going to School, Getting Sick."

[124] See for example McMichael, "Prisoners of the Proximate" and Frumkin et al, "An Introduction to Healthy Places."

rethink the entire system of sedentary spaces, assumed and enforced postures, and thus the status-quo of learning environments. These changes will also require a change in pedagogy and what sociologist Donna Huse calls the "physical contexts of learning," including "how people are located in buildings, how they are related to each other space, how they move and are expected to use their bodies,"[125] and, undoubtedly, the spaces in which these practices occur. Just as previous definitions of student health have been responded to through an evolving set of administrative and environmental interventions, the problem of the sedentary campus—uniquely intertwined with built, social, and institutional practice—must find its solution in the identification of novel administrative, pedagogical, and environmental methods and multi-level interventions today.[126]

Sedentary Physiology: A State of the Field

One of the primary challenges in studying sedentary behavior is that the word itself has been defined in two ways, at once meaning *not enough physical activity* and *too much sitting*.[127] Yet to conflate these two ideas is to overlook the serious and unique consequences each poses to human health. Lack of physical activity—the former and perhaps more ubiquitous definition of the word "sedentary"—generally is operationalized as failure to meet daily or weekly guidelines for aerobic activity. Sedentary behavior researcher Neville Owen suggests that a more precise term to describe someone who falls into this category, rather than "sedentary," is "inactive."[128] Inactivity, or insufficient physical activity, is a health risk that pertains to a large portion of the American population, as an estimated two-thirds of adults fail to obtain adequate exercise. In fact, this trend toward physical inactivity begins during the school-age years: an estimated "72% of ninth graders met guidelines for physical activity; yet by twelfth grade, only 56% did;"[129] and by college, only 50.4%% of students met daily activity guidelines.[130] This is cause for alarm not only because of the myriad health

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[125] Huse, "Restructuring and the Physical Context," 290.

[126] I argue that sedentary behavior is a hidden college health concern because it is not addressed as part of the National College Health Assessment, a twice-yearly, national survey that is used as a benchmark of student health needs and outcomes in the field of college health promotion. Thus, part of my argument will include the need to develop standard measures to assess sedentary behavior in order to quantify and track this health need over time. In order to achieve this goal, sedentary physiology needs to become a priority for college health promotion (to the same degree that sexual health, mental health, and alcohol and other drug use have been the three primary focus areas for college health promotion programs over the last decade).

[127] See Owen et al., "Too Much Sitting" and Hamilton et al, "Too Little Exercise and Too Much Sitting."

[128] Neville Owen, "Emergence of Research on Sedentary Behavior and Health," in *Sedentary Behavior and Health: Concepts, Assessments, and Interventions*, ed.Weimo Zhu and Neville Owen, (Champaign, IL: Human Kinetics, 2017), 4.

[129] Lawrence D. Frank, Peter O. Elgelke, and Thomas L. Schmid, *Health and Community Design: The Impact of the Built Environment on Physical Activity,* (Washington, DC: Island Press, 2003), 80.

[130] American College Health Association, "American College Health Association-National College Health Assessment II: Reference Group Executive Summary Spring 2014," (Hanover, MD: American College Health Association, 2014), 12. Results are gendered, with men engaging in more physical activity than women: 53% of male respondents and 49% of female respondents met these guidelines for physical activity. The guidelines are as follows: "Updated Recommendations for Adults. From the American College of Sports Medicine and the American Heart Association (2007): Moderate-intensity cardio or aerobic exercise for at least 30 minutes on 5 or more days per week or vigorous-intensity cardio or aerobic exercise for at least 20 minutes on 3 or more days per week."

implications of physical inactivity—which "causes roughly 5.3 million preventable deaths per year … on par with smoking," according to researcher Travis Saunders—[131] but also because of the relative absence of exercise opportunities in school settings, where learning, creativity, and attentional issues are all impacted by movement and physical activity, and where classroom learning remains largely sedentary.[132]

The Perils of Too Much Sitting

However, this isn't the whole picture. Sedentary behavior researcher Marc Hamilton and colleagues take issue with current physical activity guidelines that assume a leisure-time paradigm because "the current…guidelines emphasizing that people should exercise 30 minutes a day may be 'undone' if the person spends the remaining 15.5 hours in sedentary time."[133] The limits of these guidelines, in fact, are twofold: first, "sedentary time is closely associated with health risk regardless of how much physical activity you perform on a daily basis" because prolonged sitting can essentially "undo" the benefits reaped from exercise;[134] thus, it is possible for a person to meet the daily physical activity guidelines and be considered sedentary. In other words, "too little exercise" and "too much siting" are not equivalent epidemiological concerns and thus do not pose equivalent health risks.[135] Second, focusing on a single solution—such as increasing leisure-time physical activity—has left the unique risks of prolonged sitting largely obscured and also has served to privatize the burden for change, meaning interventions have been generally targeted at individual behavior change rather than to the environments and social settings that promote and enable healthy behaviors.[136]

This chapter is concerned with the latter definition of sedentary behavior: "too much sitting." The Sedentary Behavior Research Network defines sedentary behavior as "any behavior in the waking hours that is characterized by energy expenditure less than or equal to 1.5 METs [metabolic equivalents], while in a sitting or reclining posture."[137] By this definition, almost any seated activity, including computer work,

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[131] Travis Saunders, "Is Physical Activity a Human Right?" *Obesity Panacea, PLOS Blogs,* October 31, 2012, accessed May 5, 2017 http://blogs.plos.org/obesitypanacea/2012/10/31/is-physical-activity-a-human-right/. Saunders adds: "Inactivity is also responsible for 6-10% of all non-communicable diseases (it varies depending on the disease). Thus, inactivity causes roughly *5.3 million* preventable deaths per year, which is on par with smoking."

[132] Saunders estimates that 80% of class time is sedentary. Saunders, "Can Siting Too Much Kill You?" See also Jensen, *Teaching with the Brain in Mind* and Cranz, *The Chair*.

[133] Hamilton et al., "Too Little Exercise and Too Much Sitting," 5.

[134] Saunders, "Can Sitting Too Much Kill You?" See also Gretchen Reynolds, "Keep It Moving," *New York Times,* December 9, 2016, accessed May 5, 2017: https://mobile.nytimes.com/2016/12/09/well/move/keep-it-moving.html.

[135] Hamilton et al., "Too Little Exercise and Too Much Sitting."

[136] This is the approach of the National College Health Assessment and Healthy Campus 2020 initiative. See the American College Health Association, "National College Health Assessment," and the American College Health Association, "Objectives for the Healthy Campus 2020 Initiative," accessed March 5, 2017 http://www.acha.org/HealthyCampus/objectives.cfm. Recall that health benefits derived from interventions that do not take the classroom into consideration are likely to be undone with sedentary classroom time.

[137] Sedentary Behaviour Research Network, 2012, 540, in Owen, "Emergence of Research on Sedentary Behavior and Health," 4.

watching TV or a movie, riding or driving in a car, is considered sedentary behavior.[138] Perhaps not surprisingly, according to designer Peter Opsvik, we spend at least a third of our day sitting;[139] more specifically, a recent article in the Harvard Business Review estimates that we spend approximately 9.3 hours a day sitting (and only 7.7 hours sleeping), and sedentary behavior researcher Neville Owen estimates the average person's seated time as upwards of 10 hours per day.[140] Why do we sit so much? So-called "screen time" has taken much of the blame for our sedentary lifestyles—consider the number of hours the average person spends in front of a computer, television, or other electronic device, all of which are proxies for sedentary time—but this focus on individual behaviors obscures the role of the broader socio-environmental ecology that contributes to prolonged sitting. Owen suggests that "it seems probable that sedentary behaviors will be determined more strongly by the situations people are in than by their individual characteristics."[141] Indeed, the environments in which we spend the majority of our working hours—offices, schools, cars, and even cafes and restaurants—are designed around an assumed seated posture and therefore contribute greatly to the problem of sedentary behavior.

Recent studies in the field of sedentary physiology have linked sedentary time with obesity, diabetes, cardiovascular disease, cancer, back pain, and psychological well-being.[142] In a 2009 study, Peter Katzmarzyk and colleagues found that "the amount of daily sitting time was positively associated with mortality rates from all causes, cardiovascular disease, and other causes," even when controlling for "potential confounders, including age, sex, smoking status, alcohol consumption, [and] leisure time physical activity level."[143] Further, in a 2014 review (meta-analysis), Daniela Schmid and Michael Leitzmann found that time spent watching TV—a proxy for sedentary behavior—was "associated with increased risks of colon and endometrial cancer" and also discovered "a positive relation between high vs. low sedentary behavior and lung cancer."[144] Simply put, Saunders cautions: "all things being equal (body weight, physical activity levels, smoking, alcohol intake, age, and sex) the person who sits more is at a higher risk of death than the person who sits less."[145] Thus, sedentary behavior needs to be seen as an urgent public health concern and

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[138] There is debate about whether lying down or sleeping should be considered sedentary behavior. Bed rest is particularly bad from a physiological point of view; thus, it is often lumped into definitions of sedentary behavior, thus, often lumped in. However, sleeping has its own benefits, so some researchers think sleep should be counted separately.

[139] Peter Opsvik, *Rethinking Sitting,* (New York: W.W. Norton and Co., 2008).

[140] Nilofer Merchant, "Sitting Is the Smoking of Our Generation," *Harvard Business Review, HBR Blog Network,* January 14, 2013. See also Owen, "Emergence of Research on Sedentary Behavior and Health," 4.

[141] This is from a sedentary behavior ecological model by Owen et al. Also, they suggest Behavioral Choice Theory (BCT) as a way to identify factors that shape choice to engage in sedentary behavior including environmental design. Owen, "Emergence of Research on Sedentary Behavior and Health," 6.

[142] Zhu and Owen, *Sedentary Behavior and Health*.

[143] Peter T. Katzmarzyk, Timothy S. Church, Cora L. Craig, and Claude Bouchard, "Sitting Time and Mortality from All Causes, Cardiovascular Disease, and Cancer, *Medicine and Science in Sports and Exercise* (2009): 1002.

[144] Daniela Schmid and Michael Leitzmann, "Television Viewing and Time Spent Sedentary in Relation to Cancer Risk: A Meta-Analysis," *Journal of the National Cancer Institute* 106(2014): 11.

[145] Saunders, "Can Sitting Too Much Kill You?"

Katzmarzyk and colleagues recommend in particular that "physicians should counsel patients to not only increase their level of physical activity and maintain a normal body weight but to reduce the amount of time they spend…sitting."[146]

But how much sitting is too much? Simply put, we don't yet know. What is clear is that each hour of daily sitting appears to have significant implications for health. Schmid & Leitzmann found that "for each 2-hr increase in daily sitting time, the risk for colon cancer, endometrial cancer, and lung cancer, increased by 8%, 10%, and 6%, respectively,"[147] and a review by David Dunstan and colleagues found that for every additional hour of TV a person watched (used here as a proxy for sedentary time), the risk of all-cause mortality increased by 11%.[148] These studies suggest that finding ways to limit sedentary behavior by even modest amounts—such as an hour a day—can have significant positive effects on health. Yet official recommendations, as will be demonstrated below, have failed to keep up with or respond to these and other findings. As Owen explains: "recommendations at this point are rather broad, endorsing the importance of reducing sitting time … [but not identifying] what might be an unsafe or detrimental amount of daily sitting time or how to break up sitting time."[149] For example, the American College of Sports Medicine stated in 2011 the following position on sedentary behavior: "In addition to exercising regularly, there are health benefits in concurrently reducing total time spent in sedentary pursuits and also by interspersing frequent, short bouts of standing and physical activity between periods of sedentary activity, even in physically active adults."[150] Though helpful to distinguish the need to reduce and interrupt sedentary behavior independent of attaining sufficient physical activity, this statement offers little guidance about ideal amounts and quality of sedentary behavior.

Pathways

Why does sedentary behavior exact such harsh punishments on the human body? First, Travis Saunders suggests that sedentary time may be correlated with greater food intake; indeed, eating is much easier to accommodate while seated and still than on the go.[151] Second, sitting for long periods of time reduces a person's energy expenditure, meaning they burn fewer calories and do not reap the benefits of aerobic

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[146] Katzmaryk et al., "Sitting Time and Mortality," 1004.

[147] Peter Janiszewski, "Too Much Sitting May Increase Cancer Risk," *Obesity Panacea, PLOS Blogs*, June 19, 2014, ccessed May 5, 2017 http://blogs.plos.org/obesitypanacea/.

[148] David W. Dunstan, E.L.M. Barr, G.N. Healy, J. Salmon, J.E. Shaw, B. Balkau, D.J. Magliano, A.J. Cameron, A.Z. Zimmet, N. Owen, "Television Viewing Time and Mortality: The Australian Diabetes, Obesity, and Lifestyle Study (AusDiab)," *Circulation* (2010). Additionally, given the unique and potentially devastating consequences posed by just a few hours of sitting each day, we would be well advised to develop new ways to measure sitting itself, rather than—or at least in addition to—relying on proxies like screen time, though such measurements do allow some insight into the contexts of sedentary behavior.

[149] Owen, "Emergence of Research on Sedentary Behavior and Health,", 7.

[150] Garber et al., 2011, in David Dunstan, Bethany J. Howard, Audrey Bergouignan, Bronwyn A. Kingwell, and Neville Owen, "Physiological Effects of Reducing and Breaking Up Sitting Time," in *Sedentary Behavior and Health: Concepts, Assessments, and Interventions*, ed. Weimo Zhu and Neville Owen, (Champaign, IL: Human Kinetics, 2017), 42.

[151] Saunders, "Can Sitting Too Much Kill You?"

exercise. This can lead to weight gain and poor cardiovascular health, which can, in turn, lead to further incidence of morbidity.

Third, prolonged sitting interferes in a long-lasting way (beyond a missed opportunity for exercise implied above) with the body's metabolic processes that help a person lose and keep off weight.[152] Musculoskeletal physiology researcher Kenneth McLeod explains that when a person is seated for a long period of time, blood and other fluids "pool in the lower part of the body. This pooling significantly reduces the amount of fluid returning to the heart and, correspondingly, reduces how much fluid the heart can pump out during each contraction. This reduces cardiac output, which dictates a reduced [Resting Metabolic Rate or] RMR."[153] Such problematic blood circulation, caused by the inability of the lower-leg muscles to sufficiently pump and return blood to the heart during prolonged sitting,[154] is associated with a range of generalized symptoms including varicose veins, swollen or cold hands and feet, dizziness, and even trouble concentrating, all of which can contribute to more severe cardiovascular problems.[155] Further, this phenomenon has significant implications for weight loss and metabolism because an estimated 80% of the calories an average person burns in a day are due to RMR activities such as breathing and other life-essential (though largely non-volitional) life processes. Thus, reducing RMR reduces calorie expenditure in a major way.

Finally, Saunders adds that a host of additional physiological adaptations such as "changes in skeletal muscle and HDL cholesterol, increased insulin resistance" due to: "reductions in the activity of lipoprotein lipase, an enzyme which allows muscle to uptake [digest] fat." Thus, without lipase, more fat circulates in the blood. Lipase also influences cholesterol levels which, if high, can pose their own challenges to health.[156]

Interventions

As suggested above, each hour of sedentary time has significant, quantifiable implications for human health; thus, any time that a person can spend standing, perching, walking, or engaging in an activity *other than* sitting or lying down—even just an hour at a time—represents a health-promoting intervention. Genevieve Healy and colleagues have also found that punctuating long periods of seated time with breaks (e.g., brief periods of standing, stretching, or moving) interrupts some of the deleterious impacts of sedentary behavior. Specifically, the authors note that: "more interruptions in sedentary time [are] beneficially associated with metabolic risk variables" such as weight circumference, body mass index (BMI), and triglyceride and glucose levels.[157]

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[152] Kenneth McLeod, "Why Do So Many People Regain Weight After Going on a Diet?" *Washington Post,* December 30, 2016, accessed May 5, 2017 https://www.washingtonpost.com/.

[153] McLeod, "Why Do So Many People Regain Weight After Going on a Diet?"

[154] This phenomenon is referred to as the body's "two hearts" – the heart that pumps blood to the body's extremities, and the lower-leg muscles that return blood to the heart. Sonostics "Heart Partner" film, accessed May 5, 2017 https://www.sonostics.com/leg-issues/.

[155] Ibid.

[156] Saunders, "Can Sitting Too Much Kill You?"

[157] Genevieve N. Healy, David W. Dunstan, Jo Salmon, Ester Cerin, Jonathan E. Shaw, Paul Z. Zimmet, Neville Owen, "Breaks in Sedentary Time: Beneficial Associations with Metabolic Risk," *Diabetes Care* 31(2008): 663.

These findings suggest that interventions to reduce or interrupt sedentary behavior can have a significant impact even without having to completely eliminate sitting.

In contrast to the robust state of the science of sedentary physiology is a relative dearth of meaningful, evidence-based interventions and policy recommendations to reduce sedentary behavior. The link between prolonged sitting and a host of deleterious health consequences has been well documented—certainly well enough to justify a range of interventions and policy recommendations—and the general public seems to have taken interest in this issue, as recent articles in the *New York Times* and the rising popularity of sit/stand and treadmill desks attest.[158] Sedentary behavior researchers Jordan Carlson and James Sallis reviewed a number of interventions to reduce sedentary behavior in home, work, educational, and community settings (see Table 2), but acknowledge the need to conduct more studies to evaluate the efficacy of existing interventions, develop more interventions to reduce sedentary time, design policies and environments that help overcome the barriers imposed by existing solutions, and build "political feasibility and population acceptance" to ensure the success of all of the above, as "many … interventions [to reduce sedentary behavior] would be considered unfamiliar or even radical."[159] However, institutions such as the American Heart Association have yet to articulate a formal recommendation regarding levels of sedentary behavior beyond a vague recommendation to "sit less and move more."[160] Worse yet, sedentary behavior is absent from evaluation programs such as the National College Health Assessment and forward-looking plans such as Healthy People 2020. Thus, each of these institutions and programs still labor under an outdated and incomplete definition of sedentary behavior—focusing only on lack of exercise—rather than the more pressing concern of too much sitting and, in so doing, fail to provide adequate data to quantify the problem or guidelines to go about addressing it.

Solutions to reduce sedentary behavior, then, tend to be local in scale and rely on individual behavior change, thereby limiting their potential efficacy in ameliorating this major threat to public health.[161] For example, researchers from Binghamton University have created a machine to stimulate movement in the lower legs of desk-bound workers, thereby helping to prevent reduced circulation and lowered metabolic

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[158] The general public seems to have taken note, evidenced by recent articles in in the *New York Times* (see Introduction), the rise of treadmill and adjustable-height desks, people saying things like "sitting is the new smoking," and the burgeoning panache of walking meetings (regarding the latter, see Merchant, "Sitting is the Smoking of Our Generation."

[159] Jordan A. Carlson and James F. Sallis, "Environment and Policy Interventions," in *Sedentary Behavior and Health: Concepts, Assessments, and Interventions*, ed. Weimo Zhu and Neville Owen (Champaign, IL: Human Kinetics, 2017), 294.

[160] For example, a 2016 press release from the American Heart Association articulates and recognizes the problem of sedentary behavior, but does not offer specific guidelines for how much to sit. In contrast, guidelines for exercise are well established. American Heart Association, "Sedentary Time May Raise Heart Disease Risk – Sit Less, Move More," *American Heart Association Scientific Statement,* August 15, 2016, accessed May 5, 2017 http://newsroom.heart.org/news/sedentary-time-may-raise-heart-disease-risk-sit-less-move-more.

[161] Fran Baum and Matthew Fisher, "Why Behavioural Health Promotion Endures Despite its Failure to Reduce Health Inequities," *Sociology of Health and Illness* 36(2014).

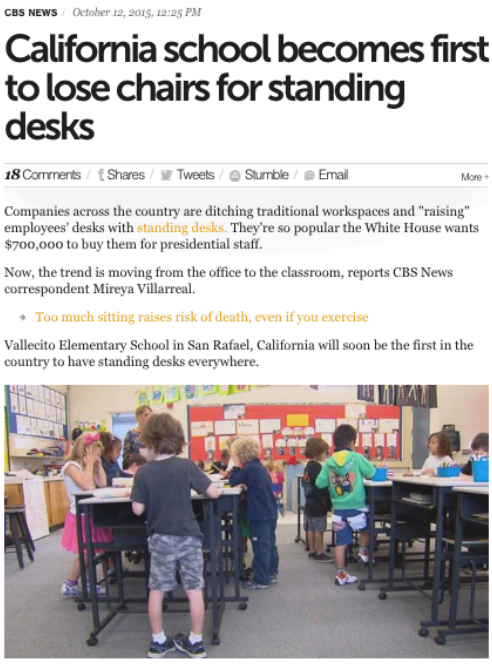
processes that accompany prolonged sitting.[162] Though this machine can stem some of the negative impacts of sedentary behavior, it is an expensive technical and individually-focused solution to a complex cultural problem.[163] By placing the onus on individual workers to acquire this costly device, this solution is limited in scope and privatizes the burden for change: rather than trying to change norms around movement and postural variation in office settings or redesigning workplaces to welcome more than just the seated posture, it takes the existing environmental and cultural norms for granted, and limits its efficacy by focusing only on individual behavior change.[164]

Table 2. Strategies to Reduce Sedentary Behavior, reproduced and adapted from "Settings and Strategies for Environment and Policy Interventions for Reducing Sedentary Behavior," by Carlson & Sallis, 2017, Table 23.1.

Context	Evaluated Strategies	Sample Unevaluated Strategies
Home	Restricted, contingent, or active screen time	Redesigning furniture and room layout
Workplace	Standing desks, computer prompts, physical activity breaks	Redesigning vehicles used for work, conference rooms, and other workplace settings; standing breaks during meetings
School	Active lessons, standing desks	Regular breaks from sitting
Community	None	Standing applause, standing during events, standing-height tables (e.g., in restaurants)
Transportation	Walkable neighborhoods	Redesigning or increasing the availability of public transit, parks

In another example, Vallecito Elementary School in San Rafael, California, recently outfitted each of its twenty-two classrooms with standing-height desks (and optional stools) in order to help students stay more active (and focused) throughout the day (Image 12).[165] According to teachers at the school—and Dr. Steven Mittelman, director of the Diabetes & Obesity Program at Children's Hospital Los Angeles, who weighed in on this intervention—providing kids with standing-height desks is indeed a positive action because it introduces physical activity and its associated advantages to students. Specifically, the desks make standing (or perching on a stool, if kids prefer) the default position, thereby reducing the amount students sit each day, and also promote cognitive and behavioral benefits by welcoming movement into the classroom.

[162] Sonostics, "Heart Partner."
[163] McLeod, "Why Do So Many People Regain Weight After Going on a Diet?"
[164] Baum & Fisher, "Why Behavioural Health Promotion Endures."
[165] CBS News, "California School Becomes First to Lose Chairs for Standing Desks," *CBS News,* October 12, 2015, accessed May 6, 2017 http://www.cbsnews.com/news/vallecito-elementary-school-in-northern-california-brings-standing-desks-into-the-classroom/.



CBS NEWS / October 12, 2015, 12:25 PM

California school becomes first to lose chairs for standing desks

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Companies across the country are ditching traditional workspaces and "raising" employees' desks with standing desks. They're so popular the White House wants $700,000 to buy them for presidential staff.

Now, the trend is moving from the office to the classroom, reports CBS News correspondent Mireya Villarreal.

Too much sitting raises risk of death, even if you exercise

Vallecito Elementary School in San Rafael, California will soon be the first in the country to have standing desks everywhere.

Image 12. Screen shot of news article about standing-height desks in a school in San Rafael, CA. *CBS News*.

A study by Greet Cardon and colleagues investigated the impact of a similar "moving school" classroom intervention, wherein standard desks were replaced by standing desks and furniture was arranged to "provide students with an open area for walking around." The results were promising: "31% of children's sitting time was replaced by standing and 10% was replaced by walking" and, importantly, these changes did not come at the expense of children's productivity with reading and writing.[166] Still, the scope of the intervention at Vallecito Elementary school is limited, as it affects only 22 out of the thousands of elementary school classrooms in California, not to mention all other sites of learning and work that promote sedentary behavior.

Thus, despite more than a century of worry about the perils of prolonged sitting—and sedentary student life in particular—and recent findings regarding the specific pathways by which sedentary behavior leads to deleterious health outcomes, learning and working environments remain largely unchanged, official guidelines fail to account for the specific perils of too much sitting, and change is limited to the actions of motivated individuals. How did we get here?

Sedentary Behavior in College Settings

This chapter focuses on sedentary behavior in the spatial, social, and historical context of the college campus. There is good reason for us to be concerned with the health and education implications of this landscape. First, considering the health effects of college campuses has significant implications for about 20 million students (and about 40% of all Americans aged 17-24) enrolled in post-secondary institutions in the United States, not to mention faculty and staff.[167] Second, university settings are one of the most significant environments in which many young people spend the "emerging adulthood" years of their lives (18-25 years of age); in this temporal—and indeed, environmental—context, students establish their independence, identity, and long-term behavior patterns. Of particular interest is the fact that these emerging adulthood years represent a period of "unique importance" in the development of long- term health-related behaviors: nutritional intake, physical activity, and sleep in college are

[166] Carlson & Sallis, "Environment and Policy Interventions," 290. See also Greet Cardon, Dirk DeClercq, Ilse DeBourdeaudhuij, and Dieter Breithecker, "Sitting Habits in Elementary Schoolchildren: A Traditional Versus a "Moving School," *Patient Education and Counseling* 54(2004), 133–142.

[167] National Center for Educational Statistics, "Back to School Statistics," National Center for Educational Statistics, 2016, accessed May 6, 2017: https://nces.ed.gov/fastfacts.

associated with healthy behaviors later in adulthood.[168] Thus, the college campus is an essential environment in which to intervene to promote short- and long-term health outcomes.[169]

Yet college campuses are relatively under-studied as healthy *places*,[170] and sedentary behavior in particular is a hidden health concern,[171] unaddressed in the National College Health Assessment survey and excluded from the American College Health Association's Healthy Campus 2020 initiative.[172] The lack of precise survey data makes exact figures about the amount of sitting college students difficult to obtain. However, in a landmark study in 2009, Janet Buckworth & Claudio Nigg estimated that students engage in at least 40 hours of sedentary behavior each week; informal sitting logs from Professor Galen Cranz's architecture courses suggest that this estimate may be low.[173] Travis Saunders estimates that 80% of class time is completely sedentary; though he does not specify the grade level, we can assume he refers to K-12 environments, since that is where the majority of literature focusing on sedentary behavior in educational environments is aimed.[174] Excessive sitting is linked to back pain, which can interfere with learning and attendance, and in the Spring 2015 National College Health Assessment survey, 12% of college student respondents reported having experienced back pain sometime within the last 12 months.[175] In contrast, cognition, reflection, and creativity are all linked to bodily movement,[176] and physical activity can also prove therapeutic for children with ADHD.[177] Thus, given the harm of prolonged siting and myriad benefits of movement, it is clear that there is much to be gained from focusing on environmental interventions to interrupt the sedentary norm of campus spaces (Image 13). In fact, the World Health Organization has identified (elementary) schools as primary sites for health interventions due to the length of time students spend at school; I argue that colleges similarly serve as ideal settings in which to intervene in sedentary behavior due to the time students spend on campus,[178] the

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[168] Melissa C. Nelson, Mary Story, Nicole I. Larson, Dianne Neumark-Sztainer, and Leslie A. Lytle, "Emerging Adulthood and College-Aged Youth: An Overlooked Age for Weight-Related Behavior Change," *Obesity* 16(2008): 2205-2211.
[169] Leslie et al., "Insufficiently Active Australian College Students."
[170] I have only found one published study, aside from my own, on the specific topic of sedentary behavior in college environments: Buckworth and Nigg, Physical Activity, Exercise, and Sedentary Behavior Among College Students."
[171] Caitlin DeClercq and Galen Cranz, "Moving Beyond Seating-Centered Learning Environments: Opportunities and Challenges Identified in a POE of a Campus Library," *Journal of Academic Librarianship* 40(2014): 574-584.
[172] See: American College Health Association, "American College Health Association-National College Health Assessment," and American College Health Association, "Objectives for the Healthy Campus 2020 Initiative."
[173] Galen Cranz, personal conversation.
[174] I suspect that a higher percentage of class time at the college level is sedentary, where bodies are largely forgotten, obscured under the weight of the mind.
[175] American College Health Association, "American College Health Association-National College Health Assessment."
[176] Jensen, *Teaching with the Brain in Mind*.
[177] Matthew B. Pontifex, Brian J. Saliba, Lauren B. Raine, Daniel B. Picchietti, Charles H. Hillman, "Exercise Improves Behavioral, Neurocognitive, and Scholastic Performance in Children with Attention-Deficit/Hyperactivity Disorder," *The Journal of Pediatrics* 162(2013): 543-551.
[178] Nelson et al., "Emerging Adulthood and College-Aged Youth."

Image 13. Classroom in Rockefeller Hall, Vassar College (1897). Rows of stationary chairs signify the sedentary norm of campus learning environments. *Photo by author.*

potential for college health interventions to inform larger public health solutions,[179] and the historical interest of college administrators and physical education faculty in this topic. In fact, for the greatest impact, interventions to promote movement in educational settings should be planned at all stages of education, from pre-school and kindergarten to high school and college; such a lifecourse approach would teach young people to move while learning and continue providing affordances to promote this practice throughout their educational tenures.

Though recent findings regarding the perils of sedentary behavior give this subject new urgency, in fact the dangers of prolonged sitting in educational settings is a topic that has long preoccupied the minds of educators, health professionals, and the general public. This chapter articulates how this threat to student health has been defined (and by whom), responded to through shifting administrative, pedagogical, and environmental interventions, and ultimately left largely unmitigated, thereby necessitating new approaches to mitigate sedentary behavior and its effects.[180]

History: Origins of Concern for Sedentary Student Body in the 19th Century

Since the founding of the earliest colleges in the United States, campus designers and administrators have shaped, designed, and modified campus environments to promote healthy student bodies.[181] Though the character of these interventions has changed according to shifting definitions of health and institutional concern for the student body, the link between health and education is a consistent theme in the history and practice of campus planning and design. While the earliest (men's) colleges were built away from cities—"sequestered," in the words of the trustees of newly-formed Princeton University (1753), "from the various temptations attending a promiscuous

[179] For example, Heather Munro Prescott demonstrates how college campuses' birth control programs influenced broader, nation-wide programs. See: Prescott, *Student Bodies*.

[180] This concern, shared by physical educators and health professionals of the era, resulted in a host of interventions, bodily, pedagogical, and architectural on campus. Yet by the late twentieth century, interest in sedentary behavior waned in favor of other health concerns, physical education declined along with the traditional institutional role of *in loco parentis*, and in K-12 environments, time for physical activity—recess—increasingly was seen as a barrier to much-needed in-class time to prepare for an increasing regime of standardized tests. Yet with obesity and other chronic illnesses on the rise and burgeoning research into the unique perils of prolonged sitting in the field of sedentary physiology, today this concern is coming back into focus.

[181] And, in turn, a healthy student body.

Image 14. Etching of Main Hall (1865), which housed the entirety of Vassar College at the time of its founding. *Archives and Special Collections, Vassar College Libraries.*

converse with the world, that theater of folly and dissipation"[182]—women's colleges took additional precautions to protect students: Vassar College was designed not as a "community of buildings" but as a single, impressively scaled structure to better shelter (female) student bodies (Image 14).[183]

The Sedentary Campus

As mentioned above, as early as 1855, the sedentary student body preoccupied the minds of campus administrators; in that year the president of Amherst College declared: "No one thing has demanded more of my anxious attention than that of the [failing] health of the students;" to blame was "the sedentary life of the scholar…during which 'physical exercise is neglected."[184] This concern for the student body—shared by administrators and health professionals and echoed by larger social anxieties about the health of the *body politic*—shaped the design of the earliest college campuses and continues to reverberate, albeit in different forms, today.

Indeed, the advent of mass education—elementary and secondary—provoked concern in nineteenth-century minds about the potential dangers that lurked in classroom desks, buildings, and the bodily practices they fostered. In 1884, Alfred Gihon, President of the American Public Health Association delivered an address to that organization in which he cautioned that primary schools were making children sick. As historian Richard Meckel explains, Gihon:

> Charged that too often these "stately school-houses are crowded beyond every sanitary propriety with hordes of feeble children" whose health was being destroyed not only by confinement in ill-ventilated schoolrooms but also by lack of exercise and a school-day schedule that stunted their growth and development. "Are not," [Gihon] asked, "their undeveloped plastic bodies distorted on uncomfortable seats, at uncomfortable desks, their eye- sight progressively deteriorated by glaring windows and poor type, their physiological necessities opposed by inexible [*sic*] rules and protracted hours?"[185]

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[182] W. Barksdale Maynard, *Princeton: America's Campus,* (University Park, PA: The Pennsylvania State University Press, 2012), 12. See also Paul V. Turner, *Campus: An American Planning Tradition,* (Cambridge, MA: The MIT Press, 1984); Prescott, *Student Bodies*; and Horowitz, *Alma Mater*.

[183] See Turner, *Campus;* Prescott, *Student Bodies*; and Horowitz, *Alma Mater.*

[184] Prescott, *Student Bodies,* 30.

[185] Meckel, *Going to School, Getting Sick*, 186.

For Gihon—and indeed many critics of women's higher education, as discussed in Chapter 2—children's gain in knowledge came at a great price: that of their health.[186]

In Victorian America, amidst rapid modernization, the rise of institutions, and women's increased entry into public spheres of learning and work—which also tended to be sedentary environments, more so than the housework and other activities women traditionally engaged in in the private domestic sphere—concerns about health were conflated with anxieties about these changing gender and social roles.[187] Seeing health in tandem with gender had two important implications: first, women's bodies bore the burden of social anxieties about the perils of modern life to a greater degree than men's. Medical historians Carroll Smith-Rosenberg and Charles Rosenberg explain that in this context: "A woman who lived 'unphysiologically'—and she could do so by reading or studying in excess, by wearing improper clothing, by long hours of factory work, or by a sedentary, luxurious life—could produce only weak, degenerate offspring."[188] Second, colleges, a new institution for women in the nineteenth century, were seen as particularly suspect environments for women's health. For example, in 1891, physician Mary Taylor Bissell argued that in addition to women's sedentary lifestyles,[189] the long hours they spent at school were of particular concern for their health: lack of air and ventilation in classroom buildings and poor posture in school desks damaged women's physical health. Regarding the latter, Bissell cautioned that sustained sitting and poor posture is "not only unbeautiful but may be possibly deforming."[190] Bissell's observations were emblematic of Victorian anxieties about sanitary construction, poor posture, and what Harvey Greene calls "bad air," yet also represented a distinct theory of women's health than that offered by conservatives such as Edward Hammond Clarke who blamed over-study and the mental rigors of higher study on women's poor health and (supposed) inability to reproduce (Image 15).

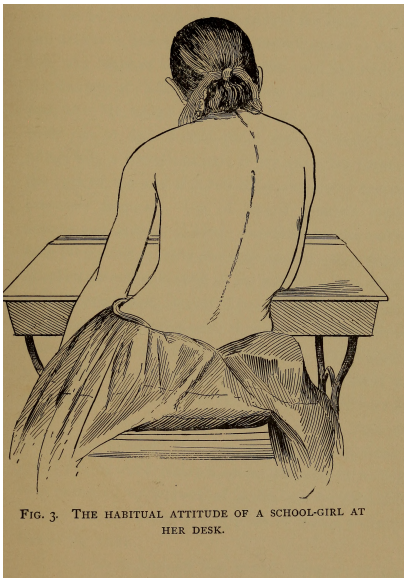
FIG. 3. THE HABITUAL ATTITUDE OF A SCHOOL-GIRL AT HER DESK.

Image 15. Image of poor posture caused by prolonged sitting in standard school desks, from Mary Taylor Bissell (1891). *Bissell, Physical Development and Exercise for Women, Figure 3, p. 48-49.*

Prolonged sitting, then, was endemic to this new institution, and shaped—though not without conflict or agenda—the design, administration, and curriculum of nineteenth-century institutions of higher education. In

[186] Ibid. Though much of Gihon's caution may read as a bit over-zealous by today's standards, indeed, he does articulate a number of real health concerns that continue to plague those of us who spend the majority of our days seated in schools, offices, and the like.
[187] Kogan, "Sex Separation" and Park, "Sport, Gender, and Society."
[188] Carroll Smith-Rosenberg and Charles E. Rosenberg, "The Female Animal: Medical and Biological Views of Woman and Her Role in Nineteenth-Century America," in *Women and Health in America: Historical Readings*, ed. Judith Walzer Leavitt, (Madison, WI: University of Wisconsin Press, 2nd ed, 1999), 114.
[189] Bissell, *Physical Development and Exercise for Women*, 42.
[190] Ibid., 48.

response to concerns about the perils of sedentary behavior, health professionals and school administrators suggested different remedies depending on their theory of disease. For critics like E. H. Clarke, the solution to the problem of "school sickness," at least in regard to women's experience in institutions of higher education, lay in avoiding mental fatigue, a suggestion tantamount to avoiding higher study altogether.[191] For others, the solution was education itself: *bodily* education meant to strengthen women's bodies to withstand the rigors of mental work and stave off the ill effects of prolonged sitting. Mary Taylor Bissell was an enthusiastic advocate of women's physical education, noting in an 1886 essay entitled "Physical Education as a Factor in Liberal Education," that "the value of physical exercise cannot be over-estimated as a sedative to emotional disturbances and a relief from that nervous irritability and hypochondria too often engendered by a sedentary or idle life."[192] Yet to Bissell, physical exercise, which nineteenth-century women would get from "walking in city streets or…domestic work" or in riding schools or "increasingly, from calisthenic programs," must be structured in order to "promote symmetric, total-body development." To that end, she proposed "regular use of a gymnasium, under proper supervision, at least twice weekly, and, when practicable, three times, in addition to the brisk walk…in fresh air."[193] To do this would be to "[secure] the foundation of a sound physique upon which the structure of a cultured mind may rest secure."[194] For men, physician and physical health educator Dudley Allen Sargent proposed a similar course of action. Given the "confinements of school life," including long hours in the classroom, Sargent called for physical education courses as well as "helpful, corrective exercises" to be added to college curricula to prevent student bodies from maturing into an "enfeebled condition."[195]

In each of the above examples, the sedentary body—a product of the institution of schooling—was seen as problematic: educators and medical professionals feared that prolonged exposure to unventilated classrooms and school desks would result in sickly, malformed bodies that could not reproduce. Schools have long been identified as institutions of control, and classrooms in particular exercised type of bodily control over students expected to sit for long periods of time in a singular posture. Yet controlling the body for sedentary learning and study created a new problem for the institution to resolve: that of (presumably) weak, malformed, reproductively incapable student bodies. Movement, notably in the form of physical exercise and bodily instruction, therefore, became a way to intervene in this problem, to *control* student bodies in a different way: toward a desired health outcome.[196] Importantly, the novelty of this development is that the institution of higher education—already empowered with its

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[191] Clarke, *Sex in Education*.
[192] Mary Taylor Bissell, "Physical Training as a Factor in Liberal Education," 1886, in *The Dangers of Education: Sexism and the Origin of Women's Colleges*, ed., Rothman and Rothman.
[193] Ibid. Bissell also advocated the need for proper clothing ("suitable dress"), unlike corsets popular at the time. See also: Bissell, *Physical Exercise and Development for Women*.
[194] Bissell, "Physical Training as a Factor in Liberal Education."
[195] Dudley Allen Sargent, *Health, Strength, and Power,* (New York: H.M. Caldwell Co., 1904), 68-69.
[196] We might consider this a biopolitics of the student body. See Rabinow and Rose, "Biopower Today."

function to stand *in loco parentis*, in the place of the parent, became charged with caring for the minds *and bodies* of its students.

As will be demonstrated below, this merging of bodily education with the education of student minds had a profound impact on the design of nineteenth-century college campuses. In particular, one building type served as the focal point of administrative and pedagogical efforts to respond to the perils of sedentary study: the campus gymnasium. Sport historians Patricia Vertinsky and Sherry McKay explain that "the college gymnasium was the essential facility for early gymnastic and calisthenic [programs] designed to remediate the health and strength of students in higher education."[197] Often among the first buildings to populate a new campus, gymnasia housed special apparatuses for physical training and postural remediation, both of which were intended to strengthen and train student *bodies*—through requisite courses, exercises, and examinations—to withstand the rigors of scholarly life.[198] Further, gymnasia housed a number of additional practices that sought to study and intervene upon the student body: anthropometric measurements and posture photos first were used as a means to demonstrate the positive impact of physical education regimes on the student body, and later became instruments to imagine ideal bodies.[199] This constellation of interventions was justified under the historical function of *in loco parentis* assumed by college administrators.[200]

Theoretical Background

As will be demonstrated below, sedentary behavior has been defined and responded to in a variety of ways since the mid-nineteenth century. To analyze these interventions in historical and social context—and to understand their limits according to what we know today about the deleterious health impacts of prolonged sitting—requires us to consider the relationship between public health theory and intervention, and how each are shaped by broader social forces. As the late social epidemiologist John Cassel reminds us, public health interventions are tied to the theories of disease one espouses.[201] For example, if we see health as individually determined, then we aim to improve it through individual behavior change and skill acquisition; yet if we see health as shaped by external forces, then we look to interventions in social and built environments as change agents.

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[197] Vertinsky and McKay, *Disciplining Bodies in the Gymnasium*, 3.

[198] Vassar's Calisthenium dates to 1867 (the campus was founded in 1865); Berkeley's Harmon Gymnasium was erected in 1879 (the campus was stabled in 1868).

[199] For more on posture photos, see Ron Rosenbaum, "The Great Ivy League Nude Posture Photo Scandal," *The New York Times,* January 15, 1995; Heather Munro Prescott, "Using the Student Body: College and University Students as Research Subjects in the United States During the Twentieth Century," *Journal of the History of Medicine and Allied Sciences* 57(2002): 3-38; and Prescott, *Student Bodies.* This practice of taking posture photos extended into the 1960s.

[200] "From the start of the Republic until well after the Second World War", Simon explains: "The rationale for governing American higher education was articulated largely in terms of its paternalistic duty to shape the values of students. The law played a key role in framing this position in the twentieth century through the legal doctrine of *in loco parentis*, by which higher education institutions were held to stand legally 'in the place of the parent.'" Simon "In the Place of the Parent," 15.

[201] John Cassel, "The Contribution of the Social Environment to Host Resistance," *American Journal of Epidemiology,* 104(1976): 107.

Individual vs. Environmental Perspectives

A primary method of health promotion is health education, which aims to build the capacity of individuals and populations to increase their health knowledge and literacy.[202] For example, Richard Crosby and colleagues explain that: "behavioral and social science theory provides a platform for understanding why people engage in health-risk or health-compromising behavior and why [and how] they adopt health-protective behavior."[203] Traditionally, such theories have tended to preference individual-level factors in attempts to identify, measure, and conceive of health-related behaviors. Yet, individual-level theories are informed by and perpetuate several assumptions about the nature of behavior; for example, "they tacitly posit the individual as the key decision maker responsible for his or her health and, as a corollary…that behavior is under volitional control."[204] Thus, the limitation of health education is that, even when employed on a large scale, it is most often individually-focused, aiming to promote knowledge, behaviors and attitudes in *individuals*, thereby limiting the scope of and burden for change.[205]

In contrast, several sociological concepts further demonstrate this dialectical process between individuals and environments.[206] First, the concept of a *health environment* includes all social, institutional, or physical features within an environment that can affect an individual's behaviors. These features are external to—yet shape in profound ways the behaviors of—an individual. Specifically:

> The social environment includes such variables as social support, role modeling, persuasion, and social norms…. The institutional environment includes rules or policies established by institutions to which individuals belong…. The physical environment includes climate, topography, and physical structures of a community as well as the availability of relevant facilities and services.[207]

The concept of a health environment demonstrates the limits of an individual-level approach to understand and explain behavior because it illuminates the complex system of social, institutional, and physical features that influence the range of possible behaviors.[208] In other words, individual behavior is both influenced by and exerts

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[202] Don Nutbeam, "Health Promotion Glossary," *Health Promotion International,* 13(1998): 351.
[203] Richard A. Crosby, Michelle C. Kegler, and Ralph J. DiClemente, "Understanding and Applying Theory in Health Promotion Practice and Research," in *Emerging Theories in Health Promotion Practice and Research: Strategies for Improving Public Health*, ed. Ralph J. DiClemente, Richard A. Crosby, and Michelle C. Kegler, (San Francisco, CA: Jossey-Bass, 2002), 1.
[204] Crosby et al., 2002, "Understanding and Applying Theory in Health Promotion Practice and Research," 5-6.
[205] Ibid. See also Baum & Fisher, "Why Behavioural Health Promotion Endures Despite its Failure to Reduce Health Inequities."
[206] Amy Schulz and Mary E. Northridge, "Social Determinants of Health: Implications for Environmental Health Promotion," *Health Education & Behavior,* 31(2004): 458-471.
[207] Howell Weschler, Randolph S. Devereaux, Mararet Davis, and Janet Collins, "Using the School Environment to Promote Physical Activity and Healthy Eating," *Preventive Medicine,* 31(2002): 122. Note that term "institution" here refers in the sociological sense to a complex organization; see Cranz, "Levels of Analysis in Environmental Design."
[208] Similarly, both social ecological theory and social cognitive theory highlight the influence of the environment on behavior: the former "posits that the environment largely controls or sets limits on the behavior that occurs within

reciprocal influence on the environment. Schools, then, must provide ecological opportunities for health; the built environment is one essential element to that end.

Another approach to promote health is to "[influence] underlying social and economic conditions and physical environments which impact upon health."[209] The social-ecological model of health (Image 16) exposes the role of *both* environmental conditions (e.g., environmental affordances, qualities, risks, resources) *and* the relationship between people and environments (e.g., perception, access) that shape health outcomes. Further, environmental interventions not only have the power to influence individual behaviors and interactions, but also can support individual and collective practices and organizational policies and services. Given this vast potential for change, Dr. Howell Weschler and colleagues note that "interventions to modify the environmental factors that influence behavior have become integral to health promotion theory and practice," particularly in educational settings.[210]

Still, environment-behavior researcher Daniel Stokols points out that "the majority of health promotion programs that have been implemented in…community settings have been focused on individuals rather than environments," a sentiment echoed by public health scholars Fran Baum & Matthew Fisher who argue that such a perspective privatizes the burden for change by targeting individual behavior change rather than changes in physical environments.[211] Instead, Stokols advocates an ecological paradigm in which: "health promotion is viewed not only in terms of specific health behaviors of individuals, but more broadly as a dynamic transaction between individuals and groups in their socio-physical milieu."[212] Here, Stokols offers a definition of health that implies the need for broader evaluations and measures (beyond the individual) that, in turn, can inform new—and more broadly effective—interventions into the built and social environment.

The Social Paradigm

Medical historian John Duffy has shown that the description of observed behaviors or physical symptoms can change over time and in different contexts.[213] Duffy also explains that the social response to an illness has a great deal to do with its classification (or not) as an epidemic. Thus, the historical study of disease is necessarily interpretive, requiring that the social context and social conception of disease and its interventions must also be considered.[214]

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it," while the latter "holds that behaviors are influenced by personal, environmental, and behavioral factors and that these factors are dynamic and constantly interacting. Weschler et al., "Using the School Environment to Promote Physical Activity and Healthy Eating," 122.

[209] Nutbeam, "Health Promotion Glossary," 354.

[210] Weschler et al., "Using the School Environment to Promote Physical Activity and Healthy Eating," 133.

[211] Daniel Stokols, "Establishing and Maintaining Healthy Environments: Toward a Social Ecology of Health Promotion," *American Psychologist* 47(1992). See also Baum & Fisher, "Why Behavioural Health Promotion Endures Despite its Failure to Reduce Health Inequities."

[212] Stokols, "Establishing and Maintaining Healthy Environments," 8.

[213] Duffy, "Social Impact of Disease in the Late Nineteenth Century."

[214] This is a particularly salient insight when considering the ideal body, a topic not uncommon to anthropometrists (and eugenicists): the body politic was a prism through which female bodies seen and judged healthy—"fit"—or not.

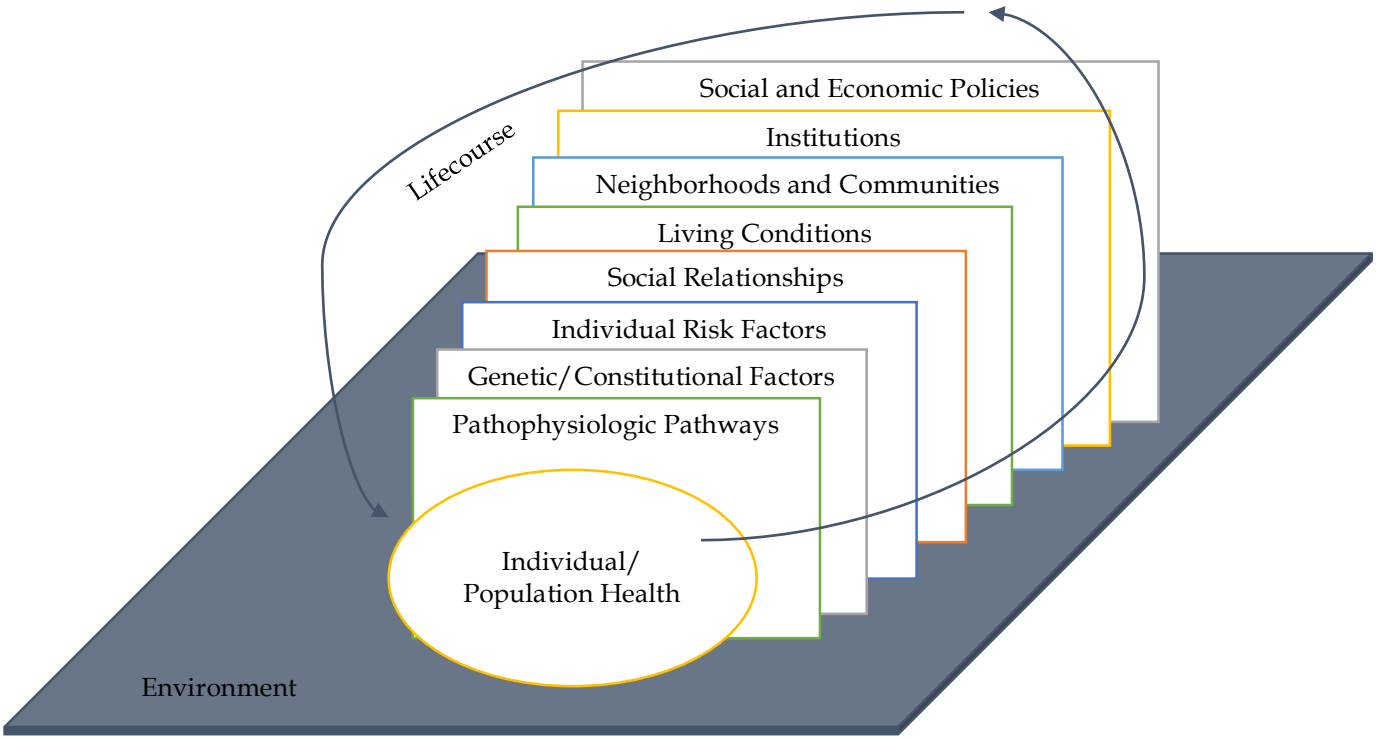

Image 16. Ecological model of health, adapted from Kaplan, "What is the Role of the Social Environment in Understanding Inequalities in Health," Figure 1, p. 117.

Historical Paradigms of Intervention: A Theoretical Model

Sedentary behavior has been primary preoccupation among administrators and health professionals since at least the nineteenth century. Within the institution of higher education, prolonged sitting was conceived of as a health risk to the student body and intervened upon through a constellation of administrative, pedagogical, and built environment interventions. These actions were shaped by prevailing ideas about the dangers of too much sitting and translated through shifting administrative paradigms on campus. Architectural historian Paul Turner argues that American universities are unique in the attention they pay to the "extracurricular lives of students," evidenced by the gymnasia and dormitories that accompany classroom buildings on campus,[215] as well as, according to legal scholar Jonathan Simon, the

[215] Turner, *Campus*, 3-4. European and American education differed in terms of physical education and sporting opportunities as well. Roberta Park articulated a "transatlantic comparison" between British and American physical education during the Victorian period, and noted the influence in particular of British models in American sports: "the vector arrow points westward from Great Britain to the United States. The antecedents of American forms of sports – and the values associated with them, at least initially – came from Great Britain, especially from England." Calisthenics and gymnastics, on the other hand, were primarily influenced by German and Scandinavian models and immigrants to the US. One comparison that Americans often made to their British counterparts was the observation (and associated anxiety) that "Americans were physically inferior to their English contemporaries," particularly in the mid- to late-1800s. Park explains: "In general, the tendency was to assume repeatedly that English girls and women were physically superior to American women. Graham's Journal of Health and Longevity, for example, declared in 1838: 'English girls, it is well known, walk five or six miles with ease. They do not reason, as our girls do,

programs and policies enacted over time to "govern the non-academic lives of their students."[216] Regarding the latter—administrative paradigms to organize and govern the student body—Simon has identified distinct "eras," described below, each of which differs according to three dimensions of government: the legitimizing discourses that justify the government of student lives, the practices that become problematized and the programs initiated "to reform efforts," and the "specific mechanisms which permit the governed subjects to be defined, targeted, and reached."[217]

Administrative Paradigms

The traditional role of colleges to stand *in loco parentis* began in the mid-1800s, as colleges were imbued with the responsibility to act as arbiters of proper comportment and guardians of morality, roles traditionally given to the family unit yet interrupted by a student's departure from their home to college campuses. In the early 1900s, a second era began—that of the legal role of *in loco parentis*, codified by tort law in which "colleges had a duty to supervise and control the activities of their students that might foreseeably lead to harm to the students or others injured by them;"[218] this paradigm prevailed until the student protests of the 1960s questioned the paternalism at the heart of *in loco parentis*. Thus, the 1970s and 1980s witnessed a third era, an almost complete rebuke of the legacy of *in loco parentis* that had prevailed for more than a century. In this new, *laissez-faire* approach to student life, students were seen and treated as consumers who pursue the resources and ends of college they desire. Finally, the 1980s and 1990s ushered in yet another shift in the administrative posture of colleges, as they assumed a stance of *risk management*, of stepping in only to mitigate possible harm, but not to police morality as it had done under *in loco parentis*.[219]

Importantly, in each of the four eras outlined above, the administrative government of student life represents both a desire and an ability of campus administrators to exert control—albeit unevenly—over the student body, a theme that is particularly salient to my interest in bodily education on college campuses. What follows is a discussion of how sedentary behavior has been responded to over time and

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that to be pretty and ''interesting'', they must be livid, pale and consumptive.'" Though the reality of the health of English women and men might have been different than assumed in America, what is important is that Americans saw themselves at a physical disadvantage compared to their English peers. Still, by the end of the nineteenth century, Americans began to assert "that they were the world's foremost nation, and that they were physically and technologically, if not intellectually and morally, superior to everyone. Sport – that is, male sport – was frequently used in an effort to establish and give weight to this presumption of superiority." While sporting competitions became a venue for American men in particular to perform their (supposed) physical superiority, others placed their hope in the rapid rise of physical education and exercise. Park explains that according to one nineteenth century author, in "'another twenty years, and no doubt our people will be as devoted to athletic exercises as the English. The results on the American frame will surprise physiologists.'" What is clear from this quote is that Americans took to physical activity with great enthusiasm, and such sporting activities took on unique significance in an American context, amid concerns about the feebleness of women vs. their hearty British counterparts, associated fears of race suicide, and the performative and competitive bent of men's sports. Park, "Sport, Gender, and Society in a Transatlantic Victorian Perspective," 1571-1575.

[216] Simon, "In the Place of the Parent."

[217] Rose and Miller, 1992, in Simon, "In the Place of the Parent," 17-18.

[218] Simon, "In the Place of the Parent," 19.

[219] Ibid.

according to the aforementioned administrative paradigms of student governance. Though prolonged sitting was—and is—a health concern, what interests me is how this health topic was translated through administrative apparatuses of college campuses to shape specific interventions into the student body over time. Thus, Simon's administrative paradigms serve as the organizing logic of the model I propose; the prism through which all other concerns—social, public health, and educational—were translated and responded to over time in the particular context of college campuses.

Era 1:[220] *In Loco Parentis* (Practical), 1850-Early 20th Century

The rise of American institutions of higher education, particularly in the early nineteenth century, gave way to concerns about the moral conduct and bodily health of its pupils. To ameliorate these concerns, colleges were built away from cities—"that center of folly and dissipation"[221]—to help prevent the transmission of immorality and infectious disease presumed to lurk in urban environments, and invested with the responsibility to stand *in loco parentis* to ensure the welfare and proper comportment of students.[222] Yet concerns about the particular threats to student health endemic to campus life—for example, infectious disease and the perils of prolonged sitting—this traditional role of colleges to stand *in loco parentis* was expanded so that it also behooved administrators to oversee the *physical* student body, including its protection and remediation.

Health concerns. Victorian America, according to historian Harvey Greene, was concerned about the perils of "bad air"—miasma, poor ventilation, pollution in city centers—and sought relief in "the movement cure": physical activity in the open air.[223] Thus, in the late 1800s, landscape architects designed Pleasure Garden parks in the pastoral ideal to serve as an antidote to the mental and physical stresses of city life,[224] while sanitarians promoted hygienic behavioral and construction practices.[225] As women and men created new institutions and entered new, modern organizations—including workplaces and colleges—in large numbers, conservatives became concerned with the bodily, particularly *reproductive*, perils of overwork, and thus promoted the need for rest at home and in pastoral settings. Yet at the same time, a sedentary lifestyle—associated with this new, modern life—was blamed for the observed poor health and pallor of American men and women (as compared to their sturdy European counterparts),[226] so rest needed to be balanced with sufficient physical exercise in order to avoid the race suicide that social Darwinists foretold.

Meanwhile, historian Terry Kogan notes that with the rise of a *realist*—as opposed to *idealist*—social paradigm in the late 1800s came an increasing focus on the

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[220] Note that these eras are from Jonathan Simon ("In the Place of the Parent"); their application to sedentary behavior is my own invention.
[221] Maynard, *Princeton*.
[222] See for example Simon "In the Place of the Parent" and Prescott, *Student Bodies.*
[223] Green, *Fit for America*. See also the works of Dudley Allen Sargent and Mary Taylor Bissell.
[224] Cranz, *Politics of Park Design.*
[225] See for example Bissell, *Physical Exercise and Development for Women*.
[226] Park, "Sport, Gender, and Society in a Transatlantic Victorian Perspective."

physical realities of people's lives as both the cause of and remedy for social anxieties.[227] Critics looked askance at the school houses and desks they blamed for the apparent "school sickness" of pupils, and conservatives grew suspicious of the dangers that lurked in the public sphere—the workplaces and sites of education into which an ever-diversifying public body entered in the late nineteenth century.[228] Yet the physical environment was also seen as a solution to promote public health: for example, health professionals such as Mary Taylor Bissell advocated hygienic construction, and college educators designed school buildings in pastoral settings to serve as a protective refuge for student bodies.[229]

Implications for sedentary behavior. This era ushered in vast changes in American society and witnessed the rise of a host of new institutions: libraries, schools, museums, factories, and office spaces created new opportunities for leisure (and for women, work outside of the home), but the prolonged sitting demanded by education and workspaces in particular caused alarm about the perils of a new, more sedentary modern lifestyle. The advent of compulsory schooling and popularization of higher education created a problem: that of the sitting student body. Objections were diverse: some feared that desks would deform young (or female) bodies;[230] others claimed that excess sitting would create frail bodies unable to bear the burden of study—or of children later in life.[231] In response, nineteenth-century educational institutions sought to foster a sound mind and body, an endeavor motivated by public health concerns and justified under the traditional practice of *in loco parentis*.

Interventions at this time sought to promote a wholesome, balanced lifestyle. Dudley Allen Sargent, M.D., advocated a daily schedule punctuated by periods of physical activity and rest; Vassar, the first women's college, mandated daily physical activity and imposed curfews on students;[232] and Bissell advocated the use of Calistheniums as well as ample exercise in the open air.[233] Physical activity was seen as restorative and curative, hygienic and educational, and a way to promote both physical and moral wholesomeness among students. Thus, in women's and men's colleges, physical activity courses were an early addition to curricula and gymnasia were often among the first buildings to populate college campuses.[234] Later, to ensure that these interventions indeed protected and strengthened students, physical educators and health professionals instituted a regime of physical anthropometric inspections.[235] Importantly, these interventions were *compensatory*: aimed to compensate for—rather

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[227] Kogan, "Sex Separation."
[228] Kogan, "Sex Separation." See also Meckel, "Going to School, Getting Sick."
[229] Jason Corburn, recognizing the intersection of public health and city planning, points out that this era also corresponds to what he terms "Miasma and the Sanitary City," referring to a specific logic of design based on the suspicions of "bad air" that characterized nineteenth century society. Corburn, *Toward the Healthy City.*
[230] See for example Bissell, *Physical Development and Exercise for Women*.
[231] Clarke, *Sex in Education*.
[232] See Horowitz, *Alma Mater;* Prescott, *Student Bodies;* and Brackett, "Vassar College."
[233] See Dudley Allen Sargent, *Physical Education, Boston: Ginn and Co., 1906;* Bissell, *Physical Development and Exercise for Women*; and Vassar, "Prospectus for Vassar Female College."
[234] Owens, "Pure and Sound Government."
[235] See Prescott, *Student Bodies* and Prescott, "Using the Student Body."

than interrupt or prevent—sedentary study. Thus, these interventions introduced a split, spatially and practically, between sitting and moving student bodies and created specialized spaces for each: classrooms for one and gymnasia/play-grounds for the other.

Educational institutions, charged with safeguarding the minds and bodies of their pupils, sought to educate not only student minds, but also student bodies. This blurring of the boundaries between health and education in the nineteenth century was justified by the practice of *in loco parentis*, but also fueled critics who conflated women's health and reproductive status with her educational experience. Thus, in the nineteenth century, health entered the educational sphere (debate), with implications that echo today.

Vassar case study. Vassar College, established in 1861 by Matthew Vassar to provide an education to women equal to that of men, serves as an apt case study to demonstrate how the above health concerns filtered through administrative apparatuses to create specific curricular and campus-based interventions to promote bodily movement (and its benefits). Matthew Vassar sought the creation of a campus in which its students would "go forth physically well-developed, vigorous, and graceful women, with enlightened views and wholesome habits as regards the use and care of their bodies."[236] Thus, as will be discussed in greater detail in Chapters 2 and 3, Vassar was designed with the body in mind, as its founders sought to inject movement into women's collegiate experience.

Indeed, the campus' first building, Main Hall (1865) sought to safeguard student bodies by surrounding them in architecture—the hall's edifice was the largest of its kind at the time of its construction—and a pastoral setting. Meanwhile, Vassar's ample playgrounds ensured women could freely circulate and engage in daily exercise away from the public eye and without intrusion. Daily physical activity was required of all Vassar students, and a testament to this essential part of Vassar's curriculum is the Calisthenium (1866), which housed a "music hall, a gym hall … a bowling alley… [and] stalls for stabling 20 to 25 horses."[237] Eventually, Vassar's physical education faculty instituted the use of anthropometric inspections, inspired by those popularized by Dudley Allen Sargent at Amherst University, as well as posture photos to quantify and prove the value of this bodily work to administrators (and, presumably, an ever-vigilant public).[238]

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[236] Vassar "Prospectus of Vassar Female College," 4.

[237] Ballintine, Compiled Materials regarding the Physical Education History of Vassar College, Communications from M. Vassar to Trustees, June 25, 1867, *Archives and Special Collections, Vassar College Libraries.*

[238] These measurements did, in fact, demonstrate improvement over time. For example, A 1900 report to President Taylor from Harriet Ballintine shows an example of how data was used to show the efficacy of Vassar's PE program: "The following statistics are of interest in showing the increase in strength test examinations. These are for the sophomore class as we have not had time to compile the measurements for the present freshmen for their last examination. Class of 1901: 164 students examined 12 whose total strength did not improve. These twelve are students who have spinal curvature or are otherwise abnormally delicate. Average gain of 151 students who did improve ..... 45.1 kilos. Some improved as much as 128 kilos A few.....15 kilos. Only one 5 kilos." Ballintine, Gymnasium Report to President Taylor, 1899, *Archives and Special Collections, Vassar College Libraries.*

Compulsory physical education courses, combined with an increase in college enrollment, necessitated the construction of another, new gymnasium on the Vassar campus. In 1899, Alumnae Hall opened its doors to an eager student body. The new building boasted a pool, facilities for indoor tennis and basketball, and a large room for calisthenics. Additionally, Alumnae Hall included a room for posture inspections, evidence of the formalization of this practice at Vassar as well as the increased emphasis on the physical body as a diagnostic tool.

Though movement was designed into the buildings and physical landscape of Vassar College—as well as its educational curriculum—its classrooms and other spaces of (mental) learning remained sedentary.[239] This disjunction is due to the underlying theory of disease at the time: that exercise was an antidote, a way to compensate for sedentary behavior.

Era 2: *In Loco Parentis* (Legal), Early 20th Century – 1960s

The legal doctrine of *in loco parentis* was formally applied to higher education in the early 20th century by tort law;[240] but this shift was minimal in practice, as, according to Jonathan Simon, "judges were only legalizing notions that had been part of higher education's explicitly paternalistic values since the birth of the republic."[241] In a 1924 case, *John B. Stetson University vs. Hunt*, a judge articulated (and formalized) this administrative paradigm, stating that:

> As to mental training, moral and physical discipline, and welfare of the pupils, college authorities stand in loco parentis and in their discretion may make any regulation for their government which a parent could make for the same purpose, and so long as such regulations do not violate divine or human law, courts have no more authority to intervene than they have to control the domestic discipline of a father in his family.[242]

Though the functional posture of college administration hardly changed with the formalization of this practice, I argue that during this time, mechanisms to educate, remediate, and control the student body became increasingly validated as other priorities emerged.

Health concerns. In the 1920s, college health programs, once merged with and centered on physical education, began to shift away from anthropometric and

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[239] My thanks to Paul Groth who pointed out that, though they enforced a single, sedentary posture, these nineteenth-century lecture halls were body-conscious in other ways: sloped floors helped ensure that all eyes could view the front of the classroom, and the slight curvature of the rows of chairs helped with the auditory quality and experience.
[240] Simon notes that the doctrine of *in loco parentis* was established on the basis of two assumptions: first, that "children and adolescents were special legal subjects" who were particularly vulnerable and who could pose specific dangers to others, and second, that "as special legal subjects, children and adolescents required governance." The primary responsibility for the governance of young people was the family; but "the task of government [of children] must be born by the state or other institutions" if the relationship "failed or was voluntarily transferred." Simon, "In the Place of the Parent," 18-19.
[241] Simon, "In the Place of the Parent," 16.
[242] Ibid., 17.

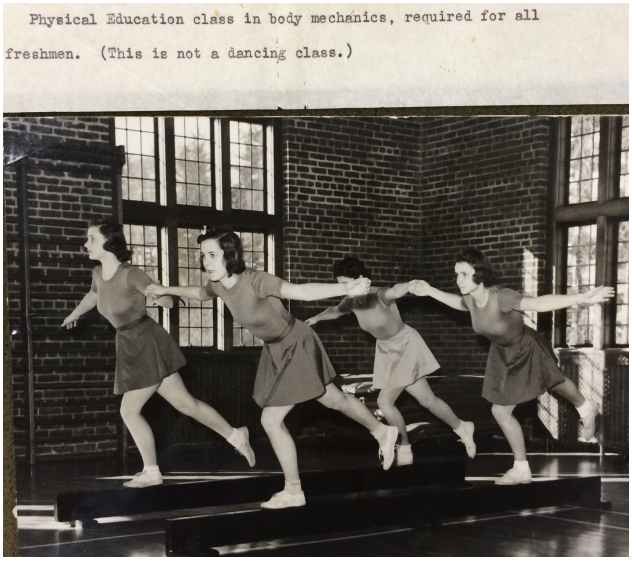


Image 17. Body Mechanics course, Vassar College. *Archives and Special Collections, Vassar College Libraries.*

callisthenic interventions and emphasized instead sanitary medicine. Thus, Physical Education departments, which gained much of their legitimacy from their link to claims of promoting student health, had to find other rationales to justify their practices. Additionally, war-time and post-war anxieties about the health of the American people injected renewed interest in the need to build healthy, capable student bodies which would birth and rear the next generation. Physical education programs, and the bodily inspections that became more widespread during this time, were essential mechanisms to both strengthen and remediate bodies toward this productive end. Finally, interest in posture—seen as a visual indicator of grace, skill, and health, particularly among women—reached a fever pitch in the early 20th century, so colleges instituted body mechanics courses to teach women how to sit and stand "pretty," use their bodies productively, and ultimately achieve an ideal of strength, beauty, and good posture.

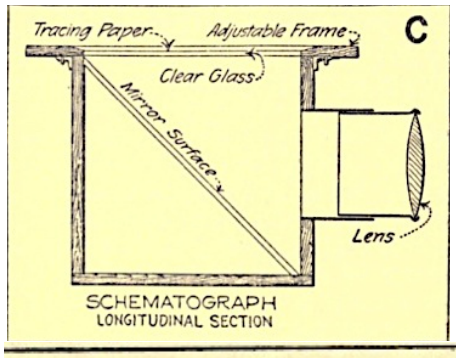
Implications for sedentary behavior. In this era, the seated body took on new associations, needing to appear "pretty" and avoid physical or reproductive deformity.[243] Educational curricula aimed at bodily education still labored under a compensatory logic, but did so with a more deliberate long-term stance. Whereas in the previous era educators and health professionals sought to strengthen the student body to withstand the "rigors" of education and do no long-term (reproductive, postural) harm, here educators sought in equal measure to train the body to perform well long after the tenure of college was over. Thus, physical education programs took on bodily posture with renewed vigor, citing a host of concerns they sought to address by remediating the student body—health, grace, beauty, and character to name a few.[244] Body Mechanics courses were popular during this time (Image 17), and many students were subjected to compulsory posture inspections at the start of their college career (as well as several times thereafter) to chart their progress. In this way, the student body served as a diagnostic tool, its contours suggesting deeper truths—or assumptions. For

[243] See literature from this time, for example Dorothy Nye, *New Bodies for Old*, (New York: Funk Wagnalls Co., 1946) and Janet Lane, *Your Carriage Madam! A Guide to Good Posture,* (New York: J. Wiley & Sons, 1934). In these books, the body was discussed using the metaphor of the machine. For example, Lane states: "Your body is a piece of mechanism, just like any other, though more pliant than other machines and therefore capable of infinitely more uses. But it is subject to the same mechanical laws of balance, motion, adjustment it is to stay in shape and running order," Lane, *Your Carriage Madam!*, 5-6.

[244] David Yosifon and Peter N. Stearns, "The Rise and Fall of American Posture," *The American Historical Review* 103(1998): 1057-1095.

example, to improve the diagnostic potential of physical exams, Clelia Duel Mosher, M.D., and Associate Professor of Personal Hygiene and Medical Adviser of Women at Stanford University, invented a machine to record graphically women's posture: the schematograph (from "schema" *form* and "grapho" *write*), a camera-like device that drew the image of a student body on a piece of paper, thereby fulfilling Mosher's desire to document student posture visually without the use of traditional photographs, which could render student images identifiable (Image 18).[245] Mosher spoke of these images as diagnostic tools, in other words, a means of discerning postural defects, conveying diagnostic information to students, and establishing a curative health regimen of posture exercises or personal hygiene practices.[246]

Vassar case study. This emphasis on bodily education, diagnosis, and long-term health outcomes are evident in the design of Vassar's third gymnasium, Kenyon Hall (1933), which was designed to foster the enjoyment of sport and physical activity that would stay with—and motivate—students long after they left campus. The gym was also designed to accommodate Body Mechanics courses, posture photos, and remedial bodily exercise regimens. In addition, Kenyon Hall offered facilities for basketball, tennis, and swimming, in which women could engage as part of individual recreation or as part of organized classes, and for the first time, physical education courses emphasized the reading of texts to help facilitate learning on a host of topics; books in the Kenyon Hall trophy room included titles such as *Your Carriage, Madam; Modern Tennis; Recreational Sports for Girls and Women; Prescription for Slimming;*



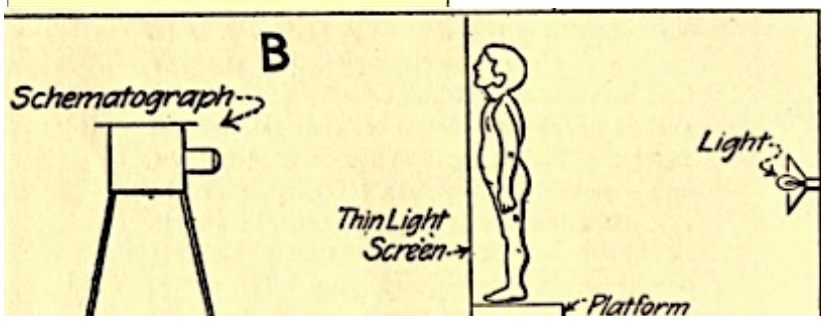


Image 18. Section drawing (above) and use diagram (below) for the schematograph, an instrument used to record the posture of students and invented by Clelia Duel Mosher (1915). *Mosher, The Schematogram, p. 3-4.*

[245] Clelia Duel Mosher feared that photos, if in the wrong hands, would betray student privacy; this is significant because of the later link between college posture photos and William H. Sheldon. See Rosenbaum, "The Great Ivy League Posture Scandal."

[246] Clelia Duel Mosher, *Personal Hygiene for Women*, Stanford: Stanford University Press, 1927. Due to the attention focused on the student body and the increasing institutionalization of health programs on college campuses, health practitioners sought novel methods to demonstrate the impact of environmental and curricular interventions on the student body. In the 1900s, anthropometric studies became commonplace in college settings, providing ample data to prove that physical education programs improved women's health. Clelia Duel Mosher (1863-1940), MA, MD, Associate Professor of Personal Hygiene and Medical Adviser of Women at Stanford University, conducted numerous studies of students, seeking to dispel ideas that women's bodies were physically inferior. Under her supervision, the Stanford physical education curriculum for women included posture inspections, physical exams, and remedial courses for physically 'defective' students.

and *From Head to Foot*. Though sedentary behavior was articulated less often in this era as an explicit concern, we can read in this expanded programming a desire to introduce new types of movement—and instruction in proper ways to move, sit, stand, walk, and play—to the student body.

Yet despite this emphasis on educating the body, the spaces traditionally deserved for the education of the mind—classrooms—saw little if any change in basic design during this time. Further, in this era we see an increasing split between the Department of Physical Education and other academic subjects, a first dismantling of the integrated mind/body educational paradigm upon which Vassar was founded.

Era 3: *Laissez-Faire*, 1970s-1980s

Beginning in the 1960s, social agitation and shifting demographics and administrative priorities paved the way for the demise of the *in loco parentis* doctrine that had defined how institutions managed student life since the mid-1800s. First, students began to protest paternalistic university practices—from denying students the right to birth control to limiting free speech to mandating regimes of bodily control including compulsory physical education courses or sex-segregating residence halls—that they saw as limiting their freedoms and imposing instead a universal (and unrealistic) set of values and practices.[247] Second, the ever-diversifying student body who enrolled in institutions of higher education in the post-war decades—including many older students supported by the GI Bill—chafed at paternalistic rules and practices and brought with them new expectations about the role of education and their experience on campus. Finally, the rise of the multiversity—a term coined by the late University of California President Clark Kerr and used to describe the complex, modern (post-WWII)[248] American university characterized by numerous communities—ushered in a profound reorientation of campus priorities as colleges became more of "a center for the production of knowledge and skilled workers" than the guardians of student morality and education.[249] Thus, as universities increasingly were seen as service-providers, a place where (increasingly older, more diverse) students went to learn specific skill sets or to prepare for certain jobs, Jonathan Simon explains that in the mid-1970s-80s, "campus government seemed to stabilize [at larger institutions] around the concept of the student as a consumer and higher education as a kind of service provider." Thus, Simon continues: "in questions of curriculum as well as lifestyle, students were increasingly treated as a kind of consumer with the sovereignty to pick and choose the kind of experience they wanted to have at college."[250] This shift ultimately had a profound impact on Physical Education programs, often a centerpiece of the government of students' non-academic lives, especially at smaller colleges, which

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[247] See Prescott, *Student Bodies.*

[248] Clark Kerr explains the multiversity: "The university started as a single community—a community of masters and students…. Today the large American university is, rather, a whole series of communities and activities held together by a common name, a common governing board, and related purposes." Clark Kerr, *The Uses of the University,* (Cambridge: Harvard University Press, 1963), 1.

[249] Simon, "In the Place of the Parent," 16. See also Kerr, *The Uses of the University.*

[250] Simon, "In the Place of the Parent," 23.

could no longer cite (paternalistic) desires to protect and remediate student bodies as a primary justification for mandatory body mechanics courses or posture inspections. Thus, this era saw both the "deregulation" of students' social lives and bodily education.

Health concerns. This was the era of self-care, a shift that had important implications for further emphasizing an emphasis on an individual (as opposed to environmental epidemiological perspective), and for placing the onus for health upon individuals. To some, this was a welcome change, as students advocated greater involvement in their own care and rights to new health services on campus. This era saw the rise of peer education programs in the 1970s, the establishment of the first Disabled Students Program (at the University of California, Berkeley, in 1970),[251] and the establishment of student advisory programs for campus health services. Beyond campus, this era saw an "epidemiological shift" in public health more generally: for the first time, chronic illnesses such as cardiovascular disease and diabetes killed more people than the infectious diseases that had long preoccupied public health efforts. Yet with physical education largely relegated to the realm of a mere service—rather than required subject—on college campuses, we might surmise that for the first time, students' engagement in sports and physical activities, long reference points for interventions to promote the health of the body politic,[252] offered few meaningful solutions for how to leverage physical education toward resolving burgeoning public health concerns.

Implications for sedentary behavior. At the same time, the recreation movement that years before had shaped park design continued to reverberate more profoundly in collegiate Physical Education programs, which increasingly emphasized individual, recreational pursuits.[253] Mandatory classes in physical education and body mechanics ceased by the 1960s, meaning bodily activity transitioned from the curriculum to the *extra*-curriculum, an activity to be explored during leisure time, and only at an individual student's own volition. Movement, therefore, was no longer an explicit institutional concern, but rather a service that colleges chose to provide in the form of leisure-time programming. In many ways, this era represents the nadir of institutional support for physical education and thus a major decline in associated programs and facilities.[254]

Vassar case study. Perhaps not surprisingly, no new gymnasia were constructed on the Vassar campus during this time (in fact, Physical Education saw relatively little capital investment between the years of 1933 [Kenyon Hall] and the 1984 construction of Walker Field House). If students were not required to engage in physical activity as

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[251] Ed Roberts led the founding of the "Rolling Quads" student group at Berkeley and the establishment of the first Disabled Students Program, on the Berkeley campus, in 1970. Under this program, students would be able to live independently with aid from the university (previously, students with profound disabilities, like Ed Roberts, lived in Cowell Hospital on campus and thus were subjected to constant surveillance). See Prescott, *Student Bodies.*

[252] Prescott argues that college health programs have—and continue to—inform interventions beyond their borders. Prescott, *Student Bodies*.

[253] See Cranz, *Politics of Park Design,* for more on Recreational Facilities, 1930-1965.

[254] Gidney, *Tending the Student Body*.

part of their educational regime—though Physical Education Department lobbied for academic credit for athletes and PE courses—then it was hard to justify the expense of a new building, despite the strains that a shift to co-education and ever-increasing student body yielded on Kenyon Hall. Yet importantly, student interest did not dwindle. Rather, students desired *more* opportunities for sports and physical education programs: increased enrollment in club sports, dance classes, social groups like the "Swupper Club" (swimming and supper club) all attest to the desire students had to be physically active at Vassar.[255]

Further, the 1968 entry of men into the student body also introduced new questions about the need to balance sports with academic life, as well as the role of physical activity programs in promoting unity among an increasingly diverse student body. Thus, during this era, students and faculty fought for what they saw as their right to (physical) education programs and facilities: students wrote letters to the editor of the *Vassar Miscellany* lamenting the lack of adequate facilities for exercise, and PE faculty appealed to their colleagues and campus administrator for funds to support more faculty positions and, ideally, improved and expanded facilities. Physical education may have been one of many services offered on campus, but student activism made clear the value ascribed to opportunities for physical activity and education alongside Vassar's liberal arts curriculum.

Era 4: *Risk Management*, 1980s-2000s

The almost total abandonment of administrative involvement in student life represented by the *laissez-faire* (deregulation) era of the 1970s and early 1980s faced a fairly quick backlash. This change in administrative posture is epitomized by a late 1980s court case: in response to a heinous case of sexual assault and kidnapping on a college campus, a judge stated that "the fact that a college need not police the morals of its students…does not entitle it to abandon any effort to ensure their physical safety."[256] Thus, universities, which still shied away from the "moral responsibility" they assumed in the nineteenth century, still had a duty to manage risks to the physical campus and student body, and thus faced "increasing pressure to deal with health and safety problems."[257]

Health concerns. This emphasis on risk management matches another in the practice of health promotion: harm reduction. A harm reduction model aims not to moralize or even eradicate all risky behavior, but rather to help actors—in this case, students—make decisions and engage in behaviors that minimize risk. Under this paradigm, harm reduction became a popular means to address sexual health, drinking, drug use, and other health concerns on college campuses. Additionally, physical

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[255] Physical Education Department, Pamphlet: "Physical Education at Vassar College," Kenyon Hall, September 1941, *Archives and Special Collections, Vassar College Libraries.*

[256] Simon, "In the Place of the Parent," 29.

[257] Simon explains this new paradigm of risk management, which refers to "the burgeoning body of discourses and practices that aim to prevent and manage the occurrence of losses" in higher education settings as well as the administrative focus on "creating the conditions for responsible choice" rather than dictating choice. Simon, "In the Place of the Parent," 27.

"fitness" became a new keyword of the era, signifying an emphasis on healthy lifestyle and behaviors.

Implications for sedentary behavior. The problem with a risk management paradigm is that it is predicated on identification of a risky behavior or environmental condition, and sedentary behavior no longer appeared to rise to that level in this era. Perhaps the perils of prolonged sitting were eclipsed by greater, more public concerns such as underage drinking, gun violence, and sexually transmitted infections. Though an emphasis on physical fitness likely preferenced—by educators and students—movement over sedentary behavior, physical education was largely overshadowed in this paradigm, seen as an essential, standard offering on college campuses, but not explicitly part of the risk management paradigm.[258]

Vassar case study. Two gymnasia were built during this time: Walker Field House (1984) and the Athletics and Fitness Center (1999). Though we might read echoes of the era's emphasis on risk management into the justification for the construction of these buildings—for example, the responsibility of the college to provide adequate facilities or the need to manage problems on campus (such as lack of facilities, cohesion of student body)—in fact, I argue this link is tangential at best. In fact, the impetus for building Walker began as early as the late 1960s, long before the era of risk management, when the impending co-education of campus presaged a crisis for the long-outdated and under-staffed physical education facilities and programs. Nevertheless, Walker and the AFC were built during eras of student governance in which self-care ruled, a fact evident in the self-service, leisure-time facilities available in each gymnasium.[259]

Still, some rhetoric of risk was evident in archival sources relating to the construction of these facilities: campus officials expressed concern about students climbing on a roof, being "sued" if someone went from over-heated gym to cold winter weather outside and got sick with pneumonia.[260] Thus, an echo of risk management is present in the construction of these spaces, but it is relevant only insofar as the gymnasium is administrative entity, rather than site of physical education or amelioration of sedentary behavior.

Conclusion

The problem of the sedentary life of scholars is as old as the university itself; yet to assume a singular reading of this concern over the last hundred-plus years is to

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[258] Echoing the above definition of risk management, during this time, physical education programs were no longer mandatory. Instead, they articulated a series of standards and recommendations for amounts of daily physical activity and encouraged, through the provision of services and facilities, the adoption of fitness-related behaviors.

[259] As suggested by the name of Vassar's newest gymnasium, "fitness" is a keyword of the era. This is an observation that would merit greater analysis at campuses beyond Vassar. For example, the University of California, Berkeley's newest gymnasium, constructed in 1984, is called the "Recreational Sports Facility," suggesting a focus on recreation rather than fitness, yet the department leads programs across campus called "WorkFit," thereby echoing a more recent focus on fitness.

[260] This fear was articulated by Laura Marlene Applebaum, captain of the women's fencing club at Vassar. Laura Marlene Applebaum, Memo to Robert Kluge about the "intolerable heat" in the newly constructed Walker Field House, November 15, 1983, *Vassar College Archives and Special Collections*, Poughkeepsie, NY.

overlook the specific institutional, historical, and epidemiological factors that have labeled it more or less problematic and dictated responses to ameliorate its effects over time. Though in the nineteenth century, prolonged sitting preoccupied the minds of school administrators, health officials, and the general public alike, the century that followed witnessed an almost total abandonment of concern regarding the perils of sedentary behavior in favor of other health issues such as infectious disease, sexual health, alcohol and drug use, and campus violence. This shift can be read in the decline of mandatory physical education courses and postural inspections and the increasing peripherality of campus gymnasia both spatially and administratively on college campuses. Today, few—if any—resources are dedicated to a health concern that once influenced campus organization and design,[261] and the deleterious effects of prolonged sitting still threaten the health of the student body. Yet recent research regarding the physiological and cognitive consequences of *too much sitting* demonstrates the many ways in which sedentary behavior has become, yet again, a topic of grave epidemiological concern, even more deadly than our nineteenth-century colleagues feared. Its resolution, however, must be found not in the latest gadget to promote movement or in individual exhortations to achieve daily recommendations of physical activity, but in a profound rethinking of the administrative, physical, and sociological context of higher education.

[261] At a school with Division I sports, we might ask who is allowed access to resources. For example, UC Berkeley recently constructed a new aquatic complex (2017) for its renowned swimming and diving team. Meanwhile, the campus' Hearst Memorial Gymnasium (1927), open to students and the public, is dilapidated from decades of deferred maintenance.

Chapter 2
Building Student Bodies:
College Gymnasia and Women's Health in Nineteenth-Century America

Introduction

The late 19th century ushered in expanded opportunities for higher education. Yet the era was also characterized by popular ambivalence about the nature of women's education, concern about the impact of an increasingly sedentary modern society on health, and Victorian ideas about female bodies.[262] Emblematic of these trends, at women's colleges, medical orthodoxies justified pedagogical and administrative interventions into the student body, notably through mandatory exercise and physical education. Bodily movement thus was one primary means through which women experienced collegiate institutions and a prism through which educators and health professionals viewed the female student body.

Matthew Vassar (Image 19) founded Vassar Female College in 1861 to afford women new opportunities for education;[263] yet sensitive to popular critiques at the time, he: "established ... as a MAXIM [*sic*] in [the] College, that the health of its students is not to be sacrificed to any other object."[264] To achieve this goal, Vassar designed the campus to protect and remediate student bodies through two primary mechanisms: a mandatory regimen of physical education and the creation of a sheltered, domestic setting that functioned as a surrogate 'separate sphere.'[265] Vassar College, founded as the first women's college and with an explicit goal of educating student minds *and* bodies, is thus a fruitful case study and starting point to investigate the intent and experience of collegiate gymnasia in Victorian America.

Architecture and Experience at Vassar College

As mentioned in Chapter 1, by 1900, Vassar constructed three spaces to develop sound minds and healthy bodies:[266] Main Hall (1865), the Calisthenium (1866), and Alumnae Hall (1889). This chapter explores how these buildings were shaped and experienced by: the public, whose interest in Vassar's student body can be read in building designs and written accounts of the new institution; female physicians and educators who, by implementing regimes of bodily instruction and assessment, asserted

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[262] See the Introduction chapter for a note on language, including the term "female."
[263] The novelty of this institution was not just that it offered women an opportunity to pursue higher education, but that it provided a liberal education *on par with men's education*. This parity was conveyed symbolically on the façade of the library building at Vassar College, where the crests of prominent schools like Harvard and Yale are etched above the front entrance of the library. See Karen Van Lengen & Lisa Reilly, *Vassar College: An Architectural Tour*, (New York, NY: Princeton Architectural Press, 2004).
[264] Vassar, "Prospectus of Vassar Female College." Also note that "female" was dropped from the name of Vassar College in 1867. Ballintine, Compiled Materials regarding the Physical Education History of Vassar College, Communications from M. Vassar to Trustees, June 25, 1867, *Archives and Special Collections, Vassar College Libraries.*
[265] See the "separate spheres" ideology that defined social roles in Victorian America (e.g., Kogan, "Sex Separation").
[266] "Soundness of body is an essential condition on which depends a healthy, well balanced and vigorous intellect," Ballintine, Compiled Materials regarding the Physical Education History of Vassar College, Proceedings of the Trustees, June 30, 1863, *Archives and Special Collections, Vassar College Libraries.*

Image 19. Matthew Vassar, founder and benefactor of Vassar College. *Archives and Special Collections, Vassar College Libraries.*

their professional expertise to navigate gendered contradictions in Victorian society; and students, whose new bodily experiences complicated popular ideas about the college and its gymnasia. These groups experienced Vassar's spaces of physical instruction—built manifestations of conflicting ideas of women's health—as ambivalent spaces that both constrained and freed female bodies.

This study offers novel insight into the imagined and lived experience of nineteenth-century collegiate architecture by taking as its subject the gendered, *moving* student body. In this chapter I explore the anxieties associated with sedentary behavior and focus in particular on the physical exercise prescribed in response. This analysis illuminates the ways in which efforts to move—and shape—the student body affected the design and administration of college campuses in general and gymnasia in particular. Shaped by distinctly Victorian ideas about science, women's health, and architecture, college gymnasia were not merely peripheral buildings, but central to the founding and mission of higher education.

Women's Education in Nineteenth-Century America

The years immediately preceding Vassar College's 1861 founding were marked by significant social change: women increasingly worked outside of the home in factories and textile mills and the emergence of seminaries and coeducational institutions gave women new entry into public life.[267] These changes profoundly disrupted the 'separate spheres'[268] ideology that defined Victorian society and, according to legal historian Terry Kogan, "fueled ... and became conflated with other social anxieties" including "concerns over public health"—especially the observed pallor and weakness of American bodies,[269] as compared to their European counterparts—and "privacy and modesty, especially related to men and women working side by side."[270] Additionally, with the rise of compulsory education in the late 1800s, administrators and health professionals alike became concerned about the length

[267] In *A Century of Higher Education for American Women*, Mabel Newcomer attributes the rise of women's education at this time to a host of factors including the Civil War, during which men vacated colleges and places of employment; an increase in women working outside of the home, especially in teaching professions; rising rates of literacy in American society; and the burgeoning women's rights movement. Mabel Newcomer, *A Century of Higher Education for American Women,* (New York: Harper & Brothers, 1959), 18.

[268] Kogan, "Sex Separation," p. 145. Roberta Park adds that if the colonial woman was hearty and robust, her Victorian counterpart, beginning in the early 1800s, was delicate and confined to a separate—domestic—sphere. Park, "Sport, Gender, and Society." In regard to new women's educational institutions, Oberlin college (co-education) opened 1833; Mt. Holyoke (a women's seminary and college) was established in 1837.

[269] Park, "Sport, Gender, and Society," 1575-1576.

[270] Kogan, "Sex Separation," 145.

of time pupils spent at school as well as the perils of sedentary study, harm that lurked in desks that enforced poor posture—which was considered "not only unbeautiful but may be positively deforming"—and unsanitary schoolhouse buildings that deprived students of much-needed light and air.[271]

Women in particular were the subject of great concern, as conservatives cautioned that both overwork and a sedentary lifestyle would have grave, deforming effects on their bodies and reproductive capacities.[272] Such concerns spurred a host of interventions designed to protect female bodies—and by extension, the body politic—and relegated women to a separate, if not domestic, sphere within these new institutions.[273] For example, Kogan explains that concern for the moral and physical purity of female workers spurred the adoption of gender-specific laws regarding the types and hours of work in which women could engage without fear of bodily harm and, eventually, mandatory provisions for sex-segregated bathroom facilities; these regulations were justified by traditional notions of women's domestic and reproductive roles and, increasingly, the scientific mantle of public health and Victorian ideas about women's bodies.[274] Meanwhile, at institutions of higher education, similar concerns were mediated by a constellation of administrative, pedagogical, and environmental interventions to promote the Victorian ideal of a sound mind and healthy body.[275]

Ambivalence About Women's Higher Education

At the same time, advocates of women's education labored to obtain equal access to educational opportunities, institutions, and facilities,[276] though they and students alike faced persistent skepticism and biases. While education was seen as a typical part of men's personal and intellectual development, the rationale for women's higher education was often expressed in *extrinsic* terms: instrumental to an end beyond education for its (or her) own sake. In fact, many early institutions aimed to prepare

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[271] Bissell, *Physical Development and Exercise for Women*.

[272] As mentioned above, historians Carroll Smith-Rosenberg and Charles Rosenberg explain a common fear at the time: "A woman who lived 'unphysiologically'... by reading or studying in excess, by wearing improper clothing, by long hours of factory work, or by a sedentary, luxurious life—could produce only weak and degenerate offspring." Rosenberg & Rosenberg, "The Female Animal," 114.

[273] For example, concern for the moral and physical purity of female workers spurred the adoption of gender-specific laws regarding the types and hours of work in which women could engage without fear of bodily harm and, eventually, mandatory provisions for sex-segregated bathroom facilities; these regulations were justified by traditional notions of women's domestic and reproductive roles and, increasingly, the scientific mantle of public health and theories about women's bodies. See: Kogan, "Sex Separation."

[274] Kogan, "Sex Separation." Meanwhile, according to Gidney, "the growth of white-collar work, a by-product of industrialization and urbanization, led to concern about the sedentary nature of modern life and its eviscerating effects on the body." Gidney, *Tending the Student Body,* 8. These fears regarding sedentary population were linked to fears of race degeneration.

[275] Bissell argued for the importance of overcoming the sedentary norm of college: "The value of physical exercise cannot be over-estimated as a sedative to emotional disturbances and a relief from that nervous irritability and hypochondria too often engendered by a sedentary or idle life." Bissell, "Physical Training as a Factor in Liberal Education."

[276] Mary Bennett Ritter, *More Than Gold in California,* Berkeley, CA: The Professional Press, 1933. Ritter was the first female physician at Berkeley and served as both medical care provider and advisor to female students. In this book, she talks about laboring to obtain access to the men's gymnasium, Harmon Gymnasium, before benefactress Phoebe Apperson Hearst donated the Hearst Gymnasium ca. 1901.

women for teaching professions,[277] and feminist scholar Daphne Spain posits that women's education was also endorsed as a way to prepare women for child-rearing.[278] Further, Spain argues that a Mount Holyoke education aimed to "prepare daughters of the land to be good mothers" and produce productive citizens.[279] Because women's education was framed in terms of the fulfillment of specific "womanly duties,"[280] critics questioned whether expanding educational opportunities would support or hinder these extrinsic ideals.

Some critics of women's education couched their objections in terms of inherent intellectual ability. According to Mabel Newcomer, "it was contended that women were mentally inferior to men and would be quite unable to meet the standards set for men's higher education," and this critique was used to advocate either no schooling or separate institutions for women. Fortunately, this criticism was easy to dispel once women entered institutions of higher education.[281] More insidiously, others argued that women—with their "wasp waists" and lack of exercise—were too frail and thus "could not stand the physical strain of higher learning" and that, should they manage to endure the rigors of college, "their children would be sickly, if they were able to have children at all."[282] In this argument, the capacity for educational achievement was stated in biological terms, not surprising given the emphasis on Darwinian theories of evolution popular in social and physical sciences at the time.[283] Scientific work of the era included 'discoveries' that women were weaker than men both intellectually and physically; these findings justified the *separate spheres* ideology and were used to bolster social and spatial practices aimed at protecting women's bodies.[284]

Such thinking not only sought to confine women to domestic life, but also, argues historian Barbara Solomon, "relegated women to a permanently inferior condition, physically and mentally," making it not only impossible for women to 'catch up' with men, but also presumed that it would be unhealthy to attempt to do so.[285] Further, these arguments focused attention upon women's reproductive anatomy, and in particular their ability to produce healthy children after college, and in so doing,

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[277] Newcomer, *A Century of Higher Education for American Women*, 10.
[278] Cahn, *Coming on Strong,* 26. This idea was also echoed by Clelia Duel Mosher, whose physical education courses at Stanford included "parenthood training."
[279] Spain, *Gendered Spaces*, 145.
[280] John Raymond, "Vassar College: A Sketch of Its Foundation, Aims, and Resources and of the Development of its Scheme of Instruction," May 1873, in Rothman & Rothman, *The Dangers of Education*, 18.
[281] Newcomer, *A Century of Higher Education for Women,* 26.
[282] Ibid., 28. In response, educators and health professionals advocated the need for physical education courses, which Newcomer observes were instituted more broadly for women than for men (Newcomer, *A Century of Higher Education*, 28-30).
[283] While Charles Darwin's (1852) *Origin of the Species* suggested an inherent biological difference of women, Herbert Spencer adopted Darwin's theory to social systems and adapted the idea of the "survival of the fittest" to popular discourse. Ross, *Moving Lessons*, 31-32. See also: Solomon, *In the Company of Educated Women*; Prescott, *Student Bodies*; and Carol Dyhouse, "Good Wives and Little Mothers: Social Anxieties and the Schoolgirl's Curriculum, 1890-1920," *Oxford Review of Education* 3(1977): 21-35.
[284] "The intellectual and emotional centrality of science increased steadily" in Victorian America and was increasingly used to justify women's 'traditional' domestic roles and the spaces to which they were assigned and relegated. Kogan, "Sex Separation," 7.
[285] Solomon, *In the Company of Educated Women*, 19.

offered a new, realist, scientific lens through which society could view the disruption to traditional family life represented by women's entry into workplaces and institutions of higher education.[286] In these examples, we see how nineteenth-century critics assumed an *embodied* understanding—meaning, an understanding projected onto the physical (female) body—of women's education and place, the latter including both women's social role and presence in collegiate settings (Image 20).[287]

Medical Experts Enter the Debate

Responding to this preoccupation with the physical student body, historian Susan Cahn explains that "formally educated doctors eager to secure their professional status took a special interest in women's health problems. In the name of medical science, they claimed to be authorities on the female body, capable of diagnosing and treating woman's [*sic*] condition."[288] Educational institutions, already undergoing considerable change and questioning the direction that modern education should take,[289] were fertile ground in which medical practitioners sought to plant their ideas. In general, their claims rested on three assumptions: the difference (and to some, *inferiority*) of women's bodies;[290] the need for special care or remediation of the female body; and the belief that women's reproductive health could be compromised by strenuous intellectual or physical activity.[291]

Image 20. Student at Vassar College (late 1800s). Nineteenth century critics would have considered this a dangerous activity: the chairs, posture, and demanding mental-work of study all (presumably) could damage a woman's body and reproductive health. *Archives and Special Collections, Vassar College Libraries.*

[286] Regarding the rise of realism, Kogan explains: "The mid-century rise of a new intellectual movement called realism…placed a new emphasis on science, encouraging a focus on the physical, tangible aspects of daily life for explanations of the world. In particular, a new emphasis was placed on the human body and the physical spaces that the body inhabited." Terry S. Kogan, "Sex-Separation in Public Restrooms: Law, Architecture, and Gender, *Michigan Journal of Gender & Law* 14(2007): 6.

[287] Solomon, *In the Company of Educated Women*, 19.

[288] Cahn, *Coming on Strong*, 130.

[289] Solomon, *In the Company of Educated Women*, 91-93. Additionally, founding President John Raymond, explained that in founding and organizing Vassar College, the trustees had to grapple with the question of what a "system of *liberal education for women*" might be; in other words, "what elements of instruction should it embrace, and in what relative proportions?" Raymond, "Vassar College, a Sketch of Its Foundation," 16.

[290] According to Cahn, "Nineteenth-century medical science characterized women as the physiologically inferior sex, weakened and ruled by their reproductive systems…[and] experts theorized that the cyclical fluctuations of female physiology caused physical, emotional, and moral vulnerability and debilitation." Cahn, *Coming on Strong,* 13.

[291] Cahn explains that "'vitalist' scientific theories…posited that bodies had a finite amount of circulating energy that was drawn to different parts of the body by activity; [thus] conservatives warned that education presented a serious danger by pulling necessary energy from the female reproductive region to the brain." Cahn, *Coming on Strong*, 13. For example, Herbert Spencer voiced fears that "study would 'desex' women, causing blood to flow from their

Male physicians focused their attention on the female reproductive system, which they saw as "the ineluctable basis of her social role and behavioral characteristics, [and] the cause of her most common ailments."[292] In 1873, Dr. E.H. Clarke, a prominent Boston physician, introduced these ideas to a public audience in his widely-published book, *Sex in Education; Or, A Fair Chance for the Girls,* in which he prescribed the 'proper' nature and structure for women's education. The body, according to Clarke, was comprised of three complementary systems: the nutritive, the nervous, and the reproductive, only the latter of which differed in men and women. A woman's lifetime was similarly tripartite and in the second of three major life stages, women's reproductive organs would develop; increasingly too in this stage women would pursue higher studies. Clarke therefore identified two collisions between women's health and education: the first was *temporal*, meaning that higher education and reproductive development occupied the same years in a woman's life; the second was *functional*, in that the overexertion of one bodily system jeopardized the functioning of others. Thus, if women's education was too strenuous or demanding for the nervous system, he cautioned, the reproductive or digestive system would suffer because bodily resources would be diverted to the brain and away from other essential areas. Clarke was unequivocal: "the brain cannot take its share without injury to other organs," rendering 'improper' methods of education neglectful of and harmful to the female 'reproductive apparatus.' Thus, Clarke proclaimed, "identical education of the two sexes is a crime before God and humanity."[293] In response, he prescribed a series of recommendations for colleges to properly attend to the specific needs of women, including the enforcement—surveillance—of proper nutrition, adequate sleep, and the careful metering of academic work to avoid over-exertion.[294] This regulation of students' experience resonated with nineteenth-century college's administrative tradition of standing *in loco parentis*.

The general public took a great interest in Clarke's text, which was printed in seventeen editions over a thirteen-year period. As historian Heather Prescott explains, "a large lay and scientific audience read Clarke's book, which sparked widespread discussion and criticism."[295] Indeed, *Sex in Education* gave voice to critics of women's education, provoked female physicians and physical educators to respond—armed with their own theories, texts and studies regarding women's health and education—and, according to Prescott, inspired the establishment of early health promotion programs for collegiate women.[296]

Not surprisingly, female physicians "failed to share the alarm of their male colleagues when contemplating the perils of education."[297] Instead, these women

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wombs to their brains and hence limit their child-bearing potential." Alison Mackinnon, *Women, Love and Learning: The Double Bind*, (Berne, IN: Peter Lang, 2010), 32.

[292] Smith-Rosenberg and Rosenberg, "The Female Animal," 112-113.

[293] Clarke, *Sex in Education,* 127.

[294] Ibid.

[295] Prescott, *Student Bodies,* 13-14. See for example Julia Ward Howe, Ed., *Sex and Education*: *A Reply to Dr. E.H. Clarke's* Sex *in Education,* (Boston: Roberts Brothers), 1874.

[296] Prescott, *Student Bodies*.

[297] Smith-Rosenberg & Rosenberg, "The Female Animal," 116.

offered different theories to explain the poor health of women, including the deleterious impacts of corsets and a sedentary life, neither of which were immutable conditions of the female body. Physician Mary Taylor Bissell critiqued Clarke's work, stating that the ill health of women was due not to studying, but to the overcrowding and stagnant air in too many school buildings and the poor posture enforced by furniture therein. By proposing an alternate theory of women's health, Bissell also advocated different interventions than those espoused by Clarke and his contemporaries: rather than avoid education, she advocated changes to the "condition of school study" including exercise, posture remediation, and the "sanitary" construction of school buildings.[298] Broadly speaking, other professional women shared her view: recognizing an "urgent medical need" to increase women's bodily strength, female physicians advocated *not* the sheltering of women's bodies, but rather systematic exercise and physical education.[299]

Physical Education and Nineteenth Century Colleges

In the late nineteenth-century, physical educators and physicians promoted physical education for its therapeutic physical and moral effects.[300] Yet initially, the role of physical education as applied to institutions of higher education was a subject of fierce debate. Advocates, such as renowned physician and physical educator Edward Hitchcock, Jr., were concerned about the perils of sedentary study and saw physical education (for men) as a means to facilitate "the rapid and healthful evaporation of superfluous animal spirits, generated by the physical and mental confinement of study." Others, meanwhile, saw physical education as a means to cultivate "regularity, attention, [...] docility," and other characteristics necessary for the leadership roles men would assume after college.[301] Yet critics saw colleges as "something better than a training ground for athletes," and expressed concern that "competition bred on false pride distracted men from more intellectual pursuits."[302] Ultimately, physical activity was integrated as a standard component of higher education, expressed in campus

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[298] Bissell, *Physical Exercise and Development for Women*, 47.

[299] At the time, physicians and lay people alike voiced anxiety about women's health, particularly compared to their European counterparts. Thus, Park explains, "the constellation of attitudes embedded in assumptions about irreconcilable differences between the sexes exerted a controlling influence over all aspects of a woman's life. When Vassar College opened in 1865, … Delia C. Woods and Elizabeth M. Powell, the first Instructors of Physical Training, taught calisthenics and exercises of the type that Dioclesian Lewis had devised. One of the primary purposes…was to strengthen the young women to enable them to withstand intellectual tasks." Park, "The Contributions of Women to Exercise Science and Sports Medicine, 1870-1994," 4.

[300] Edward Hitchcock Sr. and Jr., both physical educators, saw PE as fulfilling a moral aim in its ability to calm men and cure their desires for unhealthy pursuits like drinking and sex. See Prescott, *Student Bodies*; Park, "Sport, Gender, and Society," 1587. Additionally, spaces of physical activity, such as gymnasia and YMCAs, were seen as productive leisure-time alternatives to saloons and billiard halls; see Lupkin, *Manhood Factories*.

[301] Owens, "Pure and Sound Government," 189. Gidney adds that in the 1880s: "industrial capitalism, greater leisure time as well as fears about how that time was being spent, municipal provision of athletic fields and facilities, and increasing support by social reformers and Protestant churches for morally uplifting amusements." Further, physical education was seen as a "means of imparting such values as discipline, order, moral and physical courage, and the leadership necessary for the duties of nation and Empire," Gidney, *Tending the Student Body,* 6. See also Lupkin, *Manhood Factories* and Dominick Cavallo, *Muscles and Morals: Organized Playgrounds and Urban Reform, 1880-1920,* (Philadelphia: University of Pennsylvania Press, 1981).

[302] Owens, "Pure and Sound Government," 186-7.

playing fields and gymnasia.[303] Yet the intended aims—and experience—of this bodily curriculum differed for men and women.[304]

For women, advocates saw physical education as a means to social mobility or, more modestly, beautiful, graceful, and healthy bodily development.[305] Elizabeth Cady Stanton, a vocal advocate for women's rights, was adamant about the importance of physical education, noting in 1882 that "rigorous physical activity and a stronger and healthier body [were] vital to the advancement of women"[306] and that, in particular, "statistics [showed] that girls taking a college course [were] more healthy than those who [led] listless lives."[307] To advocates for physical education, the moving body was seen as a prerequisite to—or corollary of—social freedom in addition to bodily health, and the field of college women's health offered a space in which physicians and educators could lay claim to their medical and professional expertise. Thus, as will be demonstrated below, another way in which physical education intersected with women's social mobility was through the opportunities it afforded women to exert their professional expertise and take on new roles in collegiate institutions.[308]

Ambivalence in Data and Experience

Still, to respond to critics, female physicians and educators had to show that higher education and physical activity—two sources of dangerous exertion in the minds of E.H. Clarke and his (male) contemporaries—did not harm women's health or reproductive capacity. An 1885 study by the Association of Collegiate Alumnae (ACA) offered a direct repudiation of Clarke's theories: "Is the higher education of women detrimental or not to their physical well-being? We answer conclusively, no, unabashed by the notebooks of physicians or the theories of sociologists .... [The] admitted experience of 705 college women ... proves that instead of a loss there was an absolute gain of physical strength."[309] This data-driven approach likely appealed to Victorian audiences, to whom statistics and surveys were part of a popular epistemological view,[310] as did Vassar Professor Annie Howes' conclusion that "a higher education for

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[303] Owens, "Pure and Sound Government."

[304] See more on this comparison in Chapter 1.

[305] For example, Luther Gulick, Catharine Beecher, Elizabeth Cady Stanton, and Mary Taylor Bissell saw myriad physical and social benefits of women's physical education. See Park, "Sport, Gender, and Society;" Green, *Fit for America*; and Bissell, *Physical Development and Exercise for Women.*

[306] Park, "Sport, Gender, and Society," 1577.

[307] Elizabeth Cady Stanton, "The Health of American Women," 1882, in Park, "Sport, Gender, and Society," 1587.

[308] Park, "Sport, Gender, and Society." Matthew Vassar intended to hire an all-female faculty at Vassar, yet only hired two women on the original faculty: Professor of Astronomy Maria Mitchell and Professor of Hygiene and Physiology and head of the gymnasium, Alida C. Avery (1865-1874). The Calisthenium is now known as Avery Hall, named after Professor Avery. Van Lengen & Reilly, *Vassar College: An Architectural Tour,* 5. See also Daiels, *Main to Mudd,* 22.

[309] Annie G. Howes, "Health Statistics of Women College Graduates: A Special Committee of the Association of Collegiate Alumnae," Boston, MA, 1885, in Rothman & Rothman, *The Dangers of Education*, 9.

[310] See for example Kogan, "Sex Separation," 7: "The intellectual and emotional centrality of science increased steadily" in Victorian America and was increasingly used to justify women's 'traditional' domestic roles and the spaces to which they were assigned and relegated. Also, J.B. Jackson calls the late nineteenth century the "age of calibration" due to this fascination with measurement. J.B. Jackson, *Landscape in Sight: Looking at America,* ed. Helen Lefkowitz Horowitz, (New Haven: Yale University Press: 1997), 13. Yet another potential explanation for the use of photos, however, might be inferred from the work of Sir Francis Galton, the "father of eugenics" who used

women is in harmony with the vast law of the survival of the fittest."[311] Further, in an 1897 address, "Why Go to College?," former Wellesley College President Alice Freeman Palmer stated that improved health was an outcome women could expect from higher education and thus a reason for parents to allow their daughters to pursue higher studies.[312] Yet ambivalence persisted: while the ACA study found that college-educated women had fewer children than their uneducated counterparts, the authors were quick to point out that those who did have children typically birthed healthier offspring. In this way, data both quelled and fueled critics.

Vassar College

Vassar sought "to accomplish for young women what our colleges are accomplishing for young men;"[313] thus, this first women's college (established in 1861) captured popular attention as, in the words of second College President John Raymond, "an experiment of liberal education for that sex to which liberal education has ... been hitherto denied."[314] An advocate for women's education, founder Matthew Vassar's progressive views were unique in that he saw "the intellectual faculties of men and women being essentially similar."[315] Still, though Vassar was an innovative institution, neither the college nor its founder was immune to popular critiques. Emblematic of the conservatism of his time, Matthew Vassar believed in "wide differences in the spheres respectively assigned to the sexes in life, and corresponding constitutional differences" that should be factored into women's education. Further, dependent on funding secured from tuition, Vassar had to appeal to popular sentiment by ensuring the moral and physical protection of the (female) student body while offering women new intellectual opportunities.[316] Indeed, in a 1891 statement to the College Trustees, Matthew Vassar cautioned that at "one of the most noted of female seminaries in New England ... incalculable injury is being done to the health of the pupils, under the plea of thorough discipline, and by ill-ventilated apartments, and over-taxation of their brains."[317] Not wanting to replicate this model, Vassar sought to safeguard student bodies at his namesake institution through mandatory physical education—"with

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photography in his studies of criminals in the nineteenth century. Galton regarded the photographic medium as a form of "pictoral statistics," a subtle yet important nod to quantitative methodologies of analysis which helped to legitimize the claims he and other eugenicists made regarding the "empirical truth and unimpeachable facts" of their work, Mary K. Coffee, "The American Adonis: A Natural History of the 'Average American' (Man), 1921-32," in *Popular Eugenics: National Efficiency and American Mass Culture in the 1930s,* ed. Susan Currell and Christina Cogdell, (Athens, OH: Ohio University Press, 2006), 198.

[311] Howes, "Health Statistics of Women College Graduates," p. 18. This fits in with evolutionary thinking of the time.

[312] Alice Freeman Palmer, "Why Go to College? An Address by Alice Freeman Palmer, Formerly President of Wellesley College" 1897, in Rothman & Rothman, *The Dangers of Education*.

[313] Vassar, "Prospectus of Vassar Female College," 3.

[314] Raymond, "Vassar College, a Sketch of Its Foundation," 5.

[315] Vassar, "Prospectus of Vassar Female College," 7.

[316] I argue that Vassar, the man and the institution, was innovative but also conservative. For more Vassar's reliance on tuition funding, see Raymond, "Vassar College, a Sketch of Its Foundation."

[317] Ballintine, Compiled Materials regarding the Physical Education History of Vassar College, Communications from M. Vassar to Trustees, February 26, 1861, *Archives and Special Collections, Vassar College Libraries.*

practical reference to the laws of the health of the sex"[318]—and the creation of a surrogate domestic setting in which to instill the moral and intellectual education of women. We can read in Vassar's built forms a desire to design the collegiate experience to afford such protection to student bodies; namely, protection from the strains of too much sitting as well as the taxing mental activities assumed in women's collegiate work.

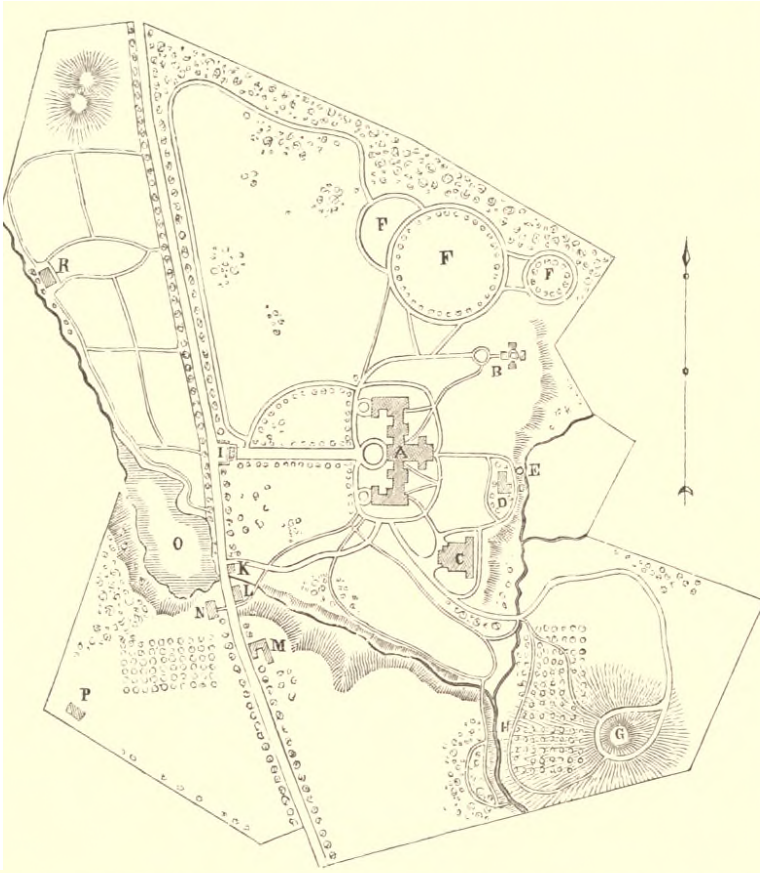

Image 21. Map of campus (1867). Note the location of Main Hall (A), the Calisthenium (C), and the play grounds (F). *Benson Lossing, "Vassar College and its Founder," p. 99.*

Women's Bodily, Moral, and Domestic Education

Matthew Vassar set as a maxim of the college the priority of student health, thereby placing under the jurisdiction of the college a project to ensure that women would "go forth physically well-developed, vigorous, and graceful women, with enlightened views and wholesome habits as regards the use and care of their bodies."[319] To carry out this goal, the founder articulated a range of interventions: "the sanitary regulation of the college," including the provision of healthy foods and facilities with proper ventilation; explicit times for walking and resting; instruction in Anatomy, Physiology, and Hygiene;[320] "a regular medical examination;" and "regular instruction" in the School of Physical Training "in the arts of Riding, Flower-gardening, Swimming, Boating, Skating,

[318] Ibid. As mentioned in previous chapters, Vassar saw women's seminaries as instructive precedents for controlling female bodies (see Horowitz, *Alma Mater*).
[319] Vassar, "Prospectus for Vassar Female College."
[320] The Trustees give more information about how they viewed this department: "Hygiene, by which we are taught the laws of health and the art of preserving it." Ballintine, Compiled Materials regarding the Physical Education History of Vassar College, Proceedings of the Trustees, June 30, 1863, *Archives and Special Collections, Vassar College Libraries.*

and other physical accomplishments suitable for ladies ... and promotive [*sic*] of bodily strength and grace."[321]

In the 1865 Prospectus for Vassar College, Matthew Vassar outlined the "General Schemes of Education," in which Physical Education was named first, "not as first in intrinsic importance, but as fundamental to all the rest, and in order to indicate the purpose [to] the managers of this institution to give it not nominally but really its true place in their plan. Good health is essential and too much neglected."[322] Further, Vassar explained, "recreations, particularly in the open air, will ... [be] regulated and taught and ... required of all the students." To meet these goals, the college provided three spaces for physical activity (Image 21): "ample and secluded ... play-grounds," "spacious and cheerful corridors of the college edifice" that would afford space for physical activity in inclement weather, and an "apparatus"—the Calisthenium—"required for Swedish Calisthenics" in which students would don "an easy-fitting dress" and engage in an individually-prescribed exercise regime .[323] Health was established, therefore, as a foundation of Vassar's curriculum due to the perceived "peculiar delicacy" of women's bodies, which rendered them, in the words of College President John Raymond, "specially liable to derangement from neglect or misuse."[324] These spaces, constructed in the 1860s, responded to quintessentially Victorian concerns about women's bodies and social roles and were legitimized by sanitary science and gendered theories of health common at the time. Yet, in mandating physical activity for women, campus historian Elizabeth Daniels reminds us that Vassar also departed in a meaningful way from normative expectations of (sedentary) Victorian women.[325]

In addition to the bodily education described above, Matthew Vassar called upon buildings to facilitate the moral and domestic education of students as well: in an 1875 article in *Harper's Magazine,* Vassar stated: "I desire that the college may be provided with commodious buildings ... affording to the inmates the safety, privacy, and purity of the family."[326] Extending this metaphor, students lived under one roof in "domestic arrangements intended to be 'attractive and home-like'"[327] and were supervised by a team of Lady Teachers who lived among the women and oversaw their

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[321] Vassar, "Prospectus for Vassar Female College," 4-5. These interventions were emblematic of sanitary science and gendered theories of health common at the time, yet their particular iteration at Vassar resulted in the deliberate ordering of student bodies in space and time. For example, as mentioned above, Vassar students were expected to observe prescribed hours of activity and rest and the playgrounds at Noyes Circle were circumscribed by large trees to prevent visual access of passers-by to campus.

[322] Vassar, "Prospectus for Vassar Female College."

[323] Ibid., 5. I see these spaces as emblematic of four administrative goals: the remediation and protection of bodies seen at risk; the promotion of health and bodily development of students; education regarding the use of bodies later in life; and a broader scientific and sociological effort to understand and instruct, in the words of Alison Mackinnon, "that disturbing being—the educated woman." Mackinnon, *Women, Love and Learning*, 32.

[324] Raymond, "Vassar College: A Sketch of its Foundation," 4.

[325] Daniels, *Main to Mudd*.

[326] Brackett, "Vassar College," 350.

[327] Vassar, "Prospectus for Vassar Female College," 29.

adherence to hygienic practices and a daily schedule of activities, evocative of the seminary tradition from which Vassar grew.[328]

Indeed, Vassar was at once a radical and conservative institution in nineteenth-century America, as well as a place where both critics and advocates looked to support their views, and a physical and social space that both constrained and freed the female body.[329] Importantly, though created in response to popular concern about women's bodies, these spaces of bodily instruction afforded female faculty opportunity to exert authority and professional jurisdiction in an institution otherwise led by men, some of whom might have objected to women's presence on faculty.[330] Further, while female students were subjected to regimes of surveillance,[331] their actions carefully circumscribed in both space and time, these same activities afforded new social and bodily experiences; in other words, the practices of bodily education introduced to female students offered them liberation from the normative Victorian physical and social experiences to which they would have been accustomed prior to college. Thus, Vassar's 'separate sphere' both confined and liberated students and faculty alike.

Image 22. Main Hall and Vassar Lake, Vassar College (ca. 1880). Both the pastoral setting and large edifice were designed to protect female students. *Archives and Special Collections, Vassar College Libraries.*

The First Spaces of Physical Activity

In its 1863 proceedings, Vassar Trustees proclaimed: "a sound mind in a sound body is received as a first truth among educators."[332] The first

[328] McFarland, "What are They Doing at Vassar?" 5. Yet as social historian Helen Lefkowitz Horowitz argues, the very dormitories that were designed to afford surveillance also offered opportunities for women to socialize, in their rooms, away from the watchful eye of teachers; this is what gave rise to the strong student culture for which Vassar became notorious. Horowitz, *Alma Mater.*

[329] I thank H. Horatio Joyce and William Whyte, of Oxford University, for asking questions during my presentation on this topic at the "Architecture and Experience in the Nineteenth Century" Conference at Oxford University in March 2016. Joyce asked to what extent Vassar was conservative, and Whyte inquired about its conservatism; together, these questions helped me consider the ambivalence of this institution.

[330] Park, "Sport, Gender, and Society." At Vassar, as evidence of the gendered inequalities among faculty, PE Head Harriet Ballintine was not given the ability to vote with the faculty until 1898. Harriet Ballintine, Compiled Materials regarding the Physical Education History of Vassar College, Chronological Quotations, *Archives and Special Collections, Vassar College Libraries.*

[331] A note on language: "regimes of surveillane" is my imposition, and admittedly Foucaultian. Yet it also references concepts and terms of the era; for example, the "sanitary *regulations*" of the college that Vassar spoke of in the "Prospectus for Vassar Female College," regimens that Dudley Allen Sargent advocated in his work (c.f. Sargent, *Physical Education*), and the "personal regimen and care of their health" mentioned in the First Catalogue of Vassar College, 1865-1866, Ballintine, Compiled Materials regarding the Physical Education History of Vassar College, *Archives and Special Collections, Vassar College Libraries.*

[332] Ballintine, Compiled Materials regarding the Physical Education History of Vassar College, Proceedings of the Trustees, June 30, 1863, *Archives and Special Collections, Vassar College Libraries.*

physical manifestation of this ideal was Main Hall (1865) and the pastoral landscape that surrounded it.

Main Hall (1865)

Whereas nineteenth-century men's colleges were comprised of a community of buildings—for example, Jefferson's "academical village" at the University of Virginia—historian Helen Horowitz explains that women's colleges "rose as single gigantic buildings" to better facilitate the supervision and seclusion of students.[333] Indeed, Vassar College was designed as a single, impressively scaled structure—Main Hall—located in a pastoral setting and arranged in domestic style to shelter female bodies (Image 22).[334]

Designed by renowned architect James Renwick, Jr.,[335] Main Hall housed a diverse program, including dormitories, classrooms, the library, and a museum.[336]

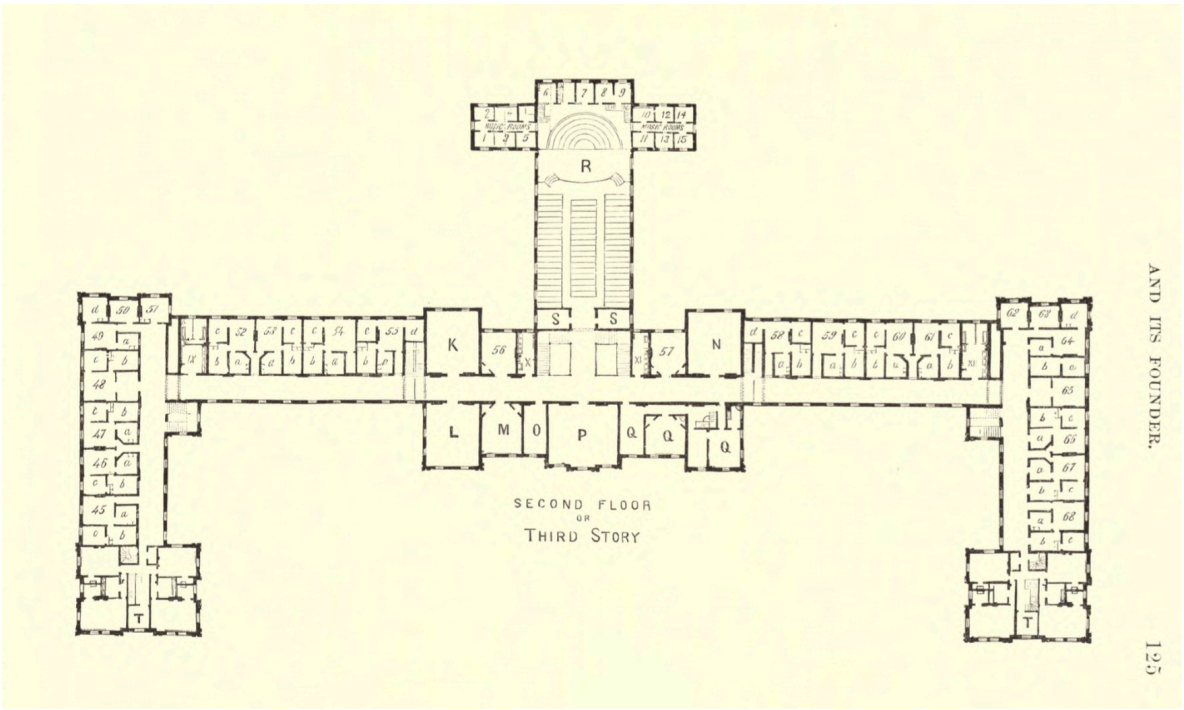

Image 23. Floor plan, Main Hall, Vassar College. Notice the wide corridors as well as the unit in each dormitory whose window faced the hallway, not the outside as would have been ideal at the time. *Lossing, "Vassar College and its Founder," 1867, p. 25.*

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[333] Horowitz, *Alma Mater,* 3-5.

[334] Turner argues that the rural setting, single-building plans, and family-like domestic arrangement of women's colleges "reflected ideas about women and their education." Turner, *Campus: An American Planning Tradition*.

[335] Architect James Renwick, Jr. also designed the Smithsonian Museums in the 1850s and New York City's Grace Church (1843-6); Van Lengen & Reilly point out that Renwick as "a prestigious choice for a pioneering institution." Van Lengen & Reilly, *Vassar College: An Architectural Tour*, 47.

[336] Later, in 1869, Renwick was commissioned to design the YMCA Headquarters building in New York City, itself a marvel of architectural innovation, and I suspect that the lessons Renwick learned about creating hybrid, easily supervisable spaces at Vassar informed his later work. For more on YMCA construction, see Lupkin, *Manhood Factories.*

Main was a grand and novel structure, yet we can also read in this building a response to popular critiques of women's education, namely the need to protect female bodies. Main's corridors were particularly commodious—"twelve feet in width and eighty-five feet in length"[337]—for the singular purpose of housing physical activity in inclement weather. In fact, Vassar historian Elizabeth Daniels explains that walking from one end of Main to the other was a one-fifth of a mile excursion, evidence of the way in which movement and physical activity were inscribed into this structure through architectural and bodily practice.[338] Though outdoor exercise (and the associated intake of fresh air) were preferable at the time,[339] designing spaces for exercise into the building ensured that women could engage in daily activity, rain or shine. Yet, as a result of these spacious, single-loaded hallways in Main Hall, an article in *Harper's Magazine* cautioned that "two out of three of the sleeping rooms" in the building's suite-style dormitories had "no windows except into the corridors" (Image 23).[340] Thus, poor ventilation was the price to pay for what historian Harvey Greene calls "the movement cure," a surprising fact given Victorian beliefs in the dangers of "bad air."[341]

An 1875 *Harper's Magazine* article describes the vast scale of Main Hall: "The main edifice is almost five hundred feet in length ... and ... [t]he height of the centre [*sic*] building from the foundation to the top of the dome is ninety-two feet."[342] Main's considerable size ensured that women were literally surrounded, *protected*, by architecture. Yet in its size and furnishing we can also read a desire to reassure the public about the viability and social value of this institution. Architectural historian Paul Venable Turner notes that Main Hall was one of the largest structures in the United States at the time of its construction, its scale evocative of an optimistic tone regarding the value of women's education.[343] We might also see in symmetry of the building's Second Empire style a desire to reassure the public that this was a well-ordered institution and the educational goals its founder sought to promote a grand, benevolent endeavor.[344] Further, Matthew Vassar desired the use of vibrant, complementary colors—evidenced in Main's purple and green slate mansard roof—as a way to convey both the innovation and optimism his namesake institution represented,

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[337] Brackett, "Vassar College," 350.
[338] Daniels, *Main to Mudd*, 21.
[339] Green, *Fit for America*.
[340] Brackett, "Vassar College," 360.
[341] Green, *Fit for America*. Yet this design also afforded greater opportunities for supervision and privacy – no student windows opened to the front. See Horowitz, *Alma Mater*, 39.
[342] Brackett, "Vassar College," 350.
[343] Ibid. Brackett also suggested that inspiration for Main's monumental size came from Matthew Vassar's early childhood experience in Norwich (UK), in which the social and spatial presence of the town's vast Cathedral left an indelible imprint on the young man and taught him the power of architecture. See also Van Lengen & Reilly, *Vassar College: An Architectural Tour*.
[344] Indeed, historian Elizabeth Daniels notes that the design for Main Hall was inspired by an 1845 trip he took to Europe, where he was impressed both by the Tuileries and Hôtel de Ville in Paris, France, and by Guy's Hospital in London, England. Regarding the latter, Vassar desired to employ his vast personal fortune to found an institution that would benefit society, as did Guy, whom Vassar thought to be a relative. Daniels, *Main to Mudd*, 11. Vassar saw his namesake institution as a "benevolent object" (Matthew Vassar's First Address to the Trustees of Vassar College, Feb 26, 1861, in James Monroe Taylor and Elizabeth Hazelton Haight, *Vassar,* (New York: Oxford University Press, 1915), 208.

as such a combination would "draw the eye upward."[345] Through these architectural details we can infer the presence of an assumed audience: an ever-watchful public possessing conflicting views about the role and impact of this institution, whom Vassar sought to reassure through administrative and design interventions.

The Campus Landscape

Vassar historian Elizabeth Daniels contends that the very site upon which Vassar College sits was selected with the public in mind, both in consideration of how passers-by would view and perceive the campus and the possibility of easily sheltering students from public exposure.[346] Helen Horowitz extends this claim, adding that Matthew Vassar selected this site for his namesake college for its location away from the "immoral influences" of the city and with ample space for physical activity in the open air.[347] Indeed, in the Prospectus for Vassar College, the founder outlined his vision for the site; in particular, how he saw it contributing to the physical and moral education of women by providing "miles of graveled paths ... [for] helpful walks, and lauded the site's "ample and pleasant" play-grounds as spaces in which women could exercise "without danger of outside intrusion" (Image 24).[348]

Public audiences took note of this thoughtful site planning: an article in *Scribner's Magazine* described the rural, pastoral campus as offering "the best of American country life," the fresh air and views of nature it afforded a benefit to student health and moral upbringing.[349] In the 1860s, outdoor exercise—the "air cure"—was seen as an antidote to the perils of sedentary life and the use of corsets.[350] Similar to the Pleasure Ground parks of the time, Vassar's pastoral setting offered fresh air and expansive views to calm women's nerves as well as ample space for "unstructured pursuits" such as walking.[351] Yet this setting

Image 24. The Vassar playgrounds (late 1800s). Notice the tall trees that served to protect students from "outside intrusion." *Archives and Special Collections, Vassar College Libraries.*

[345] Note that this follows Calvert Vaux's idea of complementary colors to help buildings fit into their natural surroundings. As Van Lengen & Reilly observe, "the alternating diagonal stripes of green and purple slate on the dome roof were intended to carry the eye upward and outward." VanLengen & Reilly, *Vassar College: An Architectural Tour,* 8.

[346] Daniels, *Main to Mudd*, 9.

[347] Horowitz, *Alma Mater,* 32.

[348] The "college grounds, with their miles of graveled paths…afford wide scope to helpful walks." Ballintine, Compiled Materials regarding the Physical Education History of Vassar College, Excerpts from the First Catalogue of Vassar College, 1865-1866, *Archives and Special Collections, Vassar College Libraries.*

[349] McFarland, "What Are They Doing at Vassar?" 6-7.

[350] See Green, *Fit for America,* and Brackett, "Vassar College," 353.

[351] Pleasure Ground parks (1850-1900), such as Frederick Law Olmsted's Central Park in New York, were designed according to the pastoral ideal: green spaces were seen as an antidote to urban life, a relief from miasma, and, with meandering pathways, expansive views, opportunities for "unstructured pursuits" in green spaces, an "opposite condition" to the surrounding city. Cranz, *The Politics of Park Design.*

also was, according to one nineteenth-century journalist, an "essential means for fashioning noble women out of impulsive girls,"[352] further evidence of an effort to reassure the public of the productive work being accomplished at Vassar.

The Experience of Vassar's Physical Grounds

Though the activities in which women could engage in this expanse were limited in space and time,[353] Vassar's landscape offered bodily freedom and an important social experience for women. An 1871 *Scribner's Magazine* article described women's "free use of the grounds" which are "in constant use with students walking each day" for their required exercise. Additionally, author Anna Brackett recounted in an article in *Harper's Magazine* how she observed women circulating freely on campus, stating: "if we walk across the college grounds where, instead of men, we meet women, hastily shawled or cloaked, going to and fro, bent on recitation or recreation."[354] Student letters and diaries at the time suggest that outdoor recreation was a social experience, students reporting who they walked with and where. For example, in 1871, Vassar student Mary Pidgeon-Kiersted noted in her diary that she and fellow student "Abbie ... took an hour's exercise on the Observatory walk" and later, the two "took our exercise on the Gymnasium and Lake."[355] The student body, engaged in movement, thus found new physical and social freedoms on campus in addition to relief from sedentary study (Image 25).

Image 25. Women freely walking on the Vassar campus ca. 1895; this type of activity was a social as much as bodily experience. *Archives and Special Collections, Vassar College Libraries.*

Yet these activities necessarily took place under the watchful eyes of not only journalists visiting campus, but also of the faculty charged with ensuring students' physical, moral, and intellectual education. In the Prospectus for Vassar College, Matthew Vassar articulated his desire to provide, through campus furnishings, "ample apartments for public instruction, and at the same time [afford] the inmates the safety, quiet, privacy, and purity of the family."[356] This desire, emblematic of the traditional role of early institutions of higher education to stand *in loco parentis* to protect student bodies,[357] was facilitated most directly at

[352] Brackett, "Vassar College," 360. Note: Brackett was a critic of E.H. Clarke (author of *Sex in Education*; see above).
[353] One student noted in her diary that "the prohibition on walking after five o' clock has been removed," evidence of how time was used to structure women's activities. Bertha Keffer, Diary, January – June 1871, p. 103, *Archives and Special Collections, Vassar College Libraries.* Additionally, Elizabeth Daniels explains that the ample foliage surrounding Vassar college—in particular the playing fields where women often took exercise—served as physical boundaries for women's activities (and visual barriers to curious passers-by); Daniels, *Main to Mudd.*
[354] Brackett, "Vassar College," 53.
[355] Mary Pidgeon, Diary, Saturday, March 18, 1871, p. 63, *Archives and Special Collections, Vassar College Libraries.*
[356] Matthew Vassar, quoted in Daniels, *Main to Mudd,* 9.
[357] See Simon, "In the Place of the Family," for more on *in loco parentis.*

Vassar through the charge of the Lady Principal and the other faculty and staff whose explicit roles were to surveil, supervise, and remediate the female student body. Historian Susan Cahn argues that, though well-meaning, campus interventions like physical education courses, examinations, and other mechanisms to "strengthen the student body" in fact created "new forms of discipline and control for the modern female body."[358] Campus gymnasia showed similar ambivalence in how they were designed and experienced at Vassar.

The First Campus Gymnasium: The Calisthenium (1866)

Vassar's first catalog (1865) reported that in addition to Main, "a still larger and more costly building is in the process of erection to contain a riding-school ... a Gymnasium Hall ... and ... the School of Physical Training."[359] Erected one year after Vassar's opening, Matthew Vassar envisioned the Calisthenium as the primary space in which students would work toward their requisite hour of daily physical instruction:[360] "The Gymnasium will be furnished with every apparatus required to make it attractive and useful, and placed under the direction of an experienced and successful Lady Instructor. The system of light gymnastics as perfected by Dr. Dio Lewis will be taught to all the college ...."[361] This third building on Vassar's campus was anticipated by student Abigail Slade, who wrote to her sister in 1866 that the new building "is going to be splendid" and, after its construction, lauded by the *New York Times* as "the most beautiful of its kind in the country, second in size only to the gym at West Point."[362] Further, the choice of Dio Lewis' regime is apt in that he advocated an integrated education similar to

Image 26. Interior view of the Calisthenium, Vassar College. Exercises were conducted to music, as dictated by physical educator Dio Lewis. *Lossing, "Vassar College and its Founder," 1867, p. 155.*

[358] Cahn, *Coming on Strong*, 26. Yet Horowitz reminds us that the very campus spaces designed to foster surveillance—in her example, the cottage-style dormitory buildings made famous at Vassar College—in fact afforded opportunities for privacy and led to the development of a robust student culture; see Horowitz, *Alma Mater*.
[359] Ballintine, Compiled Materials regarding the Physical Education History of Vassar College, Excerpts from the First Catalogue of Vassar College, 1865-1866, *Archives and Special Collections, Vassar College Libraries.*
[360] Women were required to engage in one hour of exercise daily except Sundays, when only one half-hour was required. Ballintine, Compiled Materials regarding the Physical Education History of Vassar College, Excerpts from Student's Manual, September 1872, *Archives and Special Collections, Vassar College Libraries.*
[361] Ballintine, Compiled Materials regarding the Physical Education History of Vassar College, Excerpts from the First Catalogue of Vassar College, 1865-1866, *Archives and Special Collections, Vassar College Libraries.*
[362] Abigail L Slade, letter to sister Caroline E. Slade, June 20, 1866, p. 2, *Archives and Special Collections, Vassar College Libraries.* See Daniels, *Main to Mudd*, p. 20, for the quote from the *New York Times*. Vassar's first building was Main Hall (1865), the second the Observatory (1865), and the third the Calisthenium (1866).

Image 27. Outdoor exercises at Vassar College, 1865. In Vassar's first year, women supplied their own costumes for exercise. *Archives and Special Collections, Vassar College Libraries.*

that espoused by Vassar's founders: Dr. Lewis saw calisthenics as a way to achieve not only muscular strength but also "the mental and moral improvement of practitioners."[363]

Lewis' calisthenic exercises consisted of "marches, free movements, dumb-bells, wands, rings, [and] mutual help exercises" which were "set to music" and intended to motivate "feeble and apathetic people" to engage in and enjoy these recreations (Image 26).[364] Historian Roberta Park explains that these exercises, taught by Delia C. Woods and Elizabeth M. Powell, Vassar's first instructors of Physical Training, were seen as a way to "strengthen the young women to enable them to withstand intellectual tasks."[365] Yet students also found enjoyment in this regime: one student suggested its initial popularity, writing in her diary in 1866 that "a class in light gymnastics has been formed today & I have joined. It is all the vogue in school now."[366] Another student wrote in a letter home: "We have had gymnastics now for the last two months or more and I like them very much. My muscles are getting quite strong,"[367] thereby echoing both the desired physical implications of this regime as well as the pleasure this student gleaned from it.

Physician and physical educator Dio Lewis was also an outspoken critic of women's corsets, and his instruction manuals convey the costumes he recommended for exercise: bloomer-like pants advocated by reformers as part of women's liberation.[368] Women in the first class at Vassar supplied their own costumes for exercise (Image 27), yet with the adoption of Lewis' calisthenic regime in 1866 came standard, loose-fitting uniforms (Image 28).[369] One student remarked in an 1866 letter home that "our gymnasium is complete now ... it is a pleasant site to see so many ... girls dressed in the pretty costume practicing" the exercises.[370] Thus, loose-fitting clothes, designed

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[363] Ross, *Moving Lessons,* 56.
[364] Lewis also sought to stimulate through these activities the "play impulse. Dio Lewis, *New Gymnastics for Men, Women, and Children*, Boston: Ticknor & Fields, 1862.
[365] Park, "The Contribution of Women to Exercise Science and Sports Medicine."
[366] Christine Ladd-Franklin, Diary, 1860-1866, p. 289, *Archives and Special Collections, Vassar College Libraries*..
[367] Lillian Killani, letter to grandmother, February 1877, p. 2, *Archives and Special Collections, Vassar College Libraries.*
[368] Green, *Fit for America*.
[369] Ballintine, Compiled Materials regarding the Physical Education History of Vassar College, Excerpts from the First Catalogue of Vassar College, 1865-1866 and the Second Catalogue of Vassar College, 1866-1867, *Archives and Special Collections, Vassar College Libraries*. It is unclear what the *reality* regarding corset use was. Students spoke of corsets in letters they wrote, thereby suggesting that they did not abandon corsets in daily life. Images of student physical activity uniforms from the 1860s appear to be loose-fitting, so it is possible that students in fact did *not* use corsets during physical activity. However, an 1866 image of Vassar women in tennis costumes suggests that tight-fitting sporting uniforms might have been worn with a corset.
[370] Annie Houts, letter to John Houts, November 1866, p. 3, *Archives and Special Collections, Vassar College Libraries.*

for physical movement, were another new, liberating bodily experience for Vassar women. In this way, students' embodied experience was seen as a means to social liberation, rather than a constraint.

From Dio Lewis to Dudley Allen Sargent

Several of the first female faculty in Vassar's School of Physical Training were disciples of Dudley Allen Sargent, whose influence we can see in the later years of the Calisthenium.[371] A trained physician, Sargent enjoyed a successful career as a physical educator and director of Harvard's Hemenway Gymnasium. He saw physical education as an integral part of higher learning, though he was critical of the form it took in Lewis' regime, which he criticized as being inadequate and "elementary in [its] nature."[372] In contrast, Sargent's medical theories centered around physical activity, which he saw as a way to not only promote healthy development but also cure disordered functions in the body including physical deformities, asthma, jaundice, hysteria, obesity, and other ailments. Steadfast in his belief that exercise would have a preventative *and* curative effect on students, Sargent prescribed a series of physical activities for men and women according to four general categories: hygienic, educative, recreative, and remedial.[373]

Image 28. Woman modeling Vassar's first costume for physical activity, adopted 1866 and required of all women. Image taken 1915. *Archives and Special Collections, Vassar College Libraries.*

By 1881, gymnastic instruction at Vassar was given "according to the systems in use at the Hemenway Gymnasium" and physical examinations "made by spirometer and dynamometer" were implemented in 1884.[374] These examinations helped to diagnose students' physical abilities and expose any deficiencies, the latter of which would be remediated with physical education regimens

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[371] Vassar faculty that had trained under Sargent included Harriet Ballintine and Helen Putnam.

[372] Sargent, *Physical Education*, iv (role of education) and 121 (critique). Also, Sargent was a critic of corsets, yet also labored under assumption that women's bodies categorically different than men's. Regarding the physical education of female students, Sargent articulated the necessity of: "A well-equipped gymnasium…with a pleasing, competent instructor…where corsets may be laid aside for an exercising suit, and freedom to breathe and to move be thoroughly enjoyed"; yet at the same time he called for the separation of men's and women's physical activities. Believing that women had "certain mental and physical reservations" that made them emotionally prone to excessive exercise, which he cautioned would "unsex her," Sargent specified appropriate exercises for women, often lower-impact and targeting quadrants of the female body most in 'need' of strength: muscles involved in respiration, and those near the spine, waist, and abdomen. Sargent, *Physical Education,* 59-69, 166) The names of several exercises for women are telling: *adoration* and *courtesy* (these same exercises are also prescribed for elderly men); see Sargent, *Health, Strength, and Power* and Sargent, *Physical Education.*

[373] Sargent. *Health, Strength, and Power*, 70.

[374] Ballintine, Compiled Materials regarding the Physical Education History of Vassar College, Excerpts from the Twentieth Catalogue of Vassar College, 1884-1885, *Archives and Special Collections, Vassar College Libraries.*

prescribed by the Resident Physician.[375] Increasingly, for students, the gymnasium was experienced as a place of assessment, categorization, and remediation. As for faculty, though influenced by two men—Lewis and Sargent—Vassar's physical education curriculum was executed by female instructors and, as noted earlier, therefore provided an opportunity for professional women to claim their own niche in this new organization.

Physical Construction

The Calisthenium cost $46,000,[376] yet Vassar saw this as a wise investment as "its income from the pupils engaged in these physical exercises will yield more than may the interest on its cost."[377] Designed by local architect J.A. Wood (1866), the Calisthenium, like Main, was a grand building, yet its Lombard Romanesque façade more expressive than Main's (Image 29).[378] Despite conflicting accounts about the relative size of the building's interior spaces, in its program we can read ideas about proper exercises for women.[379] In 1867, Matthew Vassar described the building to trustees: "its length is 156 feet, its width 138 ... it contains a music hall, a gym hall 81 by 30, a bowling alley 82 by 30 ... stalls for stabling 20 to 25 horses."[380] Further, the First Catalog of Vassar College (1865-6) states the dimensions of the riding school as 100 by 60.[381] In these descriptions we see echoes of Lewis' original educational scheme and the suitable activities for women—such as riding and bowling—that Matthew Vassar called for in the College Prospectus.

Image 29. The Calisthenium at Vassar College (1866, image ca. 1873). *Archives and Special Collections, Vassar College Libraries.*

Yet the building presented a problem for the ordering of Vassar's student bodies: women moved between

[375] Anthropometric measurements were collected at other colleges as early as 1860. Park, "Sport, Gender, and Society," 1585.
[376] $1,000 in 1865 is roughly equivalent to $14,000 today.
[377] It is clear from this quote that the Calisthenium enjoyed unquestioned administrative support, perhaps not surprising given the founder's desire to ensure the physical health of Vassar's students. Ballintine, Compiled Materials regarding the Physical Education History of Vassar College, Communications from M. Vassar to Trustees, June 25, 1867, *Archives and Special Collections, Vassar College Libraries.*
[378] VanLengen & Reilly, *Vassar College: An Architectural Tour*.
[379] Ballintine, Compiled Materials regarding the Physical Education History of Vassar College, Student's Manual, September 1872, *Archives and Special Collections, Vassar College Libraries.*. See also McFarland, "What are they Doing at Vassar?"
[380] Ballintine, Compiled Materials regarding the Physical Education History of Vassar College, Communications from M. Vassar to Trustees, June 25, 1867, *Archives and Special Collections, Vassar College Libraries.*
[381] Ballintine, Compiled Materials regarding the Physical Education History of Vassar College, Excerpts from the First Catalogue of Vassar College, 1865-1866, *Archives and Special Collections, Vassar College Libraries.*

their residences and this new space of physical activity, in the open, and in costumes not typically intended for public view. This provoked social and medical anxieties including questions of impropriety as well as concern about sweaty women needing to move in the cold to get to (dressing) rooms in Main; this exposed a breach of a fundamental though latent function of the campus gym: to enclose and order these novel bodily movements and costumes in architectural space.

Still, its shortcomings aside, founding trustee Benson Lossing wrote of the Calisthenium in 1867 that "in this, as in other things, Vassar College is a pioneer in good work" wherein in "appropriate and convenient costumes the pupils are instructed in the scientific use of their whole physical frame." These imparted strength, health, and vigor to Vassar women.[382]

Alumnae Hall (1889)

By the 1880s, enrollment had swelled to more than 400 students, and instructors complained of crowded conditions as they labored to accommodate well-attended daily courses in physical education.[383] Twenty years after the founding of the college, armed with decades of data showing women's physical accomplishments, and bolstered by a new consensus about the benefits of physical education,[384] in 1885 Vassar Alumnae began a long process to raise $20,000 for a new gymnasium. To obtain this sum Alumnae appealed for public funding "to make the coming [*sic*] woman more vigorous, more beautiful, and happier" than would be the case if she received only mental instruction.[385]

Yet fund-raising took several years and, once in hand, $20,000 proved insufficient for the ambitions the Alumnae had for their new gymnasium. The Committee on Physical Culture, which would oversee this process, visited "the outstanding gymnasia of the day" including "those of Bryn Mawr [and] the Brooklyn YWCA" and invited the architects of each to submit plans for the new Vassar

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[382] Benson Lossing, *Vassar College and its Founder*, New York: C.A. Alvord, 1867. Note scientific reference.

[383] Physical Education head Harriet Ballintine wrote to the College President in 1898: "In some ways our work has been very unsatisfactory owing to the crowded condition of the gymnasium in nearly every class. Especially has this been so with the sophomore and freshman classes. This is due of course to the larger freshman class but also to the present schedule." Harriet Ballintine, Annual Report for the Gymnasium, 1897-1898, 5, *Archives and Special Collections, Vassar College Libraries.*

[384] Heather Munro Prescott explains that anthropometric data, showing the physical progress of students, became "a central piece of Wellesley's promotional literature," Prescott, *Student Bodies*, 19. At Vassar, the Alumnae similarly appealed to this scientific "proof" of the value of women's physical activity, arguing that "statistics amply demonstrate the large possibilities of improving the average physical development at a period in their lives when properly directed exercise is a potent factor in their future health and well-being…. The building used at Vassar by this department is entirely inadequate for the purpose. We are working to obtain a fund of $20,000 with which we propose to erect a new, well-ventilated hall supplied with dressing and bathing rooms…which, when properly equipped with apparatus will be highly attractive, scientific, and useful." Ballintine, Compiled Materials regarding the Physical Education History of Vassar College, Notes Compiled by the Alumnae Trustees, 1889, *Archives and Special Collections, Vassar College Libraries.*

[385] Ballintine, Compiled Materials regarding the Physical Education History of Vassar College, Notes Compiled by the Alumnae Trustees, 1889, *Archives and Special Collections, Vassar College Libraries.*. In making this statement, the Alumnae lauded physical education as a necessary component of Vassar's liberal education curriculum, alluded to the wide-ranging benefits of active women, and positioned the gymnasium an essential means to pursue these goals. This sentiment echoed by Mary Taylor Bissell; see Bissell, "Physical Training as a Factor in Liberal Education."

gymnasium; all proposals far exceeded the budget. Undaunted, the committee asked William Tubby, associate in the design of Amherst's Pratt Gymnasium, to submit a proposal, which ultimately "brought a low bid of $19,055."[386] Sacrificed in the building's plan, however, were a running track and a spectator's gallery, evidence of new—though unrealized—aspirations for Vassar's physical education program. Further savings were achieved by "substituting brick for stone," not a popular material to use at a time in which the Gothic style reigned.[387] Nevertheless, Alumnae Hall opened in 1889 as "the largest for the purposes of exercise connected with any college for women." Indeed, Alumnae Hall, much larger and more programmatically diverse than the Calisthenium, was able to accommodate not only more women, but also a wider range of exercises and activities.

The Program

Dr. Mary Taylor Bissell, a physician and Vassar alumna (1875),[388] was a member of the Committee overseeing Alumnae Hall's construction; we can read her influence in the building's design and program. Bissell attributed women's poor physical health to three factors—dress, the school environment, and lack of exercise—and advocated in response the hygienic construction of buildings and regular exercise, preferably swimming, which she saw as a "perfect exercise" for bodily development.[389]

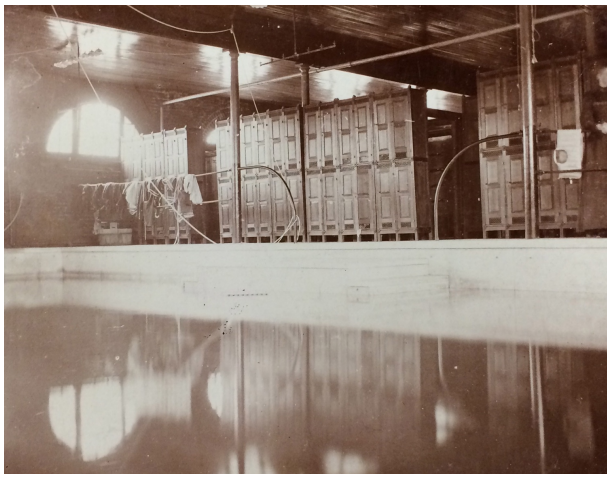

Image 30. Interior view of Alumnae Hall (1889) pool and lockers. *Archives and Special Collections, Vassar College Libraries.*

A report from the Alumnae Trustees describes similar realities in Alumnae Hall: "Especial [*sic*] attention has been given to the securing of sunlight in every room, and to the abundant ventilation without drafts ...."[390] Large windows, evocative of Roman baths, allowed for ample sunlight, an essential component of the hygienic construction advocated by Bissell. Additionally, the gymnasium contained a 43x24' swimming tank on the first floor (Image 30), a novel feature for the campus and the largest collegiate indoor pool at the time; positioned nearby were baths and dressing rooms. Also on the first floor, an exercise room (67x41)[391] served as site for

[386] "Listening In: Extra Gym Edition," November 1930, p. 4, *Archives and Special Collections, Vassar College Libraries.*
[387] Ibid.
[388] Bissell was also physician and Professor of Hygiene at the Women's College of the New York Infirmary for Women and Children. Bissell, *Physical Development and Exercise for Women*.
[389] Bissell, *Physical Development and Exercise for Women,* 16. This text was published two years after Alumnae Hall was completed, but her ideas were likely influential at the time of the hall's planning.
[390] Further descriptions include: "the plan is that of two connecting parallelograms, with a tower being at the [southwest] corner…." Ballintine, Compiled Materials regarding the Physical Education History of Vassar College, Materials Compiled by the Alumnae Trustees, 1889, *Archives and Special Collections, Vassar College Libraries.*
[391] Van Lengen & Reilly, *Vassar College: An Architectural Tour*.

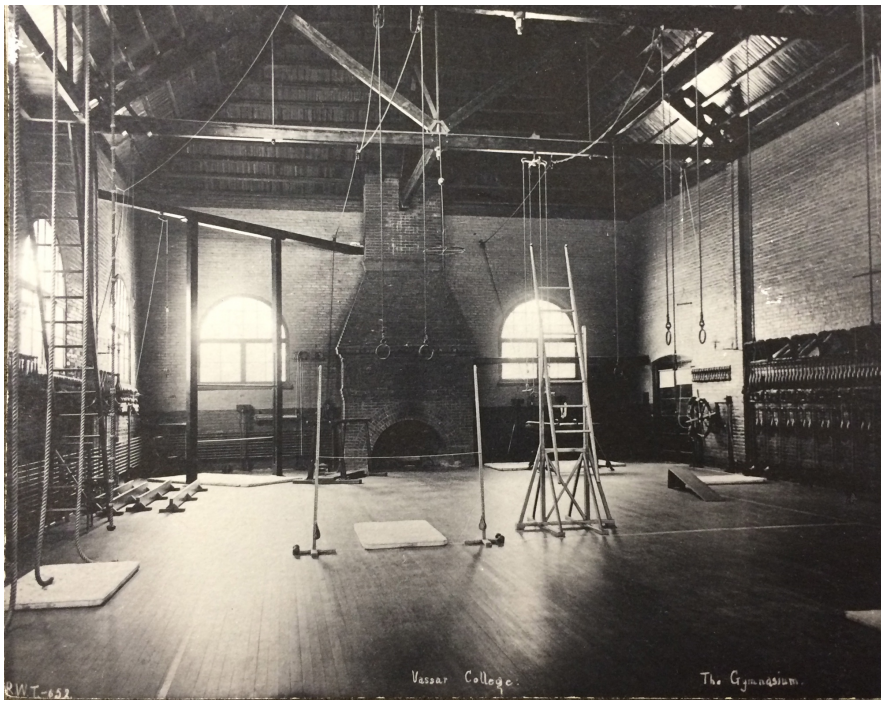

Image 31. Interior view of Alumnae Hall, n.d., ca. 1890. *Archives and Special Collections, Vassar College Libraries.*

individual exercise and physical examinations (Image 31). On the second floor, a Lyceum (100x47) housed not only social activities and dramatic productions but also organized sports—such as tennis and later, basketball—considered suitable for women at the time.[392] The Alumnae Gymnasium thus played an expanding role in the social and physical education of women on campus.

These programmatic features aligned with the "new epidemiology" of the era—ideas about disease prevalence and causation—which focused on personal hygiene and sanitary intervention.[393] In particular, daily exercise, changing out of soiled clothing immediately after exercise, and showering in a well-ventilated facility were all accommodated—if not enforced—by the design of Alumnae Hall. Additionally, after the advent of "the bacteriological revolution" in the late nineteenth century,[394] health professionals advocated behavioral and built environment interventions to stem the spread of germs: Alumnae's plentiful light and fresh air ensured a sanitary environment.

Sargent's influence also echoed well into the 1880s and 1890s. Harriet Ballintine, a disciple of Sargent, was hired in 1892 to lead the gymnasium. Prior to her hiring, physical examinations were initiated in 1884, and by 1889 Vassar's physical educators began to use Sargent's anthropometric charts to measure students' physical proportions and development (Image 32).[395] Anthropometry, the study and physical measurement

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[392] Note the domestic ambience of the lyceum. Ballintine, Compiled Materials regarding the Physical Education History of Vassar College, Chronological Quotations, *Archives and Special Collections, Vassar College Libraries.*

[393] Epidemiology is the "study of the distribution and causes of health outcomes in specified populations and the application of this study to control health problems." Epidemiologic study is comprised of both the surveillance of the patterns of health in populations and the identification of "associations among risk factors, disease, and preventive strategies," Frumkin et al., "An Introduction to Healthy Places," 15. As explained in Chapter 1, basic definitions of health change over time, as do the interventions identified as necessary and appropriate to ensure health; these shifts are emblematic of changes in epidemiological thinking.

[394] Germ theory 1868.

[395] Harriet Ballintine, Gymnasium Report to President Taylor, 1898-1899, *Archives and Special Collections, Vassar College Libraries.* The Twenty-Fifth Catalog of Vassar College (1889-1890) explains that "To ascertain the defects needing correction and to avoid overtaxing or wrongly working any student, the system of measurements recommended by the American Association for the Advancement of Physical Education, and adopted by all the best gymnasia is

of the body, gained popularity in the late 1800s and early 1900s as a way to assess individual health. In Sargent's regime, practitioners took measurements of students' weight and height, and girth—the latter of their head, neck, chest, waist, thigh, and knee—and used this data to track individual "progress" over time. Progress, for nineteenth-century physical educators, would be inferred from the achievement of ideal weights or measurements, as well as increases in strength (girth). For example, at Vassar, in 1899, Physical Education head Alice Bridgeman wrote to President Taylor about students' observed gains in physical strength: "the progress made in all cases has been satisfactory, and in some cases quite remarkable."[396]

Yet later, this data served as a way to calculate norms and thus used as a basis for comparison. Norms quickly became ideals, especially among college students whose bodies were seen as the bearers of the future race.[397] Thus, anthropometry, as practiced at colleges across the United States, has an uneven legacy especially in regard to their appropriation for the pursuit of a perfect student body, which became—to borrow from anthropologist Mary Douglas—a metaphor for the body politic. Indeed, in an 1887 address to the Association for the Advancement of Physical Education (AAAPE), Edward L. Hitchcock stated that such anthropometric measurements were essential for physical educators in order to "develop the most perfect type of man and woman in body, soul, and spirit," a sentiment and project that would was experienced by a broader public audience through Dudley Allen Sargent's own publications in *Scribner's Magazine* in which he showed "ideal forms" and their "deviations"—taken from his measurements of student bodies—as well as at World's Fair Exhibitions, where statues of the ideal male and female body, drawn from a compilation of anthropometric data from college students, were on display.[398] In these examples, anthropometric data became a proxy of individual success—bodily, racial, social, and otherwise—as well as a means to track progress in physical education programs.

The aforementioned interventions and anthropometric measurements demonstrate public interest in the (private) student body; yet the experience of these examinations undoubtedly were more profound for the students enduring them. Vassar student Adelaide Mansfield wrote to her mother about the experience of such

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allowed. The measurements afford, as taken during several years past, interesting and encouraging information concerning the valuable effects of systematic physical education. It is aimed to establish a progressive course of individual and class work so grade that no exercise is undertaken before the student has been trained up to the point of its easy accomplishment." See also Dudley Allen Sargent, *Handbook of Developing Exercises,* (Boston: Franklin Press: Rand, Avery, and Co., 1882).

[396] Anna J. Bridgeman, letter to President Taylor, 1899, *Archives and Special Collections, Vassar College Libraries.*

[397] Physical educator and protégé of Dudley Allen Sargent, R. Tait McKenzie used measurements from student inspections to create a pair of sculptures from the World's Fair. Heather Munro Prescott explains: "McKenzie attended [Sargent's] Harvard summer school and during the 1890s compiled Sargent's data to create statues of 'typical' American college men and women from measurements collected during mandatory physical examinations at elite men's and women's colleges. Prominently displayed in the Anthropology Building at the 1893 Chicago World's Columbian Exposition, these statues illustrated the bodily superiority of college men and women compared to the 'barbaric' bodies of Native Americans, African Americans, and 'foreign races' exhibited in the fair's Midway attractions." Prescott, *Student Bodies,* 40. Additionally, and equally nefarious, these physical measurements were seen as proxies for moral measures, in the case of William H. Sheldon and his somatotypes. See Prescott, "Using the Student Body."

[398] See Prescott, *Student Bodies*; Prescott, "Using the Student Body;" and Park, "Sport, Gender, and Society."

exams: "Did I tell you that I had my second physical examination in the gymnasium? My back and legs are quite a little stronger, and everything else has improved, except my right hand which has decreased."[399] This student's experience is emblematic of the nineteenth-century focus on healthy—and perfect—physical development. Further, we see here an echo of the expanded instruction and concern for the body represented and facilitated by Vassar's gymnasia and evidence of the detail involved in these examinations.[400]

The Ambivalence of Alumnae Hall

Alumnae Hall was erected after decades of women's engagement in new social spheres and bodily experiences like physical education and—increasingly—sport. Regarding the freeing of women's bodies through sport, Luther Gulick, an early President of the AAAPE and disciple of Sargent, said that games such as basketball would help women develop the skills they need for social advancement.[401] Still, despite a growing consensus about the value of physical education for women, conservatism persisted: the windows of Alumnae Hall, positioned high on the wall, afforded ample sunlight, but—importantly—did so while shielding women's bodies from public view.[402] Roberta Park explains that in Victorian America, "women's sports [were performed] away from the public eye" such that while "men performed sport" to an assumed audience of spectators, "women's sports [were] cloistered" and kept from public view.[403] Further, Alumnae Hall's vast dressing room, located adjacent to the swimming pool, meant that women no longer had to walk from their residences to the

Average.					Examination.			
Age.	Weight.	Height.	Chest.		First.	Second.	Third.	Fourth.
				No.				
				Age, last birthday,				
				Weight, without clothes,				
				Height, standing,				
				Height, sitting,				
				Head girth,				
				Neck girth,				
				Chest girth, natural,				
				Chest girth, inflated,				
				Waist girth, natural,				
				Thigh girth, right,				
				Thigh girth, left,				
				Knee girth, right,				
				Knee girth, left,				
				Calf girth, right,				
				Calf girth, left,				
				Upper-arm girth, right,				
				Upper-arm girth, left,				
				Fore-arm girth, right,				

Image 32. Physical examination templates from Dudley Allen Sargent, 1882. Measurements and examinations like those suggested here were used at Vassar College. *Sargent, Handbook of Developing Exercises, 1882, p. 48.*

[399] Adelaide Mansfield, letter to mother, March 25, 1894, *Archives and Special Collections, Vassar College Libraries.* Though Mansfield's experience was benign enough, Rosenbaum reminds us that the experience of posing for these photos—and recalling the experience decades later—was anything but pleasant for many students. See Rosenbaum, "The Great Ivy League Nude Posture Photo Scandal."

[400] This idea was articulated more deliberately by Sargent who saw colleges as ideal settings to carry out curricula of physical culture. Sargent, *Physical Education*, 122.

[401] Park, "Sport, Gender, and Society," 1594.

[402] The windows were lowered as part of a renovation in 1933, after the building ceased being used as a gymnasium (and thus, presumably, no longer needed to obscure from view the activities—and bodies—inside).

[403] The one exception to this rule was the annual "Field Day," a day meant to celebrate the year's athletic work and with a public spectacle. Park, "Sport, Gender, and Society," 1594-1595.

gymnasium in their exercise costumes; rather, changing bodies were enclosed in the locker room. Alumnae Hall therefore was emblematic of a broader paradox in late Victorian society: it offered new options and experiences for women, yet also reflected a conservative response to these social and bodily freedoms (Image 33).[404]

If the Calisthenium was an experiment in the role and nature of collegiate bodily education, Alumnae Hall represented the institutionalization of scientific views of gender and health mobilized to that end. In fact, a 1933 student publication reflected on the legacy of Alumnae Hall, noting that "the building ... met the ... needs of a headquarters for a more scientific course in body-building ... and physical recreation, and for intellectual and social diversions" and hence, this gym "made ... enormous strides in Vassar's whole educational scheme."[405] Here, then, is reminder that by the late nineteenth century, the moving student body was normalized to a certain degree, yet still experienced as somewhat problematic: something to control, supervise, and—if necessary—remediate.[406]

Intention and Experience in Vassar's Gymnasia

Undoubtedly, Vassar's nineteenth-century gymnasia were unprecedented in physical scale and function. Yet another way to understand their significance is to analyze the demands made upon these buildings by a range of actors and the ways in which the lived experience of students complicated these intentions. The experience of Vassar's spaces of physical instruction was uniquely Victorian, emblematic of and shaped by broader social anxieties and scientific paradigms that arose in the late nineteenth century. In one example, the author of an 1871 article in *Scribner's Magazine* recounts her visit to Vassar by first describing the apparent quality of the college's built setting and the disposition of its student bodies, only then to proceed to a third concern, "the education of the

Image 33. Alumnae Hall, Vassar College, 1899 (photo taken 1934). Notice the height of the first-floor windows in relationship to the man standing in front of Alumnae Hall: they were designed high enough from the ground to prevent passers-by from peering in to the pool and exercise facilities on the first floor. *Archives and Special Collections, Vassar College Libraries.*

[404] Kogan, "Sex Separation."
[405] "Listening In: Extra Gym Edition," November 1930, p. 4, *Archives and Special Collections, Vassar College Libraries.* Indeed, Alumnae Hall, later renamed Ely Hall, served the student body until 1933 when the third gymnasium, Kenyon Hall, was constructed as part of the euthenics complex – itself a study of domestic education, bodily development, and remediation.
[406] These practices were legitimized by the doctrine of *in loco parentis*. See Simon, "In the Place of the Parent."

intellect" achieved at Vassar.[407] This preferencing of the built environment and physical student body is emblematic of broader trends in Victorian society, namely the shift from idealist to realist scientific views in the mid-nineteenth century. Historian Terry Kogan explains: "After mid-century, a new sexual science arose that shifted the understanding of gender from a focus on idealized social roles to a focus on physical bodies" and spaces.[408] Indeed, Vassar's buildings, grounds, and the physical character of its inhabitants were primary concerns to both the administrators who gave the campus its form and the broader public whose attention was focused on the impact of this novel institution.

Public Experience

The general public was both an assumed and actual audience of the buildings on Vassar's campus, the interventions they housed, and the publications produced by administrators and journalists alike. As noted above, in an 1873 report, College President Raymond acknowledged popular interest in the institution by noting that Vassar was "an experiment in liberal education for that sex to which liberal education has in general been hitherto denied."[409] Anticipating the specter of public scrutiny, administrators sought to reassure—or at least engage—public debate about women's education through the resources and design of Vassar College; this took the form of physical education, anthropometric examinations, and the grand buildings that enclosed these activities.

Journalists, too, played a role, their eyewitness accounts offering reassurance of the value and efficacy of this new institution.[410] An article in *Harper's Magazine*, for example, reassured readers of the "serious work" being done at Vassar by women who appeared to walk "with a fine and even gait."[411] If the reported intellectual achievements of women were not sufficient to quell critics, then certainly a record of their postural achievements would have the desired impact, as posture was seen as a proxy of moral, intellectual, and physical character in the nineteenth century.[412] Further, such articles offered accounts of women's undamaged bodies, despite persistent concerns about prolonged siting in school desks.

Faculty Experience

Female physical educators saw physical activity as a way to quell concerns about women's poor health, while providing opportunity for women to gain strength and achieve perfect bodily development, if not fully realize the social liberation Elizabeth Cady Stanton foresaw. Yet for female physicians and educators, collegiate physical education programs offered unprecedented opportunities to take on leadership positions in professional organizations and advance up faculty ranks. In 1885, Vassar's

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[407] McFarland, "What are They Doing at Vassar?" 9-10.
[408] Kogan, "Sex Separation," 25.
[409] Raymond, "Vassar College: A Sketch of its Foundation," 5.
[410] See for example Brackett, "Vassar College" and McFarland, "What are They Doing at Vassar?"
[411] Brackett, "Vassar College," 357
[412] Yosifon and Stearns, "The Rise and Fall of American Posture."

own Helen Putnam took on a leadership role within the newly-formed American Association for the Advancement of Physical Education and the college's Head of Physical Education, Harriet Ballintine, earned the faculty vote in 1898, putting her on the same ground as her male colleagues.[413]

In addition to these professional advancements, faculty also gained credibility through the myriad studies they performed on student bodies. Historian Catherine Gidney explains: "Drawing on beliefs about the power of scientific investigation to improve the individual and society, health experts not only carved out areas of expertise within this context but gained credibility though this intellectual turn."[414] In particular, a key source of professional legitimacy for these women, including Mary Taylor Bissell, were studies using anthropometric measurements and posture photos that were used to document—and diagnose—students' physical disposition and progress over time.[415] These studies allowed women to articulate their own theories about the female body, propose novel methods for its remediation, and thus reinforce the unique expertise that professional women could offer to the topic of women's health. Physical educators also employed anthropometric data at a more local scale to reinforce the value of their programs to administrators; for example, in annual departmental reports submitted to the College President, Vassar's physical education faculty employed anthropometric data to illustrate the physical gains made by students.[416]

Still, despite looking for ways to "[depart] from Victorian restrictions on female movement," and quantify the benefits of physical activity—both of which we might see as tactics to free the female student body—Catherine Gidney argues that female educators nevertheless saw the need for greater surveillance of women's bodies in pursuit of this project.[417] Thus, the same anthropometric studies and pedagogical techniques that faculty leveraged to gain credibility for their work had a twin function: they served as mechanisms of surveillance and control of the student body.[418] By implementing regimes of bodily instruction and assessment and administering alumnae surveys, these female educators carved out a unique realm in which to leverage their

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[413] Harriet Ballintine, Compiled Materials regarding the Physical Education History of Vassar College, Chronological Quotations, *Archives and Special Collections, Vassar College Libraries.* Putnam taught gymnastics at Vassar from 1883-1890, according to Roberta Park (Park, "The Contribution of Women.")

[414] Gidney, *Tending the Student Body,* 10.

[415] Prescott, "Using the Student Body," 4-6.

[416] A 1900 report to President Taylor from Harriet Ballintine shows an example of how data was used to show the efficacy of Vassar's PE program: "The following statistics are of interest in showing the increase in strength test examinations. These are for the sophomore class as we have not had time to compile the measurements for the present freshmen for their last examination. Class of 1901: 164 students examined 12 whose total strength did not improve. These twelve are students who have spinal curvature or are otherwise abnormally delicate. Average gain of 151 students who did improve ..... 45.1 kilos. Some improved as much as 128 kilos A few.....15 kilos. Only one 5 kilos." Ballintine, Gymnasium Report to President Taylor, 1899, *Archives and Special Collections, Vassar College Libraries.*

[417] Gidney, *Tending the Student Body,* 185.

[418] Gidney suggests that the spaces and practices enclosed in gymnasia played an important role in the *experience* of authority, as the authority of physical educators and college doctors was "reinforced by the compulsory nature and institutionalization of physical training and health exams." Gidney, Tending the Student Body, 187.

expertise and popular interest in data and evolutionary thinking to navigate the gendered contradictions of Victorian society and move toward overcoming what historian Roberta Park terms the "Female Subordination Triad."[419]

The Student Experience

Though the student body was a subject of scrutiny among the general public and the object of administrative and pedagogical interventions, at Vassar, women's lived experiences often complicated the demands made upon the college and its spaces of physical instruction. In the late nineteenth century, female students experienced a host of new assessments and persistent fears that higher education might compromise their social and reproductive status, yet they also participated in a range of new sports and exercises at educational institutions across the United States. Recognizing these contradictions, historian Janice Ross has argued that women had to "navigate the great divide between the increasingly robust and independent realities of [their] lives and the persistent ... beliefs about their frailty and unsuitability for an active, engaged, and public life."[420] Indeed, we can imagine Vassar women embodying this contradiction between "behavioral reality and ... forms of conventional ideology"[421] as they danced, walked, and exercised in loose-fitting costumes, experiences that would have been uncommon for middle-class Victorian women.[422] Yet, Ross notes the "split between the freedoms that could be allowed a women's body and the control that must be exercised over her mind;"[423] namely, amid concerns about 'race suicide,' conservatives did not want women to forget their "duties" as mothers and protectors of future generations.[424]

The aforementioned 1885 Association of Collegiate Alumnae (ACA) survey sought to quantify women's experiences in college as a way to dispel concerns about overwork, fatigue, and the mental, physical, and moral dangers assumed to lurk in public—collegiate—life. While critics cited 'scientific' findings about the inherent differences of women's bodies to justify separate spheres, female educators and physicians leveraged their own studies and data to resist these ideas. Vassar physical educator Annie Howes explained that "it is because such a cry… has been raised against a college education for women that [the ACA] ... bent its energies to the task of

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[419] Historian Roberta Park offers the concept of the "Female Subordination Triad" to explain the experience of women during the late 1800s and early 1900s in relation to what now might be called exercise science and sports medicine." This triad is composed of: "(1) belief that females are biologically, hence intellectually, inferior; (2) barriers to women who wish to pursue a professional or scientific career; and (3) assumptions embedded in the protracted debate over menstruation." Park, "The Contributions of Women to Exercise Science and Sports Medicine, 1870-1994," 11.

[420] Ross, *Moving Lessons,* 24.

[421] Smith-Rosenberg and Rosenberg, "The Female Animal," 114.

[422] In fact, Ross explains that "physical well-being and the freedom to move the body in the service of physical expression…were uncommon experiences for the middle-class Victorian women" who comprised Vassar's population. Ross, *Moving Lessons,* 27.

[423] Ross, *Moving Lessons,* 27.

[424] "Race suicide" was a concern first articulated in the late 1800s to describe a popular fear that the poor health of American (white) men and women, due in large part to the negative implications of an increasingly modern society, would render them unable to bear children. This fear later was amplified by eugenicists who sought to ensure not only the propagation of future generations but that of certain "desirable" characteristics—all inherent to "white" races. See Prescott, "Using the Student Body."

discovering upon what actual basis the claims regarding the physical incapacity of college women rest."[425] This survey is emblematic of a realist scientific paradigm, but—importantly—from a women's perspective: it shows how female physicians and physical educators fought back against critics. Analyzing data from 700+ women—and offering an unsubtle response to critics—Wright concluded: "During college life the majority [of students] studied but moderately... 44 per cent did not worry over their studies or affairs ... they... took a proper amount of physical exercise daily, abstained from exercise wholly or in part during the menstrual period [and] ... as a rule they entered society but little."[426] In regard to women's lives post-college, the survey demonstrated that "about one-fourth have married, and ... of the whole number of children borne by them, the greater part are living and in good health."[427] Thus, while used to refute the claims of critics, this survey nevertheless defined women's experiences in terms of their personal health, as well as that of their progeny. In so doing, the survey—and its creators—left unquestioned basic assumptions such as the need to protect women's bodies and marriage and child-bearing as essential roles for women.[428]

Further, these data served as a form of surveillance, exerted on women long after they moved away from the panoptic gaze of college administrators, physical educators, and physicians.[429] I see the ACA survey as an ambivalent intervention: though not completely free from popular assumptions and anxieties, it illuminated new spaces for freedoms, experiences, and resistance, all of which Roberta Park suggests would be important in the transition to the 'new woman' starting in the 1890s.[430] This 'new woman' challenged Victorian gender roles, and, Park explains, owed a great debt to sport, which offered a new venue to resist conservative views of gender and realize new bodily forms and expressions.[431] Stanford Physical Educator Clelia Duel Mosher described the physical body in which this new, liberated social body was housed: "the modern college woman, with her physical activity made possible by her unconstricting

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[425] Howes, "Health Statistics of Women College Graduates," 5.

[426] Wright, "Health Statistics of Female College Graduates: From the Sixteenth Annual Report of the Massachusetts Bureau of Statistics of Labor," 74-75. Note how statistics attempt to show women's motivations and values (experience) of college health, marriage.

[427] Wright, "Health Statistics of Female College Graduates," 75.

[428] Sport historian Martha Verbrugge argues that the hidden curriculum of physical education is "its implicit training in personal values and social interaction. In subtle and overt ways, physical education teaches us about discipline and spontaneity, cooperation and competition, self-esteem and embarrassment. Thus, the overall power of physical education is considerable: through recreation, we learn to re- create both our bodies and our selves." Martha Verbrugge, "Recreating the Body: Women's Physical Education and the Science of Sex Differences in America, 1900-1940," *Bulletin of the History of Medicine* 71(1997): 273.

[429] Raymond argued in his 1873 sketch of Vassar College that "If any still labor under the impression that earnest study and high intellectual culture are destructive of feminine grace and refinement, a visit to Vassar will dispel this delusion. No parts of the system there adopted have yielded more thoroughly satisfactory results than the provisions for health and for social and moral culture." Yet importantly, Raymond attributes this success to a regime of surveillance of female student bodies: "The success attained in these respects is believed to be attributable to the systematic care which has been extended over those invaluable interests, and to the presence and tireless efficiency of responsible officers charged with their protection…." Raymond, "Vassar College: A Sketch of its Foundation," 75.

[430] See also the idea of the 'new woman'" of the 1890s, which challenged Victorian gender roles. Park, "Sport, Gender, and Society."

[431] Roberta Park, "Sport, Gender, and Society," 1578; see also Ross, *Moving Lessons*.

dress, is a much more normal and beautiful human being than the woman of the Victorian period," [432] capable, even, of achieving the bodily perfection represented by Greek statues, a far cry from the frail, wasp-waisted, sedentary female body of the early 1900s.[433] Thus, though unevenly realized, the female student body was liberated physically and socially through the spaces and practice of physical instruction that populated Vassar and its peer institutions.

Conclusion: Gymnasia in Context

Paul Venable Turner has argued that one of the unique features of American universities is their emphasis on and inclusion of programs and amenities geared toward the student experience.[434] Here, we see how this preoccupation with the student experience became *embodied* in nineteenth-century America; in other words, seen through the lens of bodily experience, health, and physical activity. Vassar's spaces of physical instruction—most notably, their gymnasia—were designed to shape student experience and, by extension, student bodies. Yet the actual use of these buildings and the social and bodily significance created therein were in fact more complex and ambivalent than their built forms suggest, at times confirming or embracing the designer's intent, and at other times subverting it.

How, then, might we understand the collegiate gymnasium, as realized at Vassar and as a general building type that emerged in the nineteenth century? First, college gymnasia represented an important shift in the jurisdictional scope of the institution: concerned not only with developing student minds, but also student bodies. Necessitated by the perils of taxing "mental work" and sedentary study, physical education ushered in a new set of administrative priorities, pedagogical techniques, and public health discourses to promote bodily education alongside the intellectual and moral education long undertaken by institutions of higher education.

Second, physical education programs, borne out of concerns for women's health and burgeoning scientific and public health theories and practices, both reflected and resisted broader popular anxieties. Further, historian Heather Munro Prescott has argued that college health services, originating in response to concern about vulnerable female bodies, have long been a mechanism to cope with a diversifying student body and a means to socialize, or "[bring] outsiders in," including women and recent immigrants.[435] Catherine Gidney extends this idea, suggesting that "the development of physical training and health services on university campuses emerged as one response to the perceived negative effects of a rapidly changing society," [436] including the sedentary nature of modern life, the observed pallor and weakness of American

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[432] Mosher, *Personal Hygiene for Women,* 85.
[433] The frontispiece in Mosher's *Personal Hygiene for Women* is a photo of a statue of the *Venus of Cyrene* – ostensibly a nod to this Greek ideal.
[434] These amenities include housing, activities, and gymnasia. Turner, *Campus: An American Planning Tradition.*
[435] Prescott, *Student Bodies,* 3. Note also similar role of parks and libraries of the nineteenth century. See Cranz, *Politics of Park Design* and Van Slyck, *Free to All.*
[436] Gidney, *Tending the Student Body,* 5.

bodies, and the profound social changes brought about by women's entry into a more public sphere.

In short, physical education and health services—a twin endeavor in the nineteenth century—functioned as mechanisms of control, manifested through the discourses and mechanisms employed to create the "ideal" student body, such as regimes of self-care, self-education, and grading; the measurement and classification of student bodies, whose statistical averages eventually became ideal norms;[437] and the ordering and enclosure of new forms of bodily movement and expression in sanctioned spaces, namely the college gymnasium and playing fields.[438] Yet college settings also offered an unprecedented forum for professional women to express different theories of women's health than those their male counterparts promoted. This, then, is not simply a tale of the subjugation of women's bodies by popular science and medicine, but one of subjectivity and instrumentality.

[437] Terry and Urla, *Deviant Bodies.*
[438] Vertinsky and Bale, *Sites of Sport*; see also Owen, "Pure and Sound Government."

Chapter 3
Women's Education in the Twentieth Century: Winds of Change

Introduction

By the early decades of twentieth century, Vassar had become part of a thriving community of women's colleges known as the Seven Sisters; during this time, these institutions, according to historian Helen Horowitz, "reached their highest point of their influence and had moved toward a common design."[439] Though women's colleges were held in high esteem and enjoyed "a high degree of acceptance and respect" in the early twentieth century, World War I ushered in a new wave of social conservatism that brought to the fore—once again—questions about women's "proper place" that influenced women's education, bodily and intellectual.

At Vassar, the transition from the nineteenth to twentieth century paralleled a profound shift in the outlook of the College. Under College President Samuel Caldwell (1875-1885), Vassar had suffered from low enrollments—owing in part to increased competition from Wellesley (1875) and Smith (1883) Colleges—and insufficient funds from tuition to sustain campus expenses. Yet once Caldwell resigned, President James Monroe Taylor (1886-1914) took the helm, leading the College from a "period of uncertainty" into a "period of expansion" through a series of curricular changes, administrative restructuring, and an ambitious building program. Regarding the latter, under Taylor, the campus saw the construction of new dormitory buildings—to keep pace with the new cottage-style dormitory style found at the sister institutions of Wellesley and Smith Colleges—and the erection of a new gymnasium, Alumnae Hall (1889). Together, these changes resulted in increased enrollment and a reassertion of Vassar's reputation as a decidedly modern institution.[440]

Yet at the same time, Taylor took a conservative view toward Vassar women, desiring to shelter them from outside influences that could prove distracting to their studies; for example, the President disallowed a debate on women's suffrage to occur on campus.[441] This conservative view presaged broader societal trends brought on at the end of WWI and is evidence of a persistent ambivalence in the institution toward the educated, (socially and physically) mobile, female student body.

Bodily Education in the Twentieth Century

By the end of the nineteenth century, campus gymnasia played a significant role in the experience of female students. Increasing use of facilities, mandatory courses, and compulsory bodily examinations ensured an active and healthy student body; thus, we can imagine the gymnasium as a space that punctuated student life: indeed, as mentioned above, included in one student's album of "Indelible Photos" were many

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[439] Horowitz, *Alma Mater,* 277. We might consider these colleges an "innovation cluster" since they looked to each other for inspirations in design.
[440] Van Lengen & Reilly, *Vassar College: An Architectural Tour,* 16; see also Horowitz, *Alma Mater* for more on collegiate designs that rendered these campuses "modern"—or not—over time.
[441] Van Lengen & Reilly, *Vassar College: An Architectural Tour.*

images of Vassar's gymnasia and other spaces of physical education (see Image 2, Introduction).[442]

Yet in the early decades of the twentieth century, the professions that oversaw these spaces and regimes of physical instruction and remediation—public health and physical education—underwent significant change. Inspired by a "new public health" which "focused on individual risk factors rather than broad environmental and social dangers," college health (hygiene) departments, began to transition in 1920 from a "gymnastic" to a "clinical" paradigm of care.[443] Still, work on the student body continued, and in fact intensified during the 1930s and 1940s. While the ideal physical body was, in the nineteenth century, measured by its strength, health, fertility, and ability to withstand the rigors of higher education, in the early decades of the twentieth century, a new ideal emerged, increasingly defined—and measured—in terms of posture.

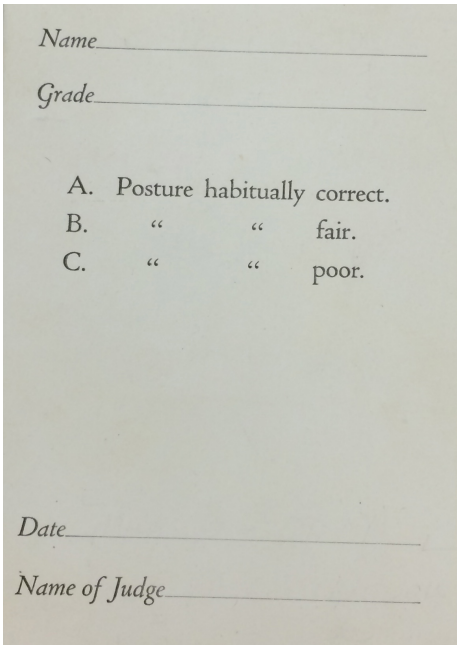
The scientific practice of anthropometry began this precise measurement of the body in the nineteenth century;[444] yet with its further development in the twentieth century, others began reading into the robust set of data produced through anthropometric studies what they wished. While health professionals and physical educators focused attention on measuring and remedying student posture as a means to promote health and "correct bodily habits," others—like William H. Sheldon—saw implications for a person's character in their body type (or, in his words, *somatotype*) and eugenicists equated good posture with "better bodies for improved breeding."[445] Particularly at institutions of higher education, posture became a primary preoccupation in the early- and mid-decades of the twentieth century. The American Posture League was established in 1914, and at Vassar, student posture was taught in Body Mechanics courses (Image 34), recorded and assessed in annual posture photos, and judged periodically through posture competitions (Image 35). Even as popular interest in the rigid, upright posture of the early twentieth century began to decline in the 1920s and 1930s, colleges remained a defiant mainstay of a

Image 34. Photo of "Correct Standing Position,", Vassar College, 1921 *Archives and Special Collections, Vassar College Libraries.*

[442] "Indelible Photographs" photo album, ca. 1890, *Vassar College Archives and Special Collections*, Poughkeepsie, NY.
[443] Prescott, *Student Bodies*.
[444] Ales Hrdlicka, a renowned practitioner of anthropomtetry, stated, tellingly, in 1918 that "the paramount objective of physical anthropology is the gradual completion, in collaboration with the anatomists, the physiologists, and the chemists, of the study of the normal white man under ordinary circumstances." Terry Urla & Alan C. Swedlund, "The Anthropometry of Barbie," in Terry & Urla, *Deviant Bodies*, 286.
[445] Patricia Vertinsky, "Physique as Destiny: William H. Sheldon, Barbara Honeyman Heath and the Struggle for Hegemony in the Science of Somatotyping," *Canadian Bulletin of Medical History/Bulletin canadien d'histoire de la médecine,* 24(2007): 296. See also Yosifon and Stearns, "The Rise and Fall of American Posture."

conservative movement to preserve proper posture, many continuing their posture-related curricula through the 1960s and 1970s.[446]

In contrast with the nineteenth century's concern about sedentary student bodies, after the turn of the century, references to the perils of prolonged sitting quickly disappear in favor of other health concerns. Yet movement—which previously had been justified as an antidote to the "sedentary life of the scholar"—was still important, taking on new meanings in light of social and institutional change, and gymnasia were still constructed, though not without fight and controversy. Thus, though this era—and indeed, this chapter—deviates from the primary topic of sedentary behavior, this investigation of twentieth-century ideas of the moving body is nevertheless instructive in illuminating how prolonged sitting was eclipsed by other concerns and thus left unresolved. Further, we see here how the mind and body—linked in the minds of nineteenth century educators and health professionals—became increasingly split as the twentieth century advanced, with profound implications for bodily and intellectual education at Vassar and beyond.


Name_____

Grade_____

A. Posture habitually correct.
B. " " fair.
C. " " poor.

Date_____

Name of Judge_____

Image 35. "Habitual posture" grading card for 1918 posture drive at Vassar College. The affixed caption reads: "In 1918 there was an 'Habitual Posture' contest. The students competing were divided into groups of not more than 12. They were judged on their daily posture for a period of one week. The marks, based on the following grades were given by student judges." *Archives and Special Collections, Vassar College Libraries.*

In sum, the dawn of the twentieth century ushered in new gains for women's education and professional development, yet also witnessed persistent ambivalence about the educated female mind and body. This ambivalence echoed throughout the 1900s, and, as will be demonstrated below, shaped women's education in general and the design of gymnasia, provision of services, and changes in the department of physical education at Vassar.

The 1920s and 1930s: Social Conservatism and Vassar Euthenics

According to feminist historian Patricia Graham, women's education peaked in 1920: in that year, women comprised 47% of undergraduates nationally, thus achieving their "highest proportion of the undergraduate population, of doctoral recipients, and of faculty members," meanwhile enjoying a diverse range of options for higher studies.[447] The subsequent decline in women's education post-1920, according to Graham, was due to numerous changes, not the least of which was the rise of social conservatism in post-war America which raised questions about women's proper place in society. At the same time, eugenicists cautioned

[446] Yosifon and Stearns, "The Rise and Fall of American Posture."
[447] Patricia A. Graham, "Expansion and Exclusion: A History of Women in Higher Education, *Signs* 3(1978): 764.

that college-educated women did not produce sufficient offspring to keep the (white) race alive, and American President Calvin Coolidge (1923-1929) accused women's colleges of "harboring radicalism," all of which had profound implications for women's education,[448] bodily and intellectual. Indeed, we might read the confluence of these factors as a subtle yet significant societal attack on women's bodies and minds, which resulted in a range of campus-based interventions to control and remediate female student bodies.

In addition to the social conservatism of the era, architectural historian Paul Turner has noted a correlate conservative turn in early twentieth century campus planning and design, citing examples of the re-emergence of the medieval quadrangle—alongside the Beaux Arts planning schemes—which were meant to emphasize collegiate values and a cloistered campus experience. To Turner, elitism and intimacy were the keywords of the early twentieth century.[449] At Vassar, the built campus took on new import under the leadership of College President Henry Noble McCracken (1915-1946), a social reformer who took special interest in the student and faculty experience and saw, as did Matthew Vassar decades before, that "the quality of education and the quality of building were intimately related."[450] McCracken was known for his close involvement in the design of new buildings—such as Vassar's fourth gymnasium, Kenyon Hall (1933)—as well as his desire to promote social reform and a spirit of independence among Vassar faculty and students. Though he shared a deep interest in Vassar's physical plant with his predecessor, President Taylor, the two diverged in their social views: McCracken was as reform-minded as Taylor was conservative.

The one anomalous point in McCracken's administration is his championing of the establishment of the Euthenics curriculum at Vassar in 1926; this program sought to apply the liberal arts to homemaking through "the scientific study of the home."[451] Though McCracken saw this program as fulfilling Matthew Vassar's dream for Vassar College to provide a specific curriculum for women, critics pointed out that in fact Mr. Vassar thought that men and women should study the same subjects. Further, Vassar Professor Mabel Newcomer considered the program "a step backwards for women's education."[452] In fact, the euthenics curriculum was never embraced by faculty, yet we can still read in its implementation echoes of what Helen Horowitz calls the "physical reorientation that accompanied new [conservative] visions about women in the twentieth century."[453] Further, important to our purposes, a new campus gymnasium, Kenyon Hall, was constructed in 1933 as part of the Euthenics Complex, thus signaling

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[448] Horowitz, *Alma Mater,* 279-282.
[449] Turner, *Campus: An American Planning Tradition*.
[450] Van Lengen & Reilly, *Vassar College: An Architectural Tour,* 10.
[451] Horowitz, *Alma Mater*, 295. Euthenics, the application of sciences to the domestic realm, was a distinct concern from eugenics, despite the two being temporally concurrent.
[452] Van Lengen & Reilly, *Vassar College: An Architectural Tour*, 53.
[453] This conservativism can be seen, for example, in the return to a cloistered collegiate gothic style at Mt. Holyoke and in the euthenics complex at Vassar. Horowitz, *Alma Mater,* 295.

a further shift in the scope and role of physical education at Vassar College in the early twentieth century: bodily movement in service of broader social and domestic goals.[454]

Alongside the aforementioned societal reorientation of women's roles in twentieth century America came a shift in conceptions of the ideal (student) body. Writing in 1923, Stanford University Physician and Professor Clelia Duel Mosher, M.D., wrote that "the Greek ideal of physical perfection" was now "practical and attainable" by collegiate women. Further, her desire for women's bodily education illustrates the increasing preoccupation with posture that defined this period: in her 1923 book, *Woman's Physical Freedom,* Mosher advocated the "possibilities for grace and beauty in a symmetrically developed woman in whom poise, balance, and graceful posture are present."[455] Perfect physical development had long been a preoccupation among physical educators, but here we see it linked more specifically to beauty and social grace, qualities of the new, ideal body. In fact, Mosher wrote in 1921 that the college woman embodied "the old Greek ideal of physical perfection,"[456] a status that she believed could be achieved by all women if they followed a set of prescribed hygenic rules of college life. Continuing this theme, the frontispiece of Mosher's 1927 text, *Personal Hygiene for Women*, boasts a photograph of the statue of the Venus of Cyrene, another deliberate (and *visual*) reference to an idealized feminine figure. Thus, in the early decades of the twentieth century, posture—much like physical activity the century before—became as much a social as a bodily endeavor.

Though society at large increasingly associated relaxed posture with modernity, in the 1920s and 1930s colleges continued to promote formality and rigidity in posture. Historians David Yosifon and Peter Stearns refer to this conservative view as a "posture counterattack" in which colleges initiated posture classes, mandatory (nude) posture photos, and posture drives in an attempt to reform student bodies. At the same time, posture became a standard rubric for evaluating personnel. In 1940, President McCracken received a request for information about Physical Education faculty member, Alfreda Mosscrop, who had applied to a position at the University of Wisconsin. In addition to answering questions like "Is she efficient in administering her work?" and "Is she adaptable and resourceful," McCracken was also asked to comment on Mosscrop's "personal characteristics" including her health and vigor, general appearance (including posture and appropriate dress), ease and poise, and culture and refinement, by grading each on a scale from Excellent to Unsatisfactory: E, G, F, P, U.[457]

Employees were not the only ones whose posture was subject to evaluation: for the average Vassar student, opportunities for postural assessment and remediation abounded on campus. For example, in a 1919 posture drive, students rewarded for

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[454] Domestic goals included the improvement of home-making through the application of science and liberal arts to domestic work and social goals included women's service to others (family, society).
[455] Mosher, *Personal Hygiene for Women,* 63.
[456] Prescott, *Student Bodies*, 25.
[457] Blanche Trilling, University of Wisconsin, Letter to President McCracken to request information about a physical education employee, Alfreda Mosscrop, May 10, 1940, *Archives and Special Collections, Vassar College Libraries.* Presumably the letter grades stand for: Exemplary, Good, Fair, Poor, Unsatisfactory.

good posture with posture pins; additionally, the 1923 class hygiene song was dedicated to the topic of posture:[458]

When we get older
We won't be told ter
Keep a straight shoulder
It'll come natural
When you bend up like a bow
Where do all your organs go
All of this you ought to know
She told us so.

These activities, seemingly frivolous when seen through today's eyes, had important consequences. Sport historian Patricia Vertinsky explains that: "In the 1930s, Vassar went so far as to claim the right to dismiss students if they had severe postural defects or if other aspects of their physical condition appeared inadequate at enrollment. Special exercise assignments were widely demanded and a 'Fundamentals' course on posture and carriage based on the analysis of posture photos was mandated for all freshmen."[459]

Though the student body had long been evaluated and assigned to remedial instruction, what is new in this emphasis on posture is the ascendancy of visual means of assessment and pedagogy, the extreme intervention of the institution into the private student body (via posture photos), and, increasingly, the association of posture with not only health concerns, but also, eventually, class and race.[460] College administrators and physicians at the time saw data as proof of the value of health curricula and examinations, and some even claimed that "by producing healthier, more physically fit, and better-educated mothers, women's colleges would make the white race that much stronger and wiser."[461]

Another example of the ambivalence about women's bodies in post-WWI America was articulated by Clelia Duel Mosher, who observed in 1923 that: "the world war and the strain of its aftermath ... made unprecedented demands on women as well as men" as women entered the workforce and proved through their work—and advances in physiological science—that "the traditional incapacity and the physical weakness supposed to be inherent in her sex ... [are] due not to sex but other and

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[458] Vassar Class Hygiene Song, 1923. "Posture and Photographs", Vassar College, accessed April 20, 2013, http://vcencyclopedia.vassar.edu/athletics/posture-and-photographs.html.
[459] Vertinsky, "Physique as Destiny," 298-299.
[460] See Prescott, *Student Bodies* and Yosifon and Stearns, "The Rise and Fall of American Posture."
[461] Prescott, *Student Bodies,* p. 8. Women's health and education, therefore, were not only linked in popular discourse but also tied together with particular conceptions of a gendered, raced, classed, and idealized female body. Indeed, from claims about health and the impact of education on student bodies to the concern for the health of the larger body politic, student posture exams—and photos—were never a neutral endeavor: images, measurements, and assessments that comprised this practice became associated with far more than a mere assessment of postural performance.

removable causes."[462] This was an important observation because it liberated women's bodies, once again, from the discourse of physiological difference (inferiority) and highlighted instead the role of external factors on women's health, including gender roles and "the fashion of dress." Still, though Mosher sought through her work to liberate the female body from the discourse of difference and disability,[463] at the same time, she argued that in entering the workforce, "it has been the duty of every woman to meet this economic demand without injury to herself racially," thereby echoing fears that hard work (whether economic or academic) would "desex" women (in nineteenth-century parlance) or feed racial degeneration (in the words of eugenicists). As demonstrated in Chapters 1 and 2, bodily education has long been an instrument to cope with societal change, and this is another example of how the student body—its posture and its reproductive capacity—faced another conservative backlash amid post-war anxieties about the body politic.

Yet at the same time, the very apparatus of college health promotion was undergoing significant change. Inspired by a "new public health" which "focused on individual risk factors rather than broad environmental and social dangers"[464] college health (hygiene) departments began to transition by 1920 from a "gymnastic" period emphasizing physical education and anthropometry to a "health promotion" period that focused on curative medicine, hygiene, and physical fitness. With this rise of sanitary medicine on college campuses, Gidney argues that "Health experts and educators saw their role as identifying and separating the contagious; grading students and providing advice on physical exercise; and inspecting…proper living conditions, dining, clothing, and behavior. They took it, too, as their responsibility to teach students how to live in the best way possible."[465] We see here an echo of the grading schemes used to assess the student body, as well as evidence of the long reach of the administration into many aspects of student life under the guise of health promotion. However, this shift was also indicative of the rise of professionalization in which physicians and physical educators sought to establish unique claims to specialized knowledge in the care of college students.[466] Historian Heather Munro Prescott has shown how college health professionals in the 1920s and 1930s sought to distinguish themselves from physical educators through the scope and paradigm of care and the establishment of professional organizations such as the American Student Health Association (ASHA) in 1920.[467]

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[462] Mosher, *Personal Hygiene for Women,* 1.

[463] Note that much of Mosher's work focused on proving that women's poor physical health due to corsets and other elements of contemporary fashion, not to inherent weaknesses; she also did multiple studies on women's menstruation.

[464] Prescott, *Student Bodies,* 76.

[465] Gidney, *Tending the Student Body,* 4.

[466] Prescott, *Student Bodies,* 6.

[467] The ASHA became the American College Health Association in 1948. Interestingly the ASHA held its annual meetings in tandem with the National Collegiate Athletics Association (NCAA) until 1938. See Prescott, *Student Bodies* and Rachel Mack, "History of the American College Health Association," *Journal of American College Health* 59(2011): 482-488.

Despite the increasingly divergent focus of college health and physical education programs, still largely unchanged was the function of these departments—as part of the broader collegiate enterprise—to stand *in loco parentis*: to educate, remediate, and intervene upon student bodies. Though the early decades of the century saw an expansion in educational opportunities for women, both bodily and intellectual—not to mention an emphasis on social reform at Vassar, under the leadership of President McCracken—through such practices, regimes of surveillance on the student body continued well into the late twentieth century.

Though physical education and college health departments across the country separated in the 1920s and 1930s,[468] at Vassar, the Physical Education department still considered physical instruction to be "part of a coordinated health program,"[469] thereby employing student health as an important justification for their work. However, as will be demonstrated below, they also sought new ways to legitimize the role of physical education in higher education; in particular, bodily education was tied to larger institutional forces. Yet at the same time, an increasing emphasis on self-directed, individual recreational pursuits made a justification for increased funding more difficult to articulate. In some ways, the 1920s-1930s represented the peak of women's education and physical education.[470]

1940s – (1968): Conflict and Coeducation

The years following the Second World War saw unprecedented change on college campuses: the student body, aided in part by the GI bill, became increasingly diverse, and students began to chafe against the paternalism of the institution's traditional role of standing *in loco parentis*, leading to an era of student protests and activism affecting nearly all aspects of collegiate life. Paul Turner adds that this period was also characterized by an ever more complex institution, as epitomized by rise of the multiversity.[471] Yet at Vassar, the most significant institutional and student body changes in this era were precipitated primarily by the College's transition to co-education in 1968.[472]

The post-war years at Vassar were characterized by optimism and growth, especially during the heady years under Vassar's first female College President, Sarah Gibson Blanding (1946-64). Blanding led the Vassar campus through curricular changes to "emphasize the value of [students'] independent work"—part of Blanding's goals to encourage women to continue to graduate school—instituted higher faculty salaries to help ensure Vassar's high quality education, and through alumnae contributions, garnered a larger endowment for the school. This modernization of Vassar's administrative and curricular apparatus was similarly reflected in the campus' modern architecture of the era (for example, the campus' Noyes Hall was designed by

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[468] Prescott, *Student Bodies.*

[469] "Listening In: Extra Gym Edition," November 1930, *Archives and Special Collections, Vassar College Libraries.*

[470] Women's education was linked with physical education at its founding, so it is not surprising that the two are linked in this way later on.

[471] Turner, *Campus: An American Planning Tradition*; see also Kerr, *The Uses of the University.*

[472] Prescott, *Student Bodies;* see also Simon, "In the Place of the Parent."

modernist architect Eero Saarinen in 1958), a significant departure from the historicist styles that had characterized Vassar's physical campus since its founding.[473] Yet Blanding could also see on Vassar's horizon another impending shift: that towards co-education.

Ultimately, Blanding's successor, Alan Simpson (1964-1977) was the one to oversee Vassar's transition to co-education. This shift represented a massive institutional undertaking, posed new challenges for the campus community, and created a crisis of sorts for the Department of Physical Education. Regarding the former, Helen Horowitz explains that "the problem was not creating and implementing a curriculum, but adapting a college plant with facilities for 1,600 women to the much more varied needs of an enlarged and coeducational student body."[474] Vassar, which for a century had been providing an education to women equal to that of men, faced few curricular challenges in educating the minds of a newly diverse student body; more challenging, however, was the question of how—and where—to ensure the bodily education of this new influx of men. Notably, no gymnasium was constructed under these two presidents—Blanding and Simpson—suggesting waning interest in (or, as might be argued by Physical Education faculty, administrative support of) physical education.

As for the Department of Physical Education, the question of coeducation required faculty to rethink course offerings, re-articulate the role of physical education in a coeducational institution, and, for the female physical educators who had long enjoyed the autonomy and opportunity afforded by the separate sphere of bodily education, define a distinct place for women's expertise in the education of men and women. On the cusp of coeducation, Vassar's Physical Education department was in desperate need of new facilities, yet such a significant investment of campus funds required faculty to make a case for expanded facilities time and again, often, it turned out, with little response.[475]

Meanwhile, post-war anxieties about the health of the nation led to renewed interest in physical training for student bodies—representing society's best and brightest, as well as the progenitors of future generations—that could preserve the health of the body politic. Historian Heather Prescott explains the context in which this focus arose: "The relationship between the fitness of the student body and the well-being of the body politic became especially prevalent in the 1930s and 1940s, as concerns about the strength of the United States as a world power intensified interest in preserving the health of the nation's student population."[476] In fact, President Harry Truman's Commission on Higher Education released a report in 1947 entitled "Higher

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[473] Van Lengen & Reilly, *Vassar College: An Architectural Tour,* 20-22. Recall that some people were upset that Kenyon was not built in a modern style. For more on the link between physical activity and modern architecture, see Vertinsky & McKay, *Disciplining Bodies in the Gymnasium: Memory, Monument, Modernism.*

[474] Horowitz, *Alma Mater,* 10.

[475] "During the past five years, three distinct committees (**) have investigated Vassar's athletic program," yet "each of these reports met a similar fate; they were either ignored or weakly implemented." Advisory Committee of Physical Education and Athletics, "Appendix B: Proposals for Vassar's Athletics: A Report of the Ad-hoc Committee to Advise the Dean of Faculty," January 1978, *Archives and Special Collections, Vassar College Libraries.*

[476] Prescott, *Student Bodies*, 7

Education for American Democracy," which linked collegiate education with "the health of the individual student body" which could help raise "the standards of individual and community health throughout the nation."[477] Once again, we see here renewed public interest in the private student body. Though this increased interest could provide much-needed support to the Department of Physical Education (which, in a post-*in loco parentis* era, was looking for new ways to legitimize physical education on campus), in fact this new emphasis on bodily education took on more complex meanings, as eugenicists became interested in the racial stock of the future mothers and leaders represented by college students.

Post WWII, then, was a period that saw the reorientation of the traditional apparatuses and interventions involved in collegiate health and physical education regimes; notably, instruments of assessing and remediating student bodies were recast with a new goal: to promote a healthy body politic, through the cultivation of healthy student bodies that would become the leaders, mothers, and fathers of tomorrow.[478] What might appear to be similar practices as compared to earlier eras in fact now had novel different justifications and aims: for example, while physical examinations and posture exercises of the 1920s were focused on anthropometry (healthy development), these same practices took on new meaning in the 1940s, as health professionals realized that anthropometric bodily measurements and nude posture photos could be used to define, somatically, a new ideal body.[479]

Akin to other mapping technologies that became popular in the late nineteenth and early twentieth centuries, posture photos contributed to a specific epistemology of the student body: a means of understanding, ordering, and controlling its physical—and by extension, social—condition.[480] To Patrick Joyce, Victorian efforts to map urban contexts were tantamount to "technologies of governance, in terms of how subjects once known and identified [are] then operated upon to secure their subjectivity"[481]; similarly, postural examinations and photos constituted a regime of governance of the student body wherein assessed postural dispositions determined the nature of physical education or remediation required. Further, the abstracted categories that students were placed into on the basis of these photos eventually became associated with other aspects of their social location and genetic "selectability."[482] While a physically deficient student may be sent to a "remedial posture course"[483] to "correct specific

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[477] Prescott, *Student Bodies*, 8; Similarly, Gidney explains that college students were seen by health experts as representing an important constituency: "graduates would take the values and ideals learned in university with them into the home, workplace, and community." Gidney, *Tending the Student Body,* 12-13.

[478] And soldiers.

[479] Studies of the body were used to define a new, ideal body.

[480] Mapping advocates claimed, at least, that such could be inferred or extracted from mapping and counting techniques. See Patrick Joyce, "Maps, Numbers, and the City: Knowing the Governed," in *The Rule of Freedom: Liberalism and the Modern City*, (London: Verso, 2003), 42-44.

[481] Joyce, "Maps, Numbers, and the City," 23.

[482] George Hersey, *The Evolution of Allure: Sexual Selection from the Medici Venus to the Incredible Hulk*, (Cambridge: MIT Press, 1996), 99. Hersey notes that in anthropometric studies, "the bodies studied all cluster around hierarchies running from good to bad—in our terms, selectable and deselectable."

[483] Rosenbaum, "The Great Ivy League Nude Posture Photo Scandal."

physical defects"[484], other students, if eugenicist William H. Sheldon had his way, might have been channeled toward specific vocational counseling based on the aptitude for future career he could divine from a student's *somatotype*.[485] If the nineteenth century was characterized by concern about the perils of the sitting body, the twentieth century witnessed new anxieties about the standing body: the need to stand and walk with proper posture to be beautiful, and the ability to assess—inspect and grade—the standing body to expose deeper physiological and sociological "truths."

The experience of these bodily practices—now burdened with new implications—also changed. Though Ellen Davis Kelly wrote in her 1949 textbook, *Teaching Posture and Mechanics,* that taking posture photos and sharing them with students could be a positive strategy to motivate students toward self-care,[486] in fact student accounts of the experience of being photographed—and subsequently graded based on their bodily disposition—was a less than positive experience for many. Alison Prentice, a student at the all-women's Smith College, where posture photos were taken of all students until 1973, wrote of her experience to her parents:

> I never did tell you what I got in my posture picture—I'm almost a genius. It was a C+. However I have an increased pelvic tilt, my shoulders are too far back and my head too far forward .... We are having our pictures taken again next Monday—and so I will let you know if there is any gigantic improvement. It's terribly humiliating and above all downright discouraging to discover that as a physical specimen you are a complete wreck! A shame to the human race.[487]

What is interesting in this quote is the poignancy of Prentice's embarrassment about her physical diagnosis—particularly when rendered on the most private part of herself, her nude figure—as well as her articulation of the "racial" implications of this practice. Student bodies now bore the weight of responsibility for the body politic, a burden not comfortably assumed by all.

Further, to feminist historian Alison Mackinnon, posture photos "subjected women's bodies to critical observation, teaching them hard lessons of what constituted the ideal feminine shape," which increasingly had less to do with individual health and more to do with changing standards of beauty and anxieties about the health of the body politic (both of which focus again on women's reproductive organs more than her mind).[488] Yet posture photos were not the only way in which, to Mackinnon, "women became [in the 1950s and 1960s] ... the object of the professional, the disciplinary, and the prurient gaze" as female students were subjected to examinations, remedial courses, and posture photos.[489] For institutions of higher education, these interventions represented a new type of power exerted over the female student body: these

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[484] Prescott, *Student Bodies,* 19.
[485] Hersey, *The Evolution of Allure.*
[486] Ellen Davis Kelly, *Teaching Posture and Body Mechanics,* (New York: A.S. Barnes & Co., 1949).
[487] Prentice, in Mackinnon, *Double Bind*, 36
[488] Mackinnon, *The Double Bind,* 4
[489] Ibid. Posture photos were taken in the nude.

techniques were not only a form of surveillance; they also were deployed with the expectation of self-care.[490]

Further, renewed questions about whether educated women could be productive wives, mothers, and citizens resulted in a host of surveys in the 1950s and 1960s that sought to measure the impact of education on women. For example, a study of the Vassar Classes of 1929-35 endeavored to understand the "development of personality, intellectual growth, and academic achievement" of students, who were grouped into categorical patterns of development, including *socially active*, *over-achievers,* and *under-achievers* and asked to reflect upon the impact of their education on their subsequent life situation.[491] Another study of the Vassar Classes of 1957 and 1958 focused on "the relationship of students' nonintellectual qualities to their academic performance" and grouped respondents into two categories: the ideal students, nominated by faculty, and a comparison group of non-nominated (presumably less-than-ideal) students.[492] Students were then evaluated according to a range of personal attributes—for example, *social integration, dominance-confidence, developmental status, and masculine role*—known as the Vassar College Attitude Inventory (VCAI) Scales; the goal was to correlate these variables with academic performance. In such studies, we can see an echo of the anxieties about women's education that prompted the Association of Collegiate Alumnae (ACA) to embark upon their landmark 1885 study of the impact of education on women; however, whereas the ACA study focused on the women's health and reproductive status, these later studies were more focused on the social impact of education on women.

At Vassar, the Physical Education department witnessed considerable growth in the 1950s and 1960s due to the diversification of gymnasium users (including faculty, staff, and guests), a new democratic philosophy toward participation in sport, and a rise in recreational activities and "club" sports. Yet at the same time, Physical Education faculty and students alike became increasingly vocal about what they perceived to be a lack of investment from the campus in these very programs that saw both increasing use and new justifications for their importance articulated at local and national scales. Health was no longer the sole justification for physical education, and with the critique and dissolution of *in loco parentis* in the 1960s, departments of physical education had to seek new rationale.[493] At Vassar, that shift came in response to the 1968 move toward co-education: Physical Education faculty positioned their department's unique contributions as essential to attracting men to Vassar, creating unity among the student body, and thus supporting the institution through unprecedented change.

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[490] See above comments about Foucaultian notions of surveillance and self-care (bio-power).
[491] Donald R. Brown and Rosemary Pacini, "The Vassar Classes of 1929-1935: Personality Patterns in College and Adult Life," 1956, in *Women's Lives Through Time*: *Educated American Women of the Twentieth Century*, ed. Kathleen Day Hulbert and Diane Tickton Schuster, (San Francisco, Jossey-Bass Publishers, 1993), 99-107.
[492] Brown & Pacini, "The Vassar Classes of 1929-1935: Personality Patterns in College and Adult Life," 163.
[493] Gidney, *Tending the Student Body*.

After Coeducation (1970s-1990s)

Whereas higher education had, since the nineteenth century, operated under the doctrine of *in loco parentis*, which provided the moral and legal justification for a host of interventions to protect and remediate the student body, by the mid-1970s, as discussed in Chapter 1, legal scholar Jonathan Simon argues that institutions of higher education began to move to an era of deregulation which he terms a "laissez-faire paradigm" of managing student life. In this era, students were reframed as a type of consumer and collegiate institutions a service provider, meaning that students were free to choose the type of experience they would engage in at college in order to achieve their individual goals for personal advancement. Legal courts in the 1970s and 1980s further emphasized this decline of *in loco parentis*, stating that the need to govern student life was "both onerous and dangerous" for the institution.[494] Because physical education programs had long been justified, at least in part, under this traditional role of the institution to stand in place of the parent—especially with regard to managing student bodies—this shift had important implications for the trajectory of college physical education programs, many of which faced significant decline in the last decades of the twentieth century.

Historian Catherine Gidney offers a number of additional explanations for the decline of collegiate physical training beginning in the 1960s: the aforementioned shift away from the parental role of the university and assumed obligations of bodily education for women combined with a "drastic rise in student enrollments" and diversification of the student body and, echoing the *laissez-faire* sentiment described above, an increasing trend to "shift the burden of physical examinations onto students, requiring them to undergo [an examination] by their family physician prior to university entrance" all chiseled away at the foundation of physical education programs.[495] At the same time, as Departments of Physical Education sought new justifications for their educational regimes beyond their traditional claims of protecting and improving student health and citizenship, Gidney explains that, in so doing, "the aims of physical training became much more amorphous." Ultimately, with the disintegration of nineteenth-century claims of moral improvement via physical education came increased freedoms and diversity of offerings in physical education programs; however, these gains came at the cost of providing a clear rationale about the broader social benefits of physical education.[496]

At Vassar, despite continued growth of Physical Education and the Department's persistent claims regarding the central importance of physical education and athletics to coeducational success, faculty and students alike increasingly voiced their concerns and frustrations over an apparent lack of support from the campus administration for new physical education staff and facilities, both of which fell far behind peer institutions. For example, though boasting the second-highest number of undergraduate students, Vassar employed the fewest Physical Education faculty; the authors of a 1978 report on

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[494] Simon, "In the Place of the Parent," 23-25.
[495] Gidney, *Tending the Student Body,* 183-184.
[496] Ibid., p. 190.

the state of athletics to the Dean of Faculty called this an "embarrassing" comparison (see Table 3), a clear appeal to the administration of the need to keep pace with peer institutions.[497] Finally, however, after at least three institutional reviews of the state of physical education programming and facilities at Vassar, countless appeals for funding, and more than fifty years after the construction of Kenyon Hall, in 1982 Vassar embarked on the construction of a new space for sport and physical activity, Walker Field House, as well as much-needed renovations to Kenyon Hall and the outdoor facilities at Prentiss Field.

Table 3. A comparison between Vassar's teaching load in Physical Education and that of faculty at other Seven Sisters Colleges; Appendix B in a 1978 report on athletics to the Dean of Faculty.[498] *Reproduced by author.*

College	Undergraduates	PE Faculty - Full	PE Faculty - Part
Barnard	1900-1950	9	5
Bryn Mawr	940	5	2
Mt. Holyoke	1950	10	4
Smith	2500	9	5
Wellesley	2000	10	4
Vassar	2250	6	2

Indeed, the mid-1980s represented a shift in the campus' orientation toward its physical plant and a re-articulation of the aims of a coeducational liberal arts education. President Virginia Smith (1977-1986) emphasized Vassar's liberal education for men and women; at the same time, the Physical Education Department (re)positioned physical education as essential to liberal education;[499] perhaps due to the consistent argument the Department made in linking athletics and coeducation, the campus saw the construction of its newest gymnasium, the Walker Field House, in 1982. Still, other areas of the campus plant suffered from neglect: by the end of Simpson's term, the campus' physical grounds were largely dilapidated, representing a perfect opportunity

[497] Authors of this report were: Jean Appenzellar, Howard Bliss, Roman Czula, Cindy Himes, Lucy Johnson, Michael McCarthy, Richard Moll, Randy Porges, Deborah Rebhuhn, Betty Richey. Advisory Committee of Physical Education and Athletics, "Appendix B: Proposals for Vassar's Athletics: A Report of the Ad-hoc Committee to Advise the Dean of Faculty," January 1978, *Archives and Special Collections, Vassar College Libraries.*

[498] Advisory Committee of Physical Education and Athletics, "Appendix B: Proposals for Vassar's Athletics: A Report of the Ad-hoc Committee to Advise the Dean of Faculty," January 1978, *Archives and Special Collections, Vassar College Libraries.*

[499] In their January 1978 report to the Dean of Faculty, the Advisory Committee of Physical Education and Athletics explained: "Our argument for a strengthened athletic program is premised on the truth that Vassar's excellence as a coeducational liberal arts college depends on rectifying deficiencies in this centrally important area [of athletics]" as "most gifted students want a superior academic program to be enriched by a lively and diversified residential life" and "athletics contributes both to individual education and to the development of community." Advisory Committee of Physical Education and Athletics, "Appendix B: Proposals for Vassar's Athletics: A Report of the Ad-hoc Committee to Advise the Dean of Faculty," January 1978, *Archives and Special Collections, Vassar College Libraries.*

for the next President, Frances Daly Fergusson (1986-2006), an architectural historian, to once again invest in Vassar's physical plant as a way to achieve the goals she set forth for the Vassar community. Pertinent to our purposes, under Fergusson's leadership, the Physical Education and Athletics Department experienced a renewed investment in its physical plant, with the construction of the Athletics and Fitness Center (AFC) in 2000. Though the linking of mind and body—the "maxim" of the College set forth by its founder, Matthew Vassar—still echoes in the work of the Physical Education and Dance Department (for example, a flyer from approximately 2016 proclaims that Vassar "student-athletes excel in the classroom and on the field"),[500] this building, as its name suggests, represents a new orientation toward physical education: as a mere *facility* for self-care, yet also an instrument to achieve institutional concerns, and a necessary service for a broad campus community.

Impact on Gymnasia

The three gymnasia constructed on the Vassar Campus in the twentieth century—Kenyon Hall (1933), Walker Field House (1982), and the AFC (1999)—were shaped by and rose in response to broader social and institutional changes. Below I explore the construction of these three spaces, chart their relationship to shifting priorities for student health and the moving body, and demonstrate the changing role of physical education on campus.

In addition to the experience of these gymnasia by public, faculty, and student audiences emphasized above, here I extend my analysis to consider: how these buildings were called upon to help the campus cope with—and control—an increasingly diverse student body; the extent to which Vassar's traditional focus on bodily education as a liberal art waxed and waned in the twentieth century;[501] and the role of the moving body in the broader institutional shift from *in loco parentis* to a *laissez faire* and, eventually, *risk management* paradigm of student management.[502] In short, the moving body, once a centerpiece of Vassar's educational program, has been increasingly obscured, subsumed by an emphasis on the education of the mind. Yet at the same time, the story of Vassar's physical education program and spaces serve as a counter-story to the narrative of decline all too common among collegiate physical education programs in the late twentieth century: the campus' focus on cultivating *sound minds and sound bodies* still echoes in its promotional materials, and indeed its work. Ultimately, these twentieth century spaces of physical activity demonstrate how we might understand gymnasia as, in the words of sport historians Patricia Vertinsky and John Bale, "struggles over space." Below I show how Vassar's gymnasia were contested physical, disciplinary, and administrative spaces on the Vassar Campus.[503]

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[500] "The Vassar Athlete Excelling" pamphlet, picked up by the author in February 2016 on the Vassar Campus.
[501] This is part of a larger historical effort (which is still going on) to bring academic legitimacy and respect to physical and somatic education.
[502] See Simon, "In the Place of the Parent."
[503] Vertinsky and Bale, *Sites of Sport*, 1

Kenyon Hall (1933)

More than forty years after the construction of Alumnae Hall—which had gone through several renovations to accommodate a rapidly expanding student body—in 1930 the Vassar campus newspaper dedicated an entire issue to cover a breaking story: the proposal of a new campus gymnasium. The proposed building, presented to the Council of Representatives of the Associate Alumnae, was reportedly received with "unanimous and enthusiastic endorsement" by the Alumnae, who agreed to "help fund an 'undesignated portion'" of the project as part of their commitment to respond to the "most acute need at the present time:"[504] the bodily education of Vassar students.

A New Physical Education Paradigm

Though enthusiastic fiscal support among Vassar Alumnae for a Vassar gymnasium was not a new phenomenon,[505] what was distinct about this new building was the novel approach it represented toward physical education. A publication (ca. 1935) entitled "The New Gymnasium" explained three distinct eras of bodily education: first, physical education "came into being as a hand-maid of the art of politics; its function was to produce healthy citizens;" then, "with the advance of medical science it became hand-maid to preventive medicine," and finally, in the 1930s, in addition to these goals, the "chief function" of physical education was "to give the individual a physical well-being not only equal to his needs in life but one in which he can delight for its own sake."[506] This idea of delight, or pleasure, was a keyword of the era and one that defined the design of Kenyon Hall. In November of 1930, the campus newspaper, *Listening In,* described the forthcoming building as a "focal point for the delights of relaxation which should follow strenuous exertion on the hockey field or basketball court" and pointed out that the gymnasium would have a "club-like feel," furnished with "davenports, easy chairs, and cheerful hangings" so as to make it a "comfortable and inviting place in which to relax and cool off after exercise."[507] In sum, Kenyon Hall was an innovative take on a familiar form, "indicative of the new role in gymnasium planning which emphasizes the pleasure of exercise rather than the duty of taking it."[508]

Yet this emphasis on the pleasure of physical activity had another implication: it signified the rise of a new, democratic, view of sport in which all bodies would be invited to participate in—and gain from—a range of physical endeavors. Vassar Physical Education Professor Alice Belding explained this shift, noting in 1930 that: "The old athletic aristocracy is being broken, for now no girl is afraid to come forward and claim her right to play in a tournament, not necessarily because she thinks she can win, but because she enjoys the sport."[509] Yet in addition—and in some ways seemingly

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[504] The presentation of the proposed gymnasium was made by Dean Thompson, Alice Belding, and Helen Kenyon, the latter of whom was chair of trustees and later the namesake of the gymnasium. "Listening In: Extra Gym Edition," November 1930, *Archives and Special Collections, Vassar College Libraries.*

[505] Recall, for example, the Alumnae Association's involvement in funding Alumnae Hall (1889).

[506] "The New Gymnasium," ca. 1930, *Archives and Special Collections, Vassar College Libraries.*

[507] Note the acknowledgement of leisure time and efforts to control it and make it productive. "Listening In: Extra Gym Edition," November 1930, *Archives and Special Collections, Vassar College Libraries.*

[508] Ibid.

[509] Ibid., quote by Alice Belding.

counter—to this emphasis on pleasure, enjoyment, and democratic participation, physical education in this era took on other functions, namely to help students develop skills for later in life and to "train the body in subordination…to group interest."[510] Thus, while students were expected to delight in the range of activities housed in the new gymnasium, these exercises were also meant to achieve instrumental ends. Not uncommon in the history of spaces of recreation and leisure, here we see expanded opportunities for physical activity and sport tempered by a desire to control such leisure pursuits by steering them toward 'productive' ends.[511]

Additionally, student health was still identified as a primary priority of this new regime of physical education—in fact, Kenyon's Pool and locker room were designed according to the principles of "sanitary science"[512] including the circulation of light and air throughout—and linked, increasingly, to the body politic. Recognizing that the majority of Vassar women became mothers or teachers after graduation, Professor Alice Belding stated that the new gymnasium was part of a "coordinated health program" on campus in which students would develop lifelong skills and interests in health that they could pass along to others.[513] Thus, women's colleges were poised, in this new paradigm of physical education, to make a "social contribution" to "social well being [*sic*] [through] better knowledge of healthful conditions of work, both mental and physical."[514]

This sentiment was further elaborated by the fact that Kenyon Hall rose as part of a complex of buildings dedicated to the new—and controversial—academic specialty of Euthenics, which sought to apply science to the domestic arts. While Blodgett Hall, the centerpiece of the Euthenics Complex, housed a biological laboratory, physiology theater, and model apartment, Kenyon contributed to the Euthenics curriculum by serving as the site where students learned the science of health and bodily movement—and how to apply it throughout life. In fact, in the November 1930 edition of the *Listening In* campus newspaper, dispatched to alumnae and parents of Vassar students, Dean Thompson explained Vassar's three-pronged health program, consisting of: (1) physical education "for healthy activity and play;" (2) a health department "which seeks not only to cure defects, but to prevent them from developing;"[515] and (3) euthenics, "or a study of the relation of the sciences to living."[516] Thus, as in the nineteenth century, domestic education persisted alongside bodily education, an endeavor that relegated women to—or at least assumed their place in—the domestic

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[510] "The New Gymnasium," ca. 1930, *Archives and Special Collections, Vassar College Libraries.* "Group interest" would have been in service to a range of goals: national, democratic, corporate, and military. See also Cavallo, *Muscles and Morals* and Lupkin, *Manhood Factories.*

[511] See a similar desire to channel leisure time and recreational pursuits toward more "productive" ends in Cranz, *Politics of Park Design*; Cavallo, *Muscles and Morals*; and Lupkin, *Manhood Factories.*

[512] Wallace & Tiernan company, Technical Publication #41: "The Sanitation of Swimming Pools," 1930, *Archives and Special Collections, Vassar College Libraries.*

[513] "Listening In: Extra Gym Edition," November 1930, *Archives and Special Collections, Vassar College Libraries.*

[514] Ibid.

[515] As noted above, physical education and college health departments split in the 1920s.

[516] Dean Thompson, in "Listening In: Extra Gym Edition," November 1930, p. 2, *Archives and Special Collections, Vassar College Libraries.*

sphere. Enjoyment could certainly be had within the walls of Kenyon Hall, but in this regime, physical activity was necessarily enjoyed in the service of others.[517]

Five years after the completion of Kenyon Hall, Alfreda Mosscrop, Chairman of the Physical Education Department, wrote a memo to faculty in which she articulated the contributions that bodily education made not only to campus priorities but also to student health and society at large. "We believe that physical education is an important integrating factor in college life. It is a phase of education," Mosscrop declared, a sentiment that would continue to reverberate throughout the twentieth century as Vassar's student community became increasingly diverse. Yet in particular, this strand of bodily education sought to help students develop:

> Optimum vitality and physical efficiency ... mental and emotional balance ... which contribute to her poise and power ... her kinesthetic reactions and ... an appreciation for the beauty of efficient movement, an appreciation of her place and responsibility in rendering service in community relationships through her knowledge of recreational activities, [and] her recreative [*sic*] powers through activity and interest.[518]

These goals translated into a host of activities housed in the new gymnasium (including a room dedicated to corrective exercise, an ultraviolet room to develop film from posture photos, and a Trophy Room with record-holder names inscribed on its walls), and also hinted at a new definition of the ideal student body: feminine, poised, powerful, beautiful—all terms that would easily be appropriated in the 1930s and 1940s by eugenicists interested in preserving the body politic.

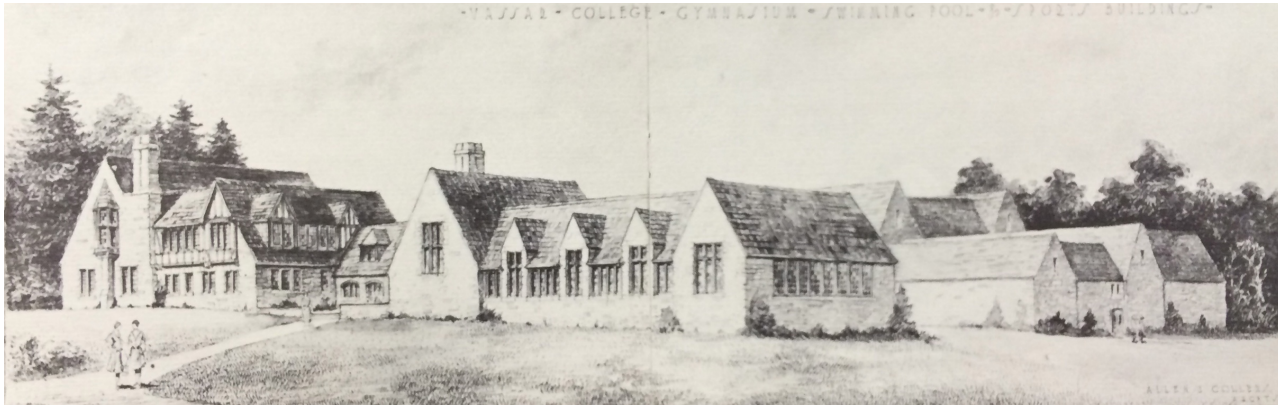

Image 36. Sketch of Kenyon Hall, Vassar College, ca. 1933, by Allen and Collens Architects. Note the pastoral feel of the buildings, which were meant to evoke the buildings on Matthew Vassar's family farm. *Archives and Special Collections, Vassar College Libraries.*

[517] Thus, despite an emphasis on the democratic enjoyment of leisurely activities, Vassar's euthenics program perpetuated a constrained view of women's bodies.

[518] Letter from the Faculty to Alfreda Mosscrop, Chairman of the Physical Education Department, May 12, 1938, *Archives and Special Collections, Vassar College Libraries.*

Physical Description

Designed by the architectural firm of Allen & Collens—a prolific practice responsible for many of Vassar's buildings during this time—Kenyon Hall was designed in the style of an old farmhouse building and adorned with architectural ornamentation to stylistically blend with other buildings in the Euthenics complex and echo foliated motifs present elsewhere on campus (Image 36).[519] Further, this building, sited on the campus' old Wing Farm,[520] initiated a shift in athletic facilities to the northwest sector of campus, a move that would be amplified with the construction of Vassar's subsequent spaces of physical education. The original *partie* of the new gymnasium depicted a simple H-shaped plan with five distinct sections of the building: along the rear horizontal section were basketball and tennis courts; populating the front horizontal were the executive areas and pool, as well as the main entry; and connecting these two parallel forms was a central area for showers and locker rooms (Image 37).[521] Further, the "low, rambling character" of the building was "evocative of an English manor's out-buildings," as was the detailing of the roof which appeared almost thatched; some claimed these architectural features were intended as an homage to Matthew Vassar's birthplace in Norfolk, England.[522] Still, this design was not without controversy: critics denounced the farmhouse style as "false expression" and protested the "old-world, post-Gothic" style, preferring instead modern architectural style.[523] Nevertheless, Kenyon's historicist style made it fit with Vassar's other buildings, and its stone façade made architectural reference to Blodgett Hall, the centerpiece of the Euthenics complex. Meanwhile, its emphasis on "a maximum inlet of light and air on all sides" due to twenty-two windows populating three sides of Kenyon Hall made it exemplary of sanitary construction techniques popular at the time.[524]

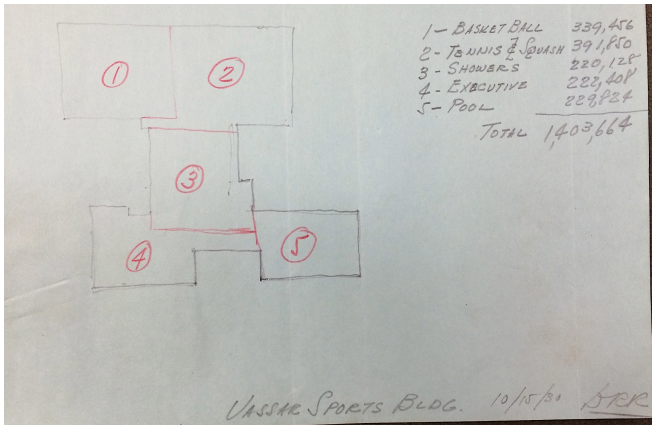

Image 37. Original partie of Kenyon Hall, ca. 1930, Allen and Collens Architects. *Archives and Special Collections, Vassar College Libraries.*

Emblematic of Vassar's new paradigm of physical education, Kenyon housed a diverse program designed to foster a novel experience of the campus gymnasium: whereas "the old type of gymnasia ... were generally noisy, filled with echoes coming from exposed brick and steel ... dark ... [and

[519] Interestingly, in an early memo regarding the design of Kenyon Hall, the architects proposed either the foliated design or the use of women's heads as ornamentation, the latter suggesting an over-emphasis on gender. Memo from the General Manager, Keane Richards, to Mr. Willis at the architectural firm Allen and Collens, May 1, 1933, *Archives and Special Collections, Vassar College Libraries.*

[520] "Listening In: Extra Gym Edition," November 1930, *Archives and Special Collections, Vassar College Libraries.*

[521] Vassar Sports Building, sketch, October 15, 1930, *Archives and Special Collections, Vassar College Libraries.*

[522] "Listening In: Extra Gym Edition," November 1930, p. 1, *Archives and Special Collections, Vassar College Libraries.*

[523] Daniels, *Main to Mudd*, 61.

[524] Ibid.

with] steam and the smell of damp clothing" pervading the atmosphere, this new gymnasium was designed to encourage healthful, pleasureful use. After all, leaders argued, "the more [the gymnasium] is used, the healthier and happier Vassar students will be, and the better foundation of health they will carry into their mature lives."[525]

Yet, in addition to providing a sunny, pleasant atmosphere to encourage use, Kenyon Hall was designed to facilitate other ends as well. On the walls of the Trophy Room, a "club-like" room off the main entrance of Kenyon, were inscribed a list of record holders and class championships from Vassar's history—note, though, how this emphasis on achievement stands in seeming in contrast to the democratic ideal of the department at the time—yet the room also housed an extensive collection of "books and magazines pertaining to all phases of physical education" as well as recommended reading for different groups of students, those with better than average skills and those with remedial defects.[526] Books such as *Your Carriage Madam*, *New Bodies for Old,* and *Prescription for Slimming* populated the bookshelves in Kenyon's trophy room and the department's 1936 reading list included texts on topics such as menstruation, fatigue, scoliosis, body mechanics, and smoking.[527] Additionally, evidence of an increasing focus on student posture were the presence of a photographic and ultra-violet room for posture photos, a room for "corrective exercises" (and other provisions that will "insure cheerfulness, confidence, and cooperation") and the teaching of the Body Mechanics course (Images 38 and 39).[528] Golf, played on the old Wing Farm to the east of the Vassar Campus, as well as club activities—including the ever-popular "swupper" club, a swimming and supper club—were among the increasing, and more democratic, opportunities for sport and leisure accommodated in the new gymnasium (Image 40).[529]

The Experience of Kenyon Hall

As noted above, Kenyon Hall was designed to facilitate a specific, *pleasureful,* student experience. But how was this gymnasium actually experienced by students, faculty, and the broader public?

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[525] Ibid.

[526] Painted "sport inscriptions" were planned for the Trophy Room of Kenyon Hall. Letter from Rambusch Decorating Company, February 5, 1935, *Archives and Special Collections, Vassar College Libraries.* The Trophy Room also served other functions, as evidenced in a 1941 pamphlet about the PE Department at Vassar: "The Trophy Room to the right of the guest entrance in Kenyon Hall is a reading room containing books and magazines pertaining to all phases of physical education." Vassar Physical Education Department pamphlet, "Physical Education at Vassar College," September 1941, *Archives and Special Collections, Vassar College Libraries.*

[527] Report from the Physical Education Department for Dean Thompson, February 10, 1941, Vassar Physical Education Department pamphlet, "Physical Education at Vassar College," September 1941, *Archives and Special Collections, Vassar College Libraries.*

[528] "Listening In: Extra Gym Edition," November 1930, p. 2, *Archives and Special Collections, Vassar College Libraries.*

[529] Club events were diverse and seemingly in the spirit of enjoyment that Kenyon Hall sought to promote: "A number of clubs and events including inter-class competitions and Founder's Day events; also a Dance Group (who gives a concert at the end of the year), a Swupper Club, which is a "swimming and supper club" (which gives a water pageant at the end of the year), and an Outing Club that does activities like skiing trips, mountain climbing, and bicycle rides; they even have a Club cabin about 1 mile from campus and arrange 'fish-night suppers,' hare and hounds chases, a skating carnival, and skiing instruction." Vassar Physical Education Department pamphlet, "Physical Education at Vassar College," September 1941, *Archives and Special Collections, Vassar College Libraries.*

Faculty. Though designed by male architects, Kenyon Hall owes much of its final shape to Alice Belding, Professor of Physical Education (1926-37) who visited numerous gymnasia across the country and, given her intimate knowledge of countless precedents, was "largely responsible for the internal design of Kenyon Hall," according to Vassar historian Elizabeth Daniels.[530] Thus, as with earlier gymnasia on the Vassar campus, Kenyon Hall served as a space for women to leverage their professional experience and expertise to shape the physical education program and, in this case, the space that gave it form.

Image 38. Posture training, Body Mechanics course, Kenyon Hall, Vassar College, ca. 1943. *Archives and Special Collections, Vassar College Libraries.*

Image 39. Body Mechanics course, Kenyon Hall, Vassar College, ca 1943. *Archives and Special Collections, Vassar College Libraries.*

Further, through this work, physical educators developed innovative pedagogical and scientific techniques to study and teach bodily mechanics, a source of professional prestige and publications for women in particular. For example, in the early 20th century, German-American physical educator Bess Mensendieck developed a tripartite system to study and teach posture: first, students were shown a series of sequential images and asked to replicate them; second, the use of mirrors, x-ray images, and the object lesson of nude bodies allowed students to develop their "powers of inspection and appreciation" of human posture; and finally, Mensendieck employed a range of metaphors to find new ways to talk about movement.[531] Meanwhile, In 1915, Dr. Clelia Duel Mosher, physician and professor of hygiene at Stanford University, invented the *schematograph* to graphically record women's posture: (see Image 18, Chapter 1).[532] Mosher used the device to "study posture and changes in bodily proportions" which enabled her to demonstrate—through

[530] Daniels, *Main to Mudd*, 61.
[531] Robin Veder, "Seeing Your Way to Health: The Visual Pedagogy of Bess Mensendieck's Physical Culture System," *The International Journal of the History of Sport* 28(2011): 1338.
[532] Clelia Duel Mosher, *The Schematogram: A New Method of Graphically Recording Posture and Changes in the Contours of the Body*, (Garrison, NY: The Science Press, 1915).

weight, height, and posture data—that student health had improved during her tenure at Stanford.[533] Others, like Ellen Davis Kelly, published books on the art of teaching Body Mechanics, and at Vassar, Alfreda Mosscrop wrote to President McCracken in 1939 to ask for a "16mm movie camera" in order to "teach efficient movement" in Body Mechanics course, evidence of pedagogical innovation for bodily education at the College.[534] These examples of visual pedagogy demonstrate how physical education faculty—primarily women—continued to introduce new forms of bodily movement and education well into the twentieth century.

An important innovation in the design and operation of Kenyon Hall was its service to a range of faculty beyond the female physical educators and health professionals who had previously used and experienced campus gymnasia as a productive separate sphere since the nineteenth century. In line with the ideals of democratic participation and lifelong fitness, Kenyon Hall catered to an increasingly diverse body of participants, as faculty and staff (and eventually guests of students and overnight visitors to the campus' Alumnae House) began to use the gymnasium's facilities.[535] Importantly, these new bodies were both male and female, so bathrooms, showers, and changing facilities were built for both men and women in Kenyon Hall (and appropriate swim suits for male visitors were also available to rent). Faculty and staff also participated in recreational sporting events, alongside students: for example, students, faculty, staff, and spouses participated in an innertube water polo competition in 1977.[536]

However, alongside this emphasis on a democratic use of facilities grew concerns about misuse of Kenyon Hall's resources. For example, in 1934, Alice Belding wondered, in a memo to General Manager Keene Richards, if opening Kenyon's bowling alleys to campus employees would be a good idea, given the potential cost liability of men being "too hard on the alleys." Instead she suggested that the alleys be limited to use by women "under proper supervision."[537] Richards proposed his own set of solutions to this problem, suggesting limited hours for employee use and, rather than allowing "promiscuous use of the bowling alleys" preferred that they be used only by "organized ... bowling leagues of experienced bowlers."[538] Staff were not the only concern, however: a 1934 departmental memo notes that the "appearance of the bowling alleys would indicate that they are being used by students with insufficient supervision." Proposed remedies echoed those mentioned above, including limiting

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[533] Prescott, *Student Bodies*, 25.

[534] Letter from Alfreda Mosscrop to President McCracken, "Needs of the Physical Education Department," November 22, 1939, *Archives and Special Collections, Vassar College Libraries*. See also Kelly, *Teaching Posture and Body Mechanics.*

[535] "Listening In: Extra Gym Edition," November 1930, *Archives and Special Collections, Vassar College Libraries.*

[536] Co-ed innertube water polo was a success such that "the season had to be extended. It may be a fad, but it is fun, a good workout and also a good equalizer between the sexes," Jean Appenzellar, Physical Education Department Annual Report, 1976-1977 academic year, May 5, 1977, p. 3, *Archives and Special Collections, Vassar College Libraries.*

[537] Memo from Alice Belding (Director of Physical Education) and Marion Wing (Director of Goodfellowship Club) to Keane Richards, suggestions regarding the use of Kenyon Hall by employees, September 20, 1934, *Archives and Special Collections, Vassar College Libraries.*

[538] Response by Keane Richards to Alice Belding and Marion Wing regarding the use of Kenyon Hall by employees, September 20, 1934, *Archives and Special Collections, Vassar College Libraries.*

use by keeping facilities locked and/or only allowing those students with sufficient experience to use the bowling alleys.[539] Here we see once again how moving bodies were limited by administrative practices; yet in this example limits were exercised along gendered and skill-based lines.

Another outcome of this expanded use of Vassar's facilities, then, was the increasing emphasis on supervision. Though gymnasia had long served as spaces in which Vassar's female student body was subjected to a range of surveillance techniques, novel in the concerns voiced at Kenyon Hall were their extrapolation into a code of conduct for participants, students and staff alike, as evidenced in this excerpt from the 1939 department pamphlet: "Playing facilities are the joint responsibility of the students and the Department of Physical Education. Reasonable care must be observed to keep them clean and in order. Neatness in locker storage, soiled towels placed in the proper container, replacement of portable equipment, are factors in any orderly organization."[540] Designed as an orientation to Kenyon Hall's facilities and hours of operation, this pamphlet denoted for the first time rules of care for equipment and standards for the comportment of guests. These rules of comportment might be seen as another form of (bodily) control exerted within the context of campus gymnasia, and necessarily an outcome of transitioning from the organized, *supervised* physical activity programs of the nineteenth century to the more self-directed recreation and leisure activities increasingly common in the twentieth century.

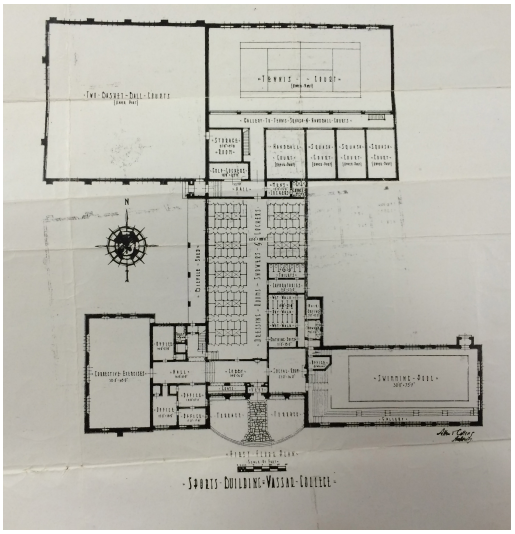

Image 40. Floor plan, Kenyon Hall, first floor, Vassar College, ca. 1933. *Archives and Special Collections, Vassar College Libraries.*

Students. Though *pleasure* and *enjoyment* were keywords of Vassar's new physical education paradigm, perhaps the most potent experiences for students revolved around the surveillance and remediation of their posture, a decidedly *un*enjoyable experience. Though the upright posture, long associated with middle class values, morality, and health, gradually gave way to popular interest in a more slouched or relaxed posture in the early decades of the twentieth century,[541] colleges—including Vassar—maintained their emphasis on posture courses,

[539] Memo from the General Manager (Keane Richards) to "Miss" (Alice) Belding regarding the Bowling Alley in Kenyon Hall, February 1, 1934, *Archives and Special Collections, Vassar College Libraries.*

[540] Vassar Physical Education Department pamphlet, September 1939, *Archives and Special Collections, Vassar College Libraries.*

[541] As Yosifon and Stearns explain, beginning in the last decades of the nineteenth century, popular preference for a more relaxed posture began to replace the rigid standards of the Victorian era. This more relaxed norm was especially popular among young people and increasingly associated with being fashionable, pleasureful, or self-assured. Meanwhile, by the early 20th century, the upright posture became, in the words of Yosifon and Stearns, a source of "ridicule, not example" for its association with the stuffy, out-dated "older-generation." Yosifon and Stearns, "The Rise and Fall of American Posture," 1064-1066.

examinations, and remediation.[542] Thus, while students enjoyed increasing bodily freedoms at Kenyon through the expansion of sporting opportunities (from golf to club sports) and engaged in these activities alongside male and female guests and colleagues alike, their bodies were still constrained by postural ideals and administrative apparatuses such as mandatory examinations and required costumes. Additionally, as mentioned above, Vassar women were subjected to physical examinations—including a nude posture photo—upon their entry to campus, assigned to an appropriate physical activity regime according to their unique abilities and limitations, later re-assessed and photographed, and required to participate in posture-related courses such as the Body Mechanics (Fundamentals) course, which lasted until 1968, the year Vassar went co-ed.

Students may have also been assigned or referred to reading activity- and posture-related books, either as part of their course requirements or as an alternate activity during their menstrual cycle.[543] In 1941, for example, women might have read any of these books: *Recreational Sports for Girls and Women; Modern Tennis; Prescription for Slimming; Your Carriage, Madam; It's Up To You; New Bodies from Old;* and *From Head to Foot*.[544] These titles reveal the range of (sometimes conflicting) discourses women encountered about their bodies: welcome involvement in new sports (those deemed appropriate for women), the need to slim and/or hold oneself in the correct posture, and an emphasis on self-care. Importantly, these reading assignments were meant to be anything but a leisurely pursuit; rather, women were tested on their knowledge of the lessons these books imparted. Thus, in addition to going through a qualifying test in a sport like badminton in which a student would have to perform the proper bodily movements to achieve successful strokes and demonstrate tactics of the game and articulate the rules of the game,[545] students also were tested on their knowledge of—and apparent conformity to—self-care regimes including a self-assessment of their own movements and behaviors. For example, required reading in the Body Mechanics course for Vassar's Class of 1940 was Janet Lane's *Your Carriage Madam*, a book dedicated to the art and practice of good posture. Upon completing the book, students were asked to respond to a number of questions such as:

> *What do you consider to be one of the most important principles of Body Mechanics brought out in <u>Your Carriage, Madam</u>? Describe in what way you may consciously apply this principle to the sport in which you are engaged.*

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[542] Yosifon and Stearns, "The Rise and Fall of American Posture."

[543] A prevalent idea at the time was that menstruation prevented women from engaging in physical activity. In fact, physicians and educators like Clelia Duel Mosher sought to prove such claims false.

[544] Report from the Physical Education Department for Dean Thompson, February 10, 1941, *Archives and Special Collections, Vassar College Libraries.*

[545] In the Qualifying Test for Badminton, students had to perform a variety of maneuvers, like: clearing (7 out of 10;" receive bird behind chalk line. Clear between painted white lines."), smash, 3/5 in each square, "receive bird in front of chalk line. Smash in marked squares"), drop in order to change pace (7/10, "A gives B high set-up. B returns bird with shoulder high or higher, hard clear...."), and serves (3/5, "inside singles and outside doubles front corners, and high serve to land and place in back court). In addition to the above strokes, students also were tested on "Tactics and Placements" (observed while playing) and given a "written test on rules and playing tactics." Qualifying Test for Badminton, 1940-41/1941-42, *Archives and Special Collections, Vassar College Libraries.*

Imagine yourself in a formal evening dress, called upon to take an announcement from a platform removed by the entire length of a ballroom floor, from your seated position. In order to reach the platform you have to rise from your chair, walk across the room and mount the steps, all eyes focused on you. Analyze in detail from the mechanical and aesthetic point of view, the movements involved in the entire procedure.[546]

Similarly, in an assignment for the Body Mechanics course in 1936, students were asked to respond to a series of questions including:

Study the frontispiece of Your Carriage, Madam. Is the picture pleasing to you? What are some of the characteristics which make a body expressive?

Outline…some of the specific problems of your own in motor efficiency on which you would like to work for next semester. State the problem and analyze the procedure by which progress could be attained.[547]

Note that in these questions, it is not just students' knowledge of key principles from the text that were tested; additionally, students were asked to self-assess their own bodily capabilities in addition to "aesthetic" concerns relating to bodily movement and posture.

Further, according to the department regulations expressed in the 1939 Department Handbook, "students [were] urged to wear regulation costume for all classes, i.e. suit for sports, leotard and skirt for dancing, fundamentals and special work, [and a] tank suit required by college (required) for swimming."[548] Notable about the sporting suits of this era is their increasing exposure of the female body (as compared to costumes donned in

Image 41. The changing fashions of physical education costumes at Vassar; from the first costumes of 1866 (left) to the leotard required for the Body Mechanics course in the 1930s (right). Image taken 1936. *Archives and Special Collections, Vassar College Libraries.*

[546] Required Reading, First Semester, Class of 1940, due February 15, 1937, *Archives and Special Collections, Vassar College Libraries.*
[547] Body Mechanics course assignment, 1936, *Vassar College Archives and Special Collections*, Poughkeepsie, NY.
[548] Department of Physical Education pamphlet, September 1939, p. 2, *Archives and Special Collections, Vassar College Libraries.*

the nineteenth century); this trend is evident in a 1936 photo from Vassar College in which women modeled each of the required physical costumes, beginning in 1866 (Image 41).[549] This increasing exposure of the female body is also evident in popular literature; for example, the costumes depicted in Mary Taylor Bissell's 1891 *Physical Development and Exercise for Women* are loose-fitting and show little skin beyond the face and hands; yet Dorothy Nye's 1946 *New Bodies for Old* shows a woman in a tight-fitting—and much more revealing—leotard.[550]

Perhaps the most extreme example of this gradual baring of the student body is the fact that posture photos were taken in the nude. How might we account for this increasing emphasis on the exposed female form? First, exposing the bodily form was a necessary component of the visual pedagogical practices developed by teachers of Body Mechanics and Physical Education; for students to learn from the form of their own—and others'—bodies, they had to be made easily visible.[551] Second, an increasing (social) emphasis on the ideal figure and posture may have similarly contributed to a desire—and general permissiveness—to more clearly expose bodily forms. As for the nude posture photos, though no sources I have read provide a definitive explanation for the necessity of the totally nude body, I propose that the preference for (if not choice of) nude subjects may have had something to do with the broader historic preoccupation with reproduction, from E. H. Clarke's theories of women's health in the late 1800s to the eugenic education movement in the first decades of the twentieth century. A nude body is sexed, its reproductive organs visible and therefore available for scrutiny and regulation. Thus, I suggest that by exposing its reproductive organs, the nude student body became a visual metaphor for the body politic; in other words, the health and reproduction of society.[552] Indeed, according to medical historian Roy Porter, in the early twentieth century: "War and the threat of war ... provoked grave anxiety about the nation's health ... [and] the most articulate and coherent response ... was the eugenics movement, which directed the health debate to the problem of fitness, understood in national and racial terms."[553] By the postwar period, concern for women's reproduction increasingly was expressed in terms of the *type* of citizens that women would produce, in other words, *how* and *by whom* sexual selection should occur. George Hersey describes sexual selection as "a subset of two processes: the natural selection that Darwin defined and the artificial selection used for centuries by breeders ... to emphasize, perfect, and exaggerate certain qualities."[554] But which traits were identified as healthy or otherwise *selectable*? Eugenic researchers like Galton and Hooton devoted their studies to the identification of delinquent or undesirable traits, and anthropometric studies—of which posture photos are a part—produced a "canon

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[549] Women wearing gymnasium costumes from previous 70 years at Vassar, January 1936, Photo Collection, Students, *Archives and Special Collections, Vassar College Libraries.*
[550] Nye, *New Bodies for Old* and Bissell, *Physical Development and Exercise for Women*.
[551] Veder, "Seeing Your Way to Health."
[552] Mary Douglas theorized the body as metaphor for society, 1966, in Turner, *The Body and Society.*
[553] Roy Porter, *The Greatest Benefit to Mankind: A Medical History of Humanity,* (New York: Norton, 1997), 639.
[554] Hersey, *The Evolution of Allure,* 5.

[or hierarchy] of selectability" running from good to bad qualities, always identifying the ideal and the undesirable.[555]

Responding to these studies and hoping to instill a sense of hereditary competency in students, eugenicists labored to make eugenic education part of the social hygiene movement,[556] and by the 1930s, "education was increasingly recognized as a viable log-term method of improving human heredity" and "controlling human reproduction."[557] The idea of women's reproductive 'duty' was certainly part of the concern of the university; perhaps nude photos were a way to materialize that preoccupation into a literal object of study.

Public. For the first time in Vassar's history, the campus gymnasium was designed for public use, accommodating visitors, guests of the Alumnae House, faculty, staff, and their spouses within its walls. This increasing diversity of the bodies within the campus gymnasium had important implications for Kenyon, some—such as the provision of locker rooms and shower facilities for men—built, and others—like the creation of separate entrances for students and non-student patrons—suggested. Yet beyond direct use of the facilities, the public brought their concerns to bear upon Kenyon Hall.

Anticipating the new gymnasium at Vassar, Dr. William Darrach, surgeon and Dean of the Medical Faculty at the College of Physicians and Surgeons of Columbia University, as well as a trustee and father of a Vassar student, wrote in 1930 that he was "strongly in favor of the proposed Physical Education Building for Vassar" because he anticipated it having "a strong influence not only on future generations [of] ... students and graduates, but [also] all those with whom they come in contact." He added: "it will undoubtedly improve the health of the student body" and, because many Vassar graduates become mothers and/or teachers, Dr. Darrach went as far as proclaiming that a new gymnasium would "make a great contribution to the 'country.'"[558] Though campus advocates stressed the importance of Kenyon Hall as a space in which women would enjoy the pleasure of recreational pursuits and, increasingly, the intrinsic benefits of sport, Darrach's perspective underscores the public's broader emphasis on the instrumental aims of physical education, namely, to ensure a healthy body politic.

Further, the programming within Vassar's newest gymnasium came under additional public scrutiny during World War II. Though just prior to the war the National Association of Directors of Physical Education for College Women (NADPECW) expressed an interest in creating an Athletics Association for Women—similar to that enjoyed by their male counterparts—ultimately this vision was set aside as wartime concerns loomed. In 1941, the NADPECW issued a number of resolutions regarding national defense in which they "[encouraged] as many women as possible to prepare themselves in Home Nursing and in Life Saving and Water Safety," activities

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[555] Ibid, 100.
[556] Michael A. Rembis, "Explaining Sexual Life to Your Daughter: Gender and Eugenic Education in the United States During the 1930s," In Currell and Cogdell, *Popular Eugenics,* 94.
[557] Ibid., 98.
[558] "Listening In: Extra Gym Edition," November 1930, *Archives and Special Collections, Vassar College Libraries.*

that would easily be accommodated in Vassar's spaces of physical education.[559] At the same time, "the addition of new extra-curricular activities which have no relation to national defense" were considered "inopportune" and thus "discouraged" by the NADPECW.[560] In their own departmental materials, Vassar's Department of Physical Education echoed this emphasis on national needs, stating in a 1942 pamphlet: "Total war has placed new emphasis on physical fitness for it demands health and vigor on the home front as well as on the battle front. Every citizen can aid the war effort by keeping in good physical condition."[561] Thus, being fit was no longer a merely individual, personal benefit, but essential to a broader "war effort." Vassar's Department of Physical Education positioned itself as aiding this endeavor, nothing that its programs helped students "develop abilities in sport that will be a means of healthful recreation throughout life." More pragmatically, from 1942-1944, Vassar offered a course in "Recreational Leadership" for those who would be working in "community centers, camps, and playgrounds."[562] We see here a new rationale for physical education, as mobilized in response to national needs. Though the link between physical education and military exercises is not new—in fact, many early men's physical education programs were initiated to help build a healthy, capable military force—here we see how women's roles in the war effort were envisioned: women were to be care-takers, educators, and keepers of the domestic sphere (though women in fact played a much more profound role in the war effort than these visions suggest).

Coeducation. More than thirty years after the construction of Kenyon Hall, in 1968 the Vassar campus transitioned to a coeducational model which posed an unprecedented crisis, experience, and opportunity for the Department of Physical Education. In planning for the transition to coeducation, Vassar's Physical Education faculty articulated the essential role they saw their department offering in attracting male students to Vassar and aiding with the cohesion of the increasingly diverse campus community. A 1975 Report on Physical Education and Athletics at Vassar stated that: "Athletics can help with the transition to coeducation; for many men 'sports are an essential component of what they consider a natural environment.'" Yet the Department felt that it had not received sufficient funding or support to properly aid in this transition. The report continued: "Vassar has already fallen short to the men currently on campus and it also has fallen short in advertising resources for recruiting male candidates."[563] Recognizing this deficit, the authors of the report urged the administration to make a greater investment in the Department of Physical Education to

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[559] Letter from Alfreda Mosscrop to President McCracken, "Needs of the Physical Education Department," November 22, 1939, *Archives and Special Collections, Vassar College Libraries.*

[560] Resolutions adopted by the National Association of Directors of Physical Education for College Women (NADPECW), April 1941, *Archives and Special Collections, Vassar College Libraries.*

[561] Department of Physical Education, pamphlet: "Physical Education at Vassar College," 1942, *Archives and Special Collections, Vassar College Libraries.*

[562] Ibid. By 1945, the Recreation Leadership course was no longer offered. Rec Leadership course no longer offered in 1945 pamphlet. Department of Physical Education, pamphlet: "Physical Education at Vassar College," 1945, *Archives and Special Collections, Vassar College Libraries.*

[563] Report on "Physical Education and Athletics at Vassar," December 14, 1975, *Archives and Special Collections, Vassar College Libraries.*

aid with a successful transition to coeducation, cautioning: "Let us not allow our motto, 'coeducation with a difference,' to become another way of saying 'token coeducation' or 'inferior coeducation.'"[564]

In fact, a 1978 survey of students who were accepted to Vassar but who chose to matriculate elsewhere demonstrated that this concern was not unfounded. Thirty-five percent of respondents assessed Vassar's athletic programs as "negative" or "very negative" and forty-five percent were "neutral." One (male) student respondent, who chose Brown over Vassar, explained that "the athletic offerings at Vassar seemed skimpy to me .... While athletics are secondary, they still add to the vibrancy of a college." Another (female) student, who decided to enroll at Duke, stated that the athletics program at Vassar was "VERY POOR" and this assessment "influenced my decision more than any other area."[565] This new justification for physical education had nothing to do with national or health interests, but rather institutional and organizational concerns (coeducation, recruitment, and—later—community cohesion). Additionally, we see in these examples how bodily movement—in the form of physical education and sports—were not merely programs imposed on the student body, but in fact sought out and valued by students. By articulating yet another rationale for collegiate physical education and capitalizing on this student sentiment, the PE Department at Vassar demonstrated its agility and intelligence in positioning itself as an essential component of the institution; this is especially striking given the greater trend of decline in 1960s of physical education programs elsewhere in the nation.[566]

The introduction of men to Vassar's student body also necessitated a reconsideration of the Department's physical plant and program as well as the pedagogy and expertise of its (mostly female) faculty. In a 1968 memo to the Dean of Faculty, Physical Education Department Chair Ruth Timm wrote that "if a college is serious about becoming coeducational all departments should be geared for the teaching of both sexes. However, because of sex differences there are offerings which should be open only to women, taught by women, others open only to men, taught by men."[567] For example, women's activities might include basketball, fitness and "fundamentals" courses, gymnastics, field hockey, lacrosse, and ski conditioning; for men, baseball, basketball, conditioning work, cross country, gymnastics, soccer, football, and track were appropriate activities; and suitable for both men and women were archery, badminton, bowling, dance, fencing, folk dance, golf, squash, swimming (diving and lifesaving), tennis, and volleyball.[568] Sport historian Patricia Vertinsky argues that through such "sex-coded activities, physical educators were able to mark

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[564] Ibid.

[565] Appendix IV: Admissions as Related to Athletics, Advisory Committee of Physical Education and Athletics, "Appendix B: Proposals for Vassar's Athletics: A Report of the Ad-hoc Committee to Advise the Dean of Faculty," January 1978, *Archives and Special Collections, Vassar College Libraries.*

[566] Gidney, *Tending the Student Body.*

[567] Memo to the Dean of Faculty from Ruth Timm, Chairman of the Department of Physical Education, December 16, 1968, *Archives and Special Collections, Vassar College Libraries.*

[568] Ibid. Timm adds that "there has been male interest in so called 'exotic' activities (scuba diving, karate, judo) which are organized on a club basis," and example of how sporting activities are gendered (see Park, "Sport, Gender, and Society").

and patrol the borders between masculinity and femininity"[569] with important implications for how the student body was conceived and managed. Further, separating activities by gender ensured feminine expertise was still required among physical education faculty.

As the above examples demonstrate, female faculty creatively mobilized different—often "conflicting and contradictory"—discourses about women's bodies and the value of physical education depending on the context of their audience and desired outcome.[570] Historian Martha Verbrugge explains that "by adopting a nuanced theory of sex differences, white female physical educators could endorse femininity and heterosexuality, sustain the importance of their profession, justify separatism and equity, and still leave room for new ideas about womanhood and fitness."[571] Yet while this creative deployment of conflicting discourses was instrumental in helping women navigate the contradictions of this new institution, such ambivalence both reinforced and downplayed the assumed difference between the male and female body. At the same time, despite an emphasis on enjoyment and the intrinsic rewards of sport, faculty expressed concern about the label of "female jock," a term that exposed anxieties about a decline in femininity, sexuality, and beauty commensurate with engagement in physical pursuits, not unlike nineteenth-century protestations against women's sports.[572] As the history of Vassar's Physical Education programs demonstrates, such gendering and stereotyping is nothing new; what is novel here, however, is the mediation of gender lines and activities *within* this singular organization, as mobilized to cope with a more diverse student body.

Walker Field House (1982)

By the early 1980s, 2,250 students comprised Vassar's coeducational student body, and the campus faced an urgent need for new facilities.[573] Despite years of advocacy and at least three separate reports on the inadequate funding and facilities of Department of Physical Education and Athletics, few changes had been made to Vassar's physical education building, staffing levels, and programming since the campus went co-ed in 1968 (and even then, changes were relatively minimal). A 1975 report on Physical Education and Athletics at Vassar noted in particular a dearth of resources to support individual recreation, one of the three primary priorities—along with instruction and competition—of the department.[574] Nevertheless, the Physical

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[569] Vertinsky and Bale, *Sites of Sport,* 22.

[570] The two postures were accommodationism and radicalism. Accommodationism: at times, faculty would emphasize sex differences; other times, they would deemphasize them (e.g., to advance the idea of the "new woman" women being active, "energetic and capable," like men or to lobby for equal instructional resources, without having to claim "discrimination." Radicalism: female teachers insisted "on self-governance" and firmly believed and committed to "'female' principles, as opposed to 'male' values." Verbrugge, "Recreating the Body," 300.

[571] Ibid, 304.

[572] Report on "Physical Education and Athletics at Vassar," December 14, 1975, *Archives and Special Collections, Vassar College Libraries.*

[573] Daniels, *Main to Mudd.*

[574] Memo from Jean Appenzellar (Chairman of Physical Education) to Hutchins, Evans, Lefferts architects, December 5, 1978. *Archives and Special Collections, Vassar College Libraries.*

Education Department boasted a range of programs including courses in physical education and team sports, which aimed to build students' individual skills and participation, respectively; intercollegiate teams, which emphasized the "intrinsic rewards of competitive sport" such as friendship, cooperation, and respect; and intramural leagues and club sports open to faculty, staff, and students.

What the 1975 report made abundantly clear was that Vassar's facilities were most lacking in their support of individual recreation, an important finding "for it is the aspect of athletics at Vassar that touches the largest number of people" and thus posed a significant barrier to the Department's emphasis on broad, democratic participation. To remedy this fact, the report articulated the need for the construction of another gymnasium facility in order to accommodate an expanded athletic and recreational program as well as increased staffing to oversee and maintain the new facility.[575] Yet this increasing emphasis on recreational, leisure-time pursuits likely made it more difficult for the Physical Education Department to justify a major capital expenditure on a new gymnasium, as compared to the seemingly unquestioned institutional support given to the Department's compulsory program in the late nineteenth and early twentieth centuries.

Accordingly, the rationale given to justify the investment in and construction of a new gymnasium took on a new tone in this era: for the first time, physical education faculty noted an institutional *deficit* that would result from the lack of adequate physical education facilities.[576] Rather than pointing out the myriad *benefits* bodily movement promised for individual health and physical development, the Department's 1978 plea for new facilities hinted instead at an impending institutional crisis: "Vassar is gravely inadequate in the physical education opportunities it offers students," and the implications of this deficit were many: "we lose or fail to attract excellent students because of our deficiencies in athletics," "our education effort as a

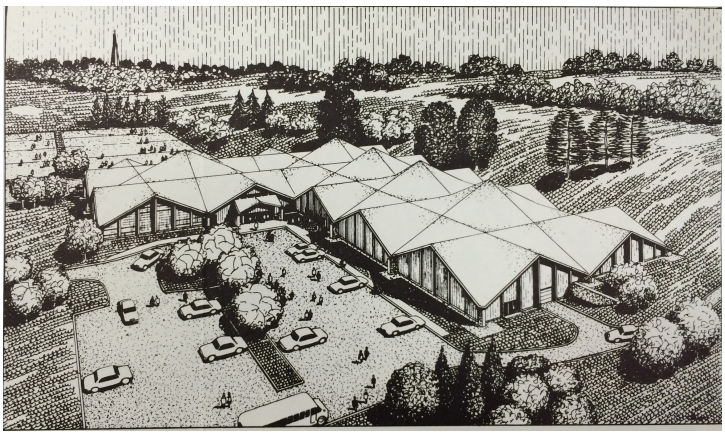

Image 42. Artist's rendering of Walker Field House, Daniel F. Tully Architects. This drawing conveys a pastoral setting with no other campus buildings visible. 1981. *Archives and Special Collections, Vassar College Libraries.*

[575] Report on "Physical Education and Athletics at Vassar," December 14, 1975, *Archives and Special Collections, Vassar College Libraries.*

[576] "Our argument for a strengthened athletic program is premised on the truth that Vassar's excellence as a coeducational liberal arts college depends on rectifying deficiencies in this centrally important area. We should not enter the future, which is dangerously uncertain for private colleges, with this formidable handicap." Advisory Committee of Physical Education and Athletics, "Appendix B: Proposals for Vassar's Athletics: A Report of the Ad-hoc Committee to Advise the Dean of Faculty," January 1978, *Archives and Special Collections, Vassar College Libraries.* This quote suggests that insufficient investment in physical education was seen as both an individual student and institutional deficit.

whole lacks balance,"[577] and "we forfeit the opportunity to develop a stronger community and to promote a closer student identification with Vassar."[578] Importantly, though the language used to talk about physical activity often included the word "athletics," the department sought to emphasize not "great intercollegiate sports" but rather "a broad spectrum of activities" that would accommodate diverse bodies.[579] In fact, a 1975 report on Vassar's physical education facilities concluded that "Vassar should emphasize broad-based participation by all sectors of the student body plus faculty;" and a more diverse student body necessitated more diverse programming.[580]

Physical Description

Almost fifty years after the erection of Kenyon Hall, the Walker Field House (1984) opened to great fanfare and much anticipation. As part of this $5 million project, Vassar's existing spaces of physical activity, Kenyon Hall and Prentiss Field, also received some much-needed upgrades.[581] Though an artist's rendering suggests a pastoral setting and downplays the stark architectural features of the new gymnasium (Image 42), in fact Walker Field House was a highly technical building, positioned just above the Euthenics Complex and the Terrace Apartments, and surrounded by approximately 80 parking spaces (Images 43 and 44).[582] Daniel F. Tully Architects oversaw the design and construction of this (ultimately controversial) addition to Vassar's campus. With a prefabricated, "hyperbolic paraboloid roof design," patented by the architectural firm and used on many other campuses (Images 45 and 46),[583] the Walker Field House boasted 69,230 square feet of "column-free playing space" in indoor courts for basketball, tennis, volleyball, badminton, soccer, hockey, gymnastics, baseball, and golf. Additionally, Walker housed a 111-foot long swimming pool, an

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[577] Because physical activity is necessary, according to the Committee members, to complement "a demanding intellectual life." This sentiment echoes the unity of mental and bodily education that Matthew Vassar promoted in founding his namesake College. Advisory Committee of Physical Education and Athletics, "Appendix B: Proposals for Vassar's Athletics: A Report of the Ad-hoc Committee to Advise the Dean of Faculty," January 1978, *Archives and Special Collections, Vassar College Libraries.*

[578] Ibid. Importantly, the Department claimed that an investment in physical education would aid campus unity.

[579] Appendix V: Comments by Alumnae Class Secretaries regarding Panel on Athletics at October '77 Alumni Council. This appendix includes telling quotes, such as: "Vassar does not wish to strive for great inter-collegiate sports, but does hope for a broad spectrum of activities" and "We heard about the inadequacies of the physical education facilities. Is fitness a peripheral subject in a liberal education? The Greeks did not think so." Advisory Committee of Physical Education and Athletics, "Appendix B: Proposals for Vassar's Athletics: A Report of the Ad-hoc Committee to Advise the Dean of Faculty," January 1978, *Archives and Special Collections, Vassar College Libraries.*

[580] The quote continues: "Sound minds in sound bodies is good advice, with equal application to our students and our faculty," Advisory Committee of Physical Education and Athletics, "Appendix A: Physical Education and Athletics at Vassar, "A Report of the Ad-hoc Committee to Advise the Dean of Faculty," January 1978, *Archives and Special Collections, Vassar College Libraries.*

[581] This is the first time that the creation of a new gym did not mean the assignment of the previous space to a different purpose, as was the case for the Calisthenium and Ely Hall.

[582] Other buildings of this time were also quite technical: Vassar historian Elizabeth Daniels described the Seeley G. Mudd Chemistry Building, a classroom and laboratory building dedicated to the sciences, as "a technologically advanced building" in that a separate firm designed its energy features. Daniels, *Main to Mudd,* 66.

[583] Similar projects at other schools include: the Brown Field House at Brown University, the Guilford College Field House, the Middlebury College Field House, constructed in 1978, and the University of Rochester Sports and Recreation Facility (1981). Daniel F. Tully Associates, Recreation Facilities brochure, ca. 1981, *Archives and Special Collections, Vassar College Libraries.*

indoor track, a conditioning room, a viewing area for the pool, and an assembly hall that could accommodate 4,000 people.[584] Unlike Vassar's previous gymnasia, which put a premium on windows and natural lighting, Walker Field House has few windows.[585] This highly technical building represented a new orientation to the function of a gymnasium: it was more machine than instrument of public health. We might read in this building, then, a suggestion of the nadir of physical education, particularly insofar as its relationship to campus health.

Whereas Vassar's previous gymnasia were monuments to sanitary construction and pleasureful recreation, the Walker Field House was designed to fulfill new priorities: the creation of a centralized sporting complex, achieved by co-locating Walker with the campus' other athletic facilities including nearby Kenyon Hall and Prentiss Field; low cost, achieved through the use of a prefabricated roof system; and energy savings, which would be attained through technologies such as rooftop solar collectors, the "recovery and recycling of exhaust air heat," and "heavy insulation" of the building.[586] Though a fourth priority—the need to meet the general recreational needs of the "entire College Community"[587]—suggested continued interest in the importance of physical activity, in general the other stated priorities for Walker subtly yet significantly obscured the body, focusing instead on environmental, fiscal, and operational goals.[588]

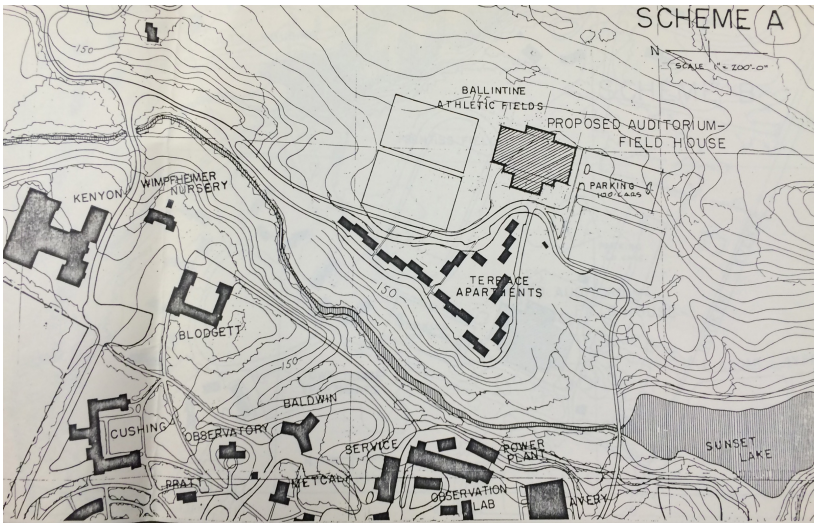

Image 43. Proposed site plan (1977) for Walker Field House, showing the location of the building to the East of campus. Kenyon Hall is on the left. *Archives and Special Collections, Vassar College Libraries.*

Experience of Walker Field House

The novel roofline of this structure resulted in unique spatial qualities both indoor and out, yet the structure wasn't without its challenges—or critics.

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584 Daniel F. Tully Associates, Press Release, "$5 million athletic expansion project underway at Vassar College," May 8, 1981, *Archives and Special Collections, Vassar College Libraries.*

585 Daniels, *Main to Mudd, 63.*

586 Daniel F. Tully Associates, Press Release, "$5 million athletic expansion project underway at Vassar College," May 8, 1981, *Archives and Special Collections, Vassar College Libraries.*

587 Conference Report 2, Physical Education Facility Planning, Meeting including Wells (Dean of Faculty), Appenzellar (Chairman of the PE Department), Kluge (Director of Plant Operations), McGilvray (Facilities Planner), Hutchins and Lefferts (Architects), September 30, 1978, *Archives and Special Collections, Vassar College Libraries.*

588 Further, the Department's emphasis on recreation meant that bodies could guide themselves to desired services, classes, and activities rather than be enrolled in mandatory physical education courses. Body Mechanics courses ended in 1968, when Vassar went co-ed, as did practice of posture photos; accordingly, there is no examination room in Walker as there was in Kenyon Hall.

Complaints about the building design. If Kenyon Hall was designed to encourage relaxation and democratic use, the experience of its successor, Walker Field House, was more complicated, somehow alienating of its users. Responding to drawings of the proposed building in 1980, Vassar Architecture Professor Richard Pommer derided Walker's design as "extremely banal and tacky" and questioned the energy efficiency of its large internal volumes and irregular roof design. Further, this professor articulated his suspicions of the architectural firm, having found its principal, Daniel Tully, to be "unresponsive to any criticism" as well as "evasive, condescending, and obscure."[589] This strained relationship between faculty, students, and the architectural firm was one of the more intense experiences of this building process.

The following year, the physical education faculty learned that a similar building at Clark University, also designed by Tully Associates, had "terrible acoustics" and problems with the floor installation; in a note scribbled in the margin of this memo, Anthony Stellato, from Vassar's Plant Operations Department, wrote "will monitor, plan study," indicating vigilance about the building design at Vassar.[590] Indeed, upon completion, faculty, staff, and students noted a range of problems with the design, performance, and maintenance of the new building. A memo written by Bob Colyer, Chairman of the Department of Physical Education and Dance in 1982, just after the completion of Walker, to Spencer Johnson of Tully Architects listed a number of concerns, including the noise of heating equipment, the functioning of the lighting panel and alarm system, the inoperability of nine out of twenty shower heads, improper installation of toilet partitions and hair dryers, incorrect sports nets and basketball backdrops, trip hazards on the floor of the Field House, and the color of the walls that made tennis balls hard to see.[591]

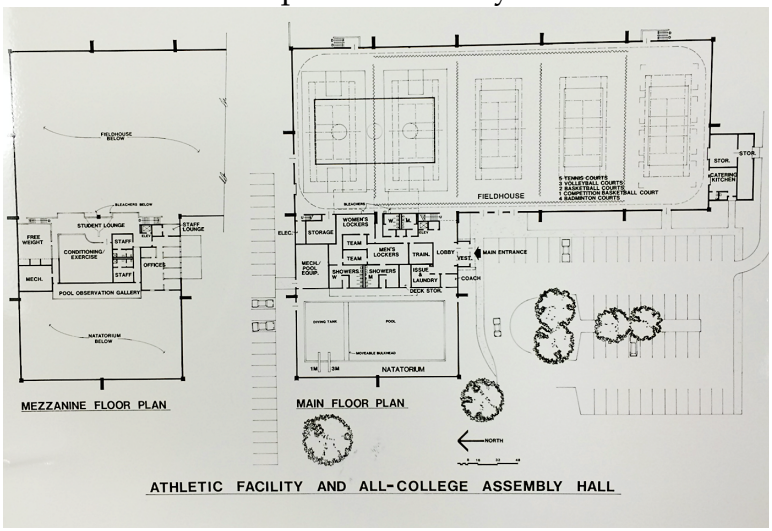

Image 44. Site plan, Athletic Facility and Assembly Hall (Walker Field House), ca. 1984, *Archives and Special Collections, Vassar College Libraries.*

[589] Peter Cummings, "VC Architects Speak," *Vassar Miscellany,* September 26, 1980, *Archives and Special Collections, Vassar College Libraries.*

[590] Memo from Carol Gannon Salguero (Director of Development) to Anthony Stellato (Plant Oprations) regarding feedback from Clark University about their "Tully-designed field house," May 7, 1981, *Archives and Special Collections, Vassar College Libraries.*

[591] Letter from Bob Colyer (Chairman of the Department of Physical Education and Dance) to Spencer Johnson (Architect, Tully Associates), November 1, 1982, *Archives and Special Collections, Vassar College Libraries.* Interestingly, Colyer organizes his feedback about the building's performance—and subsequent request for the architects to make necessary changes—into two categories: (1) things currently unfinished or not of good quality, (2) areas of disagreement between the architects and department. The latter suggests a strained relationship between the client (Vassar) and architectural firm.

Further, despite the architecture firm's promise that their patented prefabricated design would yield cost savings due to energy efficiency, a study in November 1983 by the Energy Resource Management Company (thERM) found that in 1982-1983, "the Field House used some 6.1777 MMBTUs of natural gas for a cost of $43,371.00." This figure far exceeded the 1.658 MMBTUs Tully estimated would be used in a year. Noting this "rather large discrepancy," David Newton, VP of thERM, stated in a memo to Vassar's Director of Plant Operations, Robert Kluge, that "Mr. Spencer Johnson [of Tully Associates] ... confirmed that his gas estimates were for space heating only and did not include the energy needed to heat domestic hot water for the pool," a surprising oversight given the "sizable load" of energy usage the pool represented.[592] It is clear that heating the space required more energy than predicted, but the experience of Walker's heating system illuminated more pressing concerns: in 1983, the captain of the women's fencing team complained about the "intolerable heat in the building" that made her nearly pass out. She proceeded to explain that "not only is this an unpleasant condition, it is exceedingly unhealthy, particularly when one must exit into temperature 50-60 degrees colder" in the winter and thus urged Kluge to "turn down the heat before someone gets pneumonia and sues Vassar."[593] This quote is interesting because it points to the extreme discomfort users felt in the space as well as evidence of the burgeoning risk management paradigm of campus administration, the third paradigm of student governance—after *in loco parentis* and *laissez-faire*—articulated by Jonathan Simon.[594]

Image 45. Construction of the signature hyperbolic paraboloid roof that Daniel F. Tully Associates as known for (n.d.). *Archives and Special Collections, Vassar College Libraries.*

Students also were dissatisfied with the building and did not hesitate to voice their complaints in the student newspaper. A 1982 Letter to the Editor of Vassar's *Miscellany News* entitled "Locker Colors Exhibit Humorless Sexual Typecasting" criticized the choice of blue and pink doors for Walker's men's and women's locker rooms. Though Vassar had long been a leader in "denouncing sexism and sexist stereotypes," and despite what the author assumed to be an attempt to "offer equal opportunities in physical endeavors to both sexes," the blatantly gendered door colors were, to the author, "degrading"—not only emblematic of sexist attitudes, but

[592] Memo from Newton (VP, The Energy Resoruce Management Company) to Kluge (Plant Operations) regarding the energy performance of Walker and suggested improvements, December 5, 1983, *Archives and Special Collections, Vassar College Libraries.*
[593] Laura Marlene Applebaum, Memo to Robert Kluge about the "intolerable heat" in the newly constructed Walker Field House, November 15, 1983, *Archives and Special Collections, Vassar College Libraries.*
[594] Simon, "In the Place of the Parent."

also suggestive of a sense of "infantilism."[595] The Chairman of the Department of Physical Education and Dance quickly responded to this letter, noting that, though he disagreed with the student's use of a public venue to voice her concerns, he and the Physical Education faculty shared the student's concern and had asked the architects to remedy the issue as one of "some several dozen on the list of corrections which need to be made" before the building was opened.[596] This response suggests growing tension with the architects, as well as increased student advocacy, but also an echo of a paternalistic attitude toward students.

The architectural firm did in fact hear of the complaint and took action to repaint the doors, but not without offering their own jab at the student who wrote the Letter to the Editor. Dismissing the student's concern, architect Spencer Johnson of Tully Architects wrote: "obviously—the writer doesn't know a Vassar color [pink] when she sees one."[597] Though this issue was resolved, the following year, Walker was back in the *Miscellany News,* this time thanks to a memo that listed a number of grievances about the lack of maintenance and unsatisfactory cleanliness of Walker, including mold on the floors and nearly half of the locker room showers being inoperable.[598] Ultimately, the immense complexities of the building design resulted in a much more complex—if at times problematic—relationship between users and the Walker Field House.

Faculty. Beyond troubleshooting problems with the new building and—just as at Kenyon—making use of the facilities, one of the most prominent themes in how faculty experienced Walker Field House was the lack of institutional support they perceived prior to its erection. The new gymnasium undoubtedly represented a significant investment ($4.9 million for Walker, plus $500,000 for upgrades to Kenyon and a proposed $2.5 million endowment for staffing and maintaining the new structure);[599] however, prior to the approval for this building, faculty reports and memos demonstrated increasing frustration with the level of support and communication they experienced with campus administration. In the wake of coeducation, faculty had been lobbying for more

Image 46. Outside of Walker Field House, 2016. Notice the unique roofline and ample outdoor parking. *Photo by author.*

[595] Allison X. Kozak, "Locker Colors Exhibit Humorless Sexual Typecasting," Letter to the Editor, *Miscellany News*, October 8, 1982, *Archives and Special Collections, Vassar College Libraries.*

[596] Bob Colyer, Response to Allison Kozak's Letter to the Editor, October 8, 1982, *Archives and Special Collections, Vassar College Libraries.*

[597] Memo from Spencer (architect) to Otis (contractor?), affixed to a copy of Allison Kozak's Letter to the Editor, November 5, 1982, *Archives and Special Collections, Vassar College Libraries.*. Vassar's first official school color was pink; then the color was changed to maroon with the 1868 transition to coeducation.

[598] "The Annual Parents Weekend Cleanup Not Enough for Walker," *Vassar Miscellany*, April 6, 1983, *Archives and Special Collections, Vassar College Libraries.*

[599] M.J. Alexander, "Limited Hours, Usage/Futuristic Field House Nears Finish," *Vassar Miscellany,* September 3, 1982, *Archives and Special Collections, Vassar College Libraries.*

faculty and improved facilities to ensure Vassar's continued legacy as a place that promoted a "sound mind and sound body" for all students, male and female alike.

In 1968, the same year Vassar went co-ed, long-time Physical Education faculty member and chair Ruth Timm wrote to the Dean of Faculty to request more faculty support: "as we have stated for years, our teaching load is heavier than any of the Seven Sisters and ... heavier than those in the coeducational institutions" she studied.[600] She continued: "The embarrassment becomes more acute when we compare ourselves with the coeducational colleges with whom Vassar competes for students" and illustrated her claims with a summary of the student-faculty ratios of nine of Vassar's peer institutions (see Table 4). Ultimately, Timm framed this as an issue of attracting students to Vassar, certainly an institutional priority in the years following the campus' shift to coeducation: "The point demonstrated by these figures is not lost on potential applicants nor on students whom we admit but who matriculate elsewhere."[601]

Table 4. An 'embarrassing' comparison of Vassar's Physical Education teaching load as compared to other coeducational institutions.[602] *Reproduced by author.*

College	Undergraduates (Number)	PE Faculty – Full Time	PE Faculty – Part Time
Amherst	1,491	11	
Bates	1,375	10	
Bowdoin	1,325	12	
Colby	1,593	10	
Middlebury	1,850	12	
Trinity	1,677	13	
Tufts	3,950	5 (*14 coach-lecturers*)	
Wesleyan	2,268	14	
Williams	1,891	15	
Vassar	2,250	6	2

In fact, students were enrolling in physical education courses and programs at record levels: in the early 1970s, the department wrote that enrollment had doubled, making Physical Education "one of the few departments showing consistent growth over the last seven years."[603] Yet staffing and facilities failed to keep up with the demands posed by the move to a coeducational model and increased enrollment, such that by 1978 Physical Education faculty wrote of an "urgent and immediate need" for

[600] Memo to the Dean of Faculty from Ruth Timm, Chairman of the Department of Physical Education, December 16, 1968, *Archives and Special Collections, Vassar College Libraries.*
[601] Advisory Committee of Physical Education and Athletics, "Appendix B: Proposals for Vassar's Athletics: A Report of the Ad-hoc Committee to Advise the Dean of Faculty," January 1978, *Archives and Special Collections, Vassar College Libraries.*
[602] Ibid.
[603] Ibid.

significant financial commitments that "to date, the College has been unwilling to make."[604] That same year, a report on the state of Physical Education and Athletics asked: "Shall Vassar continue to make a virtue of its inadequacies in athletics? Shall we continue to lose prospective students and dissatisfy present ones, because we choose to segregate our academic offerings from physical exercise and competitive sports?"[605] Why this lack of investment? According to official explanations from the campus administration, the primary reason was lack of funding: authors of the 1978 report acknowledged this excuse, stating that "the only reasonable argument we heard in defense of the status quo was financial constraint." However, the authors countered this earlier claim by arguing that "continued emphasis on financial constraint ... will relegate Vassar to an inferior position among school of comparable size and philosophy."[606]

Yet the above quote also suggests an increasing tension between athletics and academics or, in other words, the education of the mind and body that had long been unified in Vassar's curriculum. Indeed, in the mid-1970s, Vassar faculty debated the merits of awarding academic credit for Physical Education classes.[607] In response, the Physical Education faculty rebutted with an appeal to the "Greek ideal of a healthy mind in a healthy body"—evocative of Vassar's founding proclamation that the College would aim to instill sound minds and sound bodies—and argued that awarding credit for physical endeavors would not undermine Vassar's high academic standards, and that a "narrow definition of 'academic'…[should not be] the only criterion for worthwhile educational experiences."[608] To further prove their point, in the aforementioned 1978 report, the Physical Education faculty presented a list of peer schools to demonstrate that in fact academics and athletics could coexist (see Table 4).[609] This is a fascinating debate because Vassar was founded with the integration of mind and body in mind, yet by the 1970s, educating the body seemed somehow suspect or less worthwhile (to some) than the education of the mind; thus, the College had to look to peer institutions to reiterate what had long been true at—and essential to the spirit of—Vassar. Further, in 1982, the year that Walker opened, Bob Colyer reassured the campus community in a *Miscellaneous News* article that: "The expansion of the new facilities would not lead to a new sports-dominated way of thinking for the school. 'It's in my coaches' handbooks,' he said. 'Priority one, academics. Priority two, athletics. We have the ability to mix them pleasantly.... I wouldn't want to be a leader of

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[604] Advisory Committee of Physical Education and Athletics, "Appendix B: Proposals for Vassar's Athletics: A Report of the Ad-hoc Committee to Advise the Dean of Faculty," January 1978, *Archives and Special Collections, Vassar College Libraries.*

[605] Ibid.

[606] Ibid.

[607] This debate, about whether and how to award credit for physical education courses, endures today. See Roger Pielke, Jr., "Why Not a College Degree in Sports?" *New York Times,* The Opinion Pages, September 14, 2016.

[608] Letter from Elizabeth Richey (faculty in PE department) to Donald Wilson (Chairman of the Trustee Committee on Coeducation), June 7, 1974, *Archives and Special Collections, Vassar College Libraries.*

[609] Advisory Committee of Physical Education and Athletics, "Appendix B: Proposals for Vassar's Athletics: A Report of the Ad-hoc Committee to Advise the Dean of Faculty," January 1978, *Archives and Special Collections, Vassar College Libraries.*

anything that would take away from academics."[610] Ultimately, as this quote demonstrates, even when they did receive funding and support for the multi-building renovation and expansion, the department all but apologized for its gains and sought to reassure other departments that they did not come at the expense of intellectual education. Here we see evidence of a subtle yet significant shift in the relationship of athletics (physical activity) to the rest of campus, namely its increasing peripherality both intellectually (e.g., athletics as positioned in opposition to academics) and administratively (e.g., a relative lack of funding for the department).[611] Further, for the first time, bodily movement—once central to the founding of the institution—was at odds with other administrative priorities.

Students. In the wake of coeducation—and a subsequent growth in the size and diversity of Vassar's student body—faculty seemed particularly concerned about the lack of student community at Vassar in the 1970s. However, more noteworthy was how, in this era, student advocacy centered around participation in physical education and sports on campus. Prescott notes that in the 1970s, students began to advocate for both the expansion of on-campus health services and a voice into their provision, establishing, for example, Student Advisory Committees to advise campus health centers on student needs and services.[612] Similarly, at Vassar, a campus-wide "Pink Sheet" memo (ca. 1976) published a call for students to form a Vassar Athletic Association, led by students "interested in any aspect (casual recreation, intramurals, varsity, physical education classes)."[613] This marked an important shift: physical activity was no longer just experienced as a mandatory course or set of requirements, but as a service expected—demanded—by students.[614]

Student participation in the planning process was also a primary concern, particularly regarding decisions regarding the programming and construction of Walker. A series of articles in the campus' *Miscellany News* point to an ongoing dialog, negotiated in public, between students and the administration regarding student involvement in the planning and design process of the new gymnasium. As early as 1980, students stated with optimism, "We are glad the student body has been given the opportunity to observe and thus participate in this project" and expressed a desire for this partnership to continue as plans for the new building progressed.[615] Yet later that year, student sentiment took a different tone as the Athletic Association President Susan Davis penned an article in which she accused college President Virginia Smith of stalling plans to expand the campus' athletics program and ignoring recent "petitions demanding athletics improvements ... including a petition [presented to her] last year

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[610] M.J. Alexander, "Limited Hours, Usage/Futuristic Field House Nears Finish," *Vassar Miscellany,* September 3, 1982, *Archives and Special Collections, Vassar College Libraries.*

[611] And we might say spatially, too (see Conclusion chapter).

[612] Prescott, *Student Bodies*.

[613] Letter from Wells (Dean of the Faculty) to McCarthy (Assistant Professor of Philosophy), "Report on Physical Activity and Athletics at Vassar," December 14, 1975, *Archives and Special Collections, Vassar College Libraries.*

[614] Due to Title IX, in fact equal access for men and women was required, but equally important is the fact that students expressed their demands for services.

[615] "Thanks Ms. Smith!", *Vassar Miscellany,* February 29, 1980, *Archives and Special Collections, Vassar College Libraries.*

that included over 1,400 signatures."[616] Then, in 1981, the *Miscellany News* published an article accusing the administration of proceeding "in secret" with their plans for the new gymnasium. The authors asked: "What are the administration and Trustees hiding?" In response, students demanded both inclusion in and transparency of the building process.[617]

What is clear from these articles is that students saw physical education and athletics as fundamental services to be provided by administration and demanded inclusion in the decision-making process regarding what form these programs should take. Thus, in the late twentieth century, we see not only a renegotiation by students of the *experience* of physical education—as an essential service to be offered by the college—but also a renegotiation of the relationship between administration, faculty, and students to achieve that end. Perhaps not surprising, given the enthusiasm for physical education demonstrated in the *Miscellany News*, students were using the gymnasium in record numbers in the late 1970s, thereby providing further justification for the need to construct new facilities to accommodate the increasing demand. A 1979 report estimated that, out of 2,300 enrolled students, approximately 500 attended regular physical education classes; additionally, 900 students participated in intramural activities, 300 participated in intermural, and 150 in club sorts, and countless students—officially reported as an "indeterminate" number—engaged in recreational activities.[618] These numbers suggest that the democratic ideal of participation envisioned by physical educators appears to have been shared by students.

The Athletics and Fitness Center (2000)

Recognizing a need for further investment in Vassar's growing athletics program and responding to a desire to centralize the administration of the multi-faceted Vassar Athletics Program and Department of Physical Education and Dance, at the turn of the century, Vassar constructed its sixth and most recent gymnasium, the Athletics and Fitness Center (AFC), in 2000 on a site adjacent and connected by a glass walkway to Walker Field House (Image 47). The large rectangular volume of the building reads as a rather bland *facility*,[619] though its brickwork and arced windows provide a subtle though pleasing reference to its predecessors, Alumnae and Kenyon Halls, in addition to more natural light than what Walker allows in. The AFC, connected to Walker and possessing a fitness room, an indoor track, basketball and volleyball courts, staff offices, and a large interior lounge space, signifies the role of today's gymnasia as a hub of campus life and serves as a monument to the principles of (lifelong) fitness. In fact, Elizabeth Daniels writes that: "These days ... students write their own exercise regimen. But they are now joined by other members of the college community who also use the building in a new kind of camaraderie. In some ways the machine room has become

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[616] "Administration Accused of Lack of Support for Sports," *Vassar Miscellany*, February 15, 1980, *Archives and Special Collections, Vassar College Libraries.*
[617] "On Chaplains and Gyms," *Vassar Miscellany,* April 24, 1981, *Archives and Special Collections, Vassar College Libraries.*
[618] Conference Report 5: Physical Education Facilities of Vassar College, Meeting between Appenzellar and Czula (Physical Education) and Hutchins (Architect), January 1, 1979. *Archives and Special Collections, Vassar College Libraries.*
[619] We might sense here an echo of the earlier Recreation Facilities, from 1930-1965 (see Cranz, *Politics of Park Design*).

'the spot,' more popular, than the Retreat in the College Center."[620] Vassar's gymnasia have long played a central role in students' experiences, as evidenced by nineteenth century student diaries and photo albums; yet what is unique about the AFC is that it was specifically designed to accommodate this function, its large interior atrium providing students a formal, dedicated social space (though as Daniels' words make clear, in fact the machine room is used and experienced to a greater extent than the gymnasium's paramount social space).

Vassar Athletics coaches and faculty in the Department of Physical Education and Dance were deeply involved in the programming of this gymnasium, expressing their needs for sufficient—and centralized—administrative space, and offering their expertise on other programmatic elements. When asked about how well the building functions, most had few complaints beyond the lack of office space—a common refrain in modern college campuses—and the seemingly excessive volume and décor of the building's entryway.[621]

Though physical education is no longer required, today Vassar students—as well as faculty, staff, and members of the Poughkeepsie community—enjoy a range of activities at the AFC and its sister gymnasia,[622] including physical education and dance courses; varsity, intramural, and club sports; recreational activities through the "lifelong fitness program"; self-service facilities; and summer camps for local residents. A recent brochure entitled "The Vassar Athlete Excelling" notes that in recent years "Vassar has invested more than $20 million in athletic facilities in order to meet the competitive and recreational athletic needs of students" and thus "provides an environment where student-athletes achieve academic and athletic excellence."[623] This usage of the hybrid "student-athlete" moniker suggests a rejoining of two halves of Vassar's identity—mind and body, academics and athletics—and indicates that an administrative investment in athletics is no longer in question. Though campus gymnasia have in some ways become more peripheral (spatially and socially) as the requirements and rationale for physical education have changed, Vassar continues to make a strong and compelling argument for the need to educate mind and body: athletics foster "a sense of community" as well as "the leaning and growing process that strengthens skills in leadership, diplomacy, discipline, teamwork, and perseverance" for success in the

Image 47. The exterior of the AFC building, with the grand arched entryway and windows evocative of historic details elsewhere on campus. The glass walkway (at right) connects to the Walker Field House. *Image by author.*

[620] Daniels, *Main to Mudd*, 63.
[621] Informant interviews, Vassar College, February 2016.
[622] Walker and Kenyon are still functioning gymnasia; athletic facilities are also at Prentiss and Ballintine Fields today.
[623] "The Vassar Athlete Excelling" pamphlet, n.d.

workplace, in graduate school, and in volunteer settings.[624] In this quote, we can see that Vassar's long-standing interest in promoting "sound minds and sound bodies" still echoes today.

Conclusion

Though their role and prominence on campus have largely been eclipsed by other campus priorities today, reflecting on the origin and history of campus gymnasia, as explored above and in Chapter 2, reminds us that they were in fact central spaces of the student experience in nineteenth century America, a focal point of popular ambivalence about women's new social and bodily freedoms, and the site from which female faculty advocated their proper place as scientists, educators, and physicians. The experience of these gymnasia was ambivalent, at times affording newfound freedoms to the social and physical student body, and at other times serving as its constraint.

This ambivalence not only conveys the contradictions inherent in nineteenth-century ideas about health, gender, and bodily movement but also suggests possible limits to and opportunities for addressing sedentary behavior in the future. First, though implemented and experienced at times as a source of surveillance and control of the female student body, the physical education program at Vassar also introduced new opportunities for bodily movement and expression. Importantly, this freeing of student bodies—even if only limited to campus gymnasia and playgrounds—ultimately benefitted women in ways far beyond the salutary effects of physical activity. These tangential effects—professional advancement and social connection to name just two—are reason enough to justify the need for greater opportunities for movement on today's campuses, and even more so given what we currently know about the cognitive and physiological benefits of physical activity and the need to interrupt the sedentary norm of learning environments.

Second, despite originating, at least in part, as an imposed, compensatory activity to quell critics and conservatives, in fact students enjoyed and later, demanded, elements of the physical education curriculum at Vassar. Though many factors led to the demise of physical education programs across the country, archival evidence at Vassar College reminds us that an important though too often unacknowledged force resisted this trend: that of students (and faculty) advocating for physical activity as an essential element of higher education.[625] This advocacy for physical education on the part of students comes into particularly sharp focus in the twentieth century after the demise of *in loco parentis* and subsequent decline in administrative support for physical education. We have every reason to believe this desire is still present on college campuses, and listening to and investing in it can help reintroduce the body to education and, in so doing, help to address burgeoning health problems like obesity and sedentary behavior.

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[624] "The Vassar Athlete Excelling" pamphlet, n.d.

[625] For example, in 2015, students at the University of California, Berkeley, voted in a fee referendum to expand services at the campus health services and recreational sports facility.

Controlling Student Bodies

Historians John Bale and Patricia Vertinsky argue that "architecture functions importantly as a potential stimulus for movement, real or imagined."[626] Since their nineteenth century origins, gymnasia, then, have been designed and experienced as spaces for the *moving* student body—as opposed to its stationary counterpart, confined to desks for learning and study—and thus have played (and continue to play) a unique role in institutions of higher education.

If schools are "regulators of bodies,"[627] then campus gymnasia might be understood as spaces of bodily regulation and control. While classrooms control student bodies through the apportioning of students in fixed locations, singular postures (and the restriction of movement), and panoptic arrangement wherein all students are visible to the teacher, gymnasia exert control over the student body by stimulating movement. Indeed, at the most basic level, gymnasia are specialized buildings that circumscribe certain behaviors: throughout their history, campus gymnasia have served as spaces in which bodies are instructed to move in a particular way and toward a particular end. Even as nineteenth-century women experienced greater bodily freedoms through physical education, dance, and sport, they necessarily did so within the four walls of the campus gymnasium. Enclosing bodies in this building type afforded other mechanisms of control, such as time limitations, the enforcement of certain codes of conduct and dress, and periodic bodily assessments.

The physical presence and specialized design of the spaces that housed these activities—from the 1866 construction of the Calisthenium, a building dedicated to calisthenic exercise, to the inclusion of rooms for corrective exercises and the development of posture photos in Kenyon Hall (1933)—further elaborated the power of these techniques of bodily instruction. Campus gymnasia rose as large, solid, impressive monuments to various scientific discourses throughout each era, each—building and scientific discourse—legitimizing the other. Yet today, with the dissolution of the doctrine of *in loco parentis* in favor of a risk management paradigm, gymnasia are called upon in a much different way to shape the student body: they are to provide a service, for willing student bodies, to afford opportunities for movement and self-care, and to help mitigate risk.

Indeed, different values are placed on the work of the moving body, charged with engaging in physical activity, and the still body tasked with doing mind-work; these values, as demonstrated through the long history of Vassar College, change over time. Whereas many early colleges were founded on the principle that bodily education was the foundation upon which a liberal education of student minds would rest, today we have come to value mind-work over body-work, particularly in institutions of higher education. This shift has shaped how various elements of the campus landscape are mobilized—or not—as mechanisms of control, and can be read in campus design:

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[626] Vertinskyy and Bale, *Sites of Sport*, 15.

[627] Linda McKie & Nick Watson, eds., *Organizing Bodies: Policy, Institutions and Work*, (New York: St. Martin's Press, 2000), xvii.

grounds, gymnasia, and classrooms all convey subtle yet powerful expectations about how bodies are expected to sit, stand, or move.

Recall that educational scholar Nancy Lesko has argued that schools practice a "curriculum of the body," and sociologist Tuula Gordon and colleagues have expanded this idea to include a "pedagogy of the body," including the official, informal, and physical dimensions of school and associated body practices.[628] In campus gymnasia, the student body is taught to move in a particular way in order to meet a range of external objectives: healthy development, perfect posture, beauty and grace. At times these ideas in service to academic goals—*sound mind and sound body*—yet at other times, these actions serviced other ideas, namely the fulfillment of "womanly duties" and maintenance of the body politic. The decline of mandatory physical education programs in the late twentieth century reflects and presages many changes in the management of the student body. Further, despite the multi-faceted—and ever-changing—project to atone for the sedentary life of collegiate men and women over the last century through the design of campus gymnasia and the physical education programs they housed, campus administrators and health officials have given little or no attention to movement in other spaces, namely classrooms and libraries. In fact, in these spaces, the body has been relegated to a *seated* posture, which we now know can "undo" the salutary effects of leisure-time physical activity.

Today's campuses primarily exert control over the student body through the design of classrooms and other educational spaces that enforce a singular, seated, stationary posture;[629] though less overt than the control of the body once enforced through mandatory physical education, this form of bodily control is in fact deeply problematic, impacting the mind and body of students. Yet the deleterious impacts of sedentary behavior will remain largely unaddressed today as long as the body remains constrained by administrative and curricular practice and interventions overlook the educational spaces where students spend the majority of their time.

[628] Gordon et al., "Moving Bodies/Still Bodies," 31.
[629] Huse, "Restructuring and the Physical Context."

Chapter 4
The Sedentary Campus: Issues and Future Directions

Introduction: The Sedentary Campus

Today, students who walk the halls of the University of California, Berkeley campus are greeted by a series of posters encouraging them to *be well to do well*; in other words, to adopt a self-care regimen of physical activity and sufficient sleep to achieve positive health—and by extension, academic—outcomes. In contrast to the *in loco parentis* era of the nineteenth and early twentieth centuries, these posters convey a subtle yet significant message that health is an individual, rather than institutional, responsibility and thus obscure the social and environmental settings that help to encourage or thwart desired health outcomes.[630] Though undoubtedly a pressing health concern for students today, sedentary behavior is not mentioned in the "be well to do well" posters. Further, because the health consequences associated with prolonged sitting are not ameliorated through leisure-time physical activity, the individual behavior-change model assumed in the posters is inadequate for student health promotion, as is the compensatory model of the nineteenth and twentieth centuries, explored in Chapters 2 and 3, in which physical activity was prescribed as compensation for sedentary study.[631]

In contrast, the American College Health Association (ACHA) recently articulated a number of objectives for student health in its Healthy Campus 2020 initiative, including the need to "create social and physical environments that promote good health for all" in order to "support efforts to increase academic success, productivity, student and faculty/staff retention, and life-long learning."[632] This initiative, in highlighting the role of place in shaping student health—and education—outcomes, is a particularly hopeful prospect because it invites planners and designers to once again participate in re-envisioning and redesigning campuses as healthy places. This has important implications for sedentary behavior, as research regarding prolonged sitting illuminates the need to rethink the entire system of sedentary learning spaces, assumed and enforced postures associated with learning and studying, and thus the status-quo of educational environments. Such changes will also require a change in pedagogy and what sociologist Donna Huse calls the "physical contexts of learning," including "how people are located [in buildings], related to each other, move, speak, and use their bodies."[633] In other words, just as previous visions for student health have been responded to through an evolving set of administrative and environmental interventions (as demonstrated in Chapters 2 and 3), the problem of the sedentary

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[630] *If you find time for sufficient exercise and sleep*, the posters seem to say, *then you will be healthy*.
[631] See Owen et al. "Too Much Sitting" and Hamilton et al., "Too Little Exercise and Too Much Sitting." Pertinent to the topic of physical movement in higher education, burgeoning research in the field of inactivity physiology continues to uncover an urgent threat to student well-being: the deleterious health (and education) impacts associated with prolonged sitting. In other words, because sedentary behavior (prolonged sitting) poses unique health challenges independent of physical activity, it is not possible to "compensate" for too much sitting with physical activity, rendering compensatory models ineffective.
[632] American College Health Association, "Objectives for the Healthy Campus 2020 Initiative," emphasis mine.
[633] Huse, "Restructuring and the Physical Context," 290.

student body—which I argue is also a problem of the sedentary campus, as it is uniquely intertwined with built, social, and institutional practice—must find its solution today in the identification of novel, multi-level administrative, pedagogical, and environmental interventions.

Designing for Movement: Spatial and Social Change

This chapter proposes methods to realize spatial change in educational settings; yet this is not a neutral or purely spatial endeavor, as architect Patrick Pouler explains: "Space is neither innocent nor neutral: it is an instrument of the political; it has a performative aspect for whoever inhabits it; it works on its occupants. At the micro level, space prohibits, decides what may occur, lays down the law, implies a certain order, commands and locates bodies."[634] Thus, to embark upon spatial change is necessarily to intervene in and re-envision social *and* bodily relations; this dissertation explores both in equal measure.

Further, Daphne Spain's term of a *spatial institution* is useful in illuminating how spatial relationships are indicative of and produced by social relations.[635] For example, a latent function of the spatial institution of the school is control, notably bodily control: pupils must learn to sit upright, still, raise hands, moderate interactions with others, use restrooms at breaks or with permission.[636] As will be explored below, this function of bodily control poses significant challenges to rethinking the sedentary classroom: though movement is linked to cognition and creativity—important functions in any learning context—it stands at odds with the bureaucratic delivery of information assumed and enforced by the majority of classroom settings today.[637]

The case study of Vassar College illuminated how the promotion of bodily movement, though confined to certain spaces and bodily practices in a specific organizational setting, served to both liberate and control the student body; in this chapter I show how techniques to *limit* the movement of the body—what Tuula Gordon and colleagues term a "pedagogy of the body"—also function as a contrasting form of latent control in educational settings.[638] The built environment plays an important role to that end: if movement was confined to and circumscribed by campus gymnasia, its opposite—stillness—is enforced by classrooms, where minds are educated.[639] We see here, in architectural and pedagogical practice, the Cartesian split of the mind and body, which is much more pronounced today than when nineteenth-century educators sought to promote *sound minds in sound bodies*. To interrupt the sedentary norm of learning, then, requires us to rejoin the mind and body and, to do so, reconsider the

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634 Pouler, 1994, 175, in John Wm. Folkins, Jennifer C. Friberg, and Paul Cesarini, "University Classroom Design Principles to Facilitate Learning: The Instructor as Advocate," *Planning for Higher Education* 43(2015): 45.
635 Spain, *Gendered Spaces*.
636 Gordon et al., "Moving Bodies/Still Bodies."
637 Huse, "Restructuring and the Physical Context."
638 Gordon et al., "Moving Bodies/Still Bodies."
639 In fact, it is a fallacy to say that only minds are educated, because bodies also are socialized, meaning they learn social practice, in classrooms. Still, we see a divide between the education of the mind and body rendered in administrative, spatial, and pedagogical dimensions: the (explicit) bodily curriculum is limited to campus gymnasia, and all other (mental) learning occurs in classrooms and libraries.

entire educational landscape, including pedagogical practices and what Torin Monahan calls built pedagogy—"architectural embodiments of educational philosophies," which shape behavior and also subtly communicate and foster a tacit curriculum of a space via the arrangement and provision of classroom materials.[640]

Indeed, we should be concerned with the design of offices, classrooms, and other educational environments in which we do the vast majority of our sitting. As mentioned in Chapter 1, sedentary physiology researcher Travis Saunders reports that "roughly 70% of class time, including physical education class, is completely sedentary."[641] This is of particular concern not only due to the physiological consequences of sedentary behavior, but also its cognitive impacts: brain function, creativity, and memory are stimulated with movement.[642] Movement, therefore, should be a key component of educational (classroom) design, not its opposite. How, then, can we (once again) design learning environments for movement? This endeavor necessarily must take a different form than the precedents of the nineteenth and twentieth centuries, in which gymnasia were built and physical activity introduced as a way to compensate for—rather than transform—sedentary study.

Though central to the history presented in Chapters 2 and 3, campus environments—and the planners and designers who give them form—are too often left out of today's approaches to college health promotion, which are dominated by individual-level assessments and interventions.[643] In contrast, in this chapter I propose three methods that rejoin the built environment and health promotion: first, environmental analyses such as post-occupancy evaluations—a common architectural research tool used to assess and understand how environments are used and perceived once built—can be used to investigate the contexts of student health behaviors including prolonged sitting; [644] second, design science offers an apt methodology to envision something new by engaging creatively precedents in realms beyond education to inform how we might think about this problem; and finally, evidence obtained from these methods needs to inform the design of campus settings, a practice known as evidence-based design.[645]

Toward the Healthy (Movement-Centered) Campus

College campuses are settings in which students not only learn but also work, play, and often live, so the social and environmental resources campus environments provide have important implications for student health.[646] Thus, in order to better evaluate and intervene in health, individual approaches—like those described above

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[640] Torin Monahan, "Flexible Space and Built Pedagogy: Emerging IT Embodiments," *Iventio* 4(2002): 4.
[641] Saunders, "Can Sitting Too Much Kill You?"
[642] Jensen, *Teaching with the Brain in Mind*.
[643] Baum and Fisher, "Why Behavioural Health Promotion Endures Despite its Failure to Reduce Health Inequities."
[644] DeClercq and Cranz, "Moving Beyond Sedentary Learning Environments."
[645] Hamilton defines evidence-based design as: "the deliberate attempt to base design decisions on the best available research evidence." D. Kirk Hamilton, "The Four Levels of Evidence-Based Practice," *Healthcare Design* 3(2003), 18.
[646] I use the term "college campus" to refer to all higher education settings; hence, I mean the term to be inclusive of a broad range of institution types. The American College Health Association's scope is similarly inclusive of a range of higher education institution types.

and in Chapter 1—should be complemented by ecological and community-level approaches that include social and built environmental variables.[647] Yet despite recent calls for environment-level interventions and ample evidence proving the place effects on health, individual theories and interventions persist in the field of college health—and in public health more broadly.[648]

For example, chances are if you wanted to learn about the most prevalent health concerns among college-aged students today, you would turn to the National College Health Assessment (NCHA) survey. Each semester, this survey collects students' self-reported assessments of, among other concerns, health issues that have resulted in negative academic outcomes (e.g., grading and attendance). For example, regarding mental health, stress, sleep difficulties, and anxiety are the most commonly reported barriers to academic success.[649] However, though mental health is impacted by individual, interpersonal, and institutional factors,[650] the NCHA survey offers few insights into the broader *context* of students' behaviors and experiences—for example, where, when, and why students feel most stressed or most relaxed—and thus suggests that individual behaviors are the primary determinants of health and levers for change.[651]

Limits of Current Approaches to Sedentary Behavior

NCHA data about sedentary behavior is even more limited, in part due to the survey's failure to acknowledge recent advances in our understanding of the perils of prolonged sitting. As mentioned in Chapter 1, previously, those who did not meet recommended guidelines for physical activity were considered "sedentary." Yet today, in light of new research about the unique impacts of prolonged sitting on a range of health outcomes, *regardless of physical activity levels*, scholars in the field of sedentary physiology now argue that sitting for long periods of time must be accounted for in any definition of "sedentary."[652] This definition has important implications for

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[647] William A. Satariano & Edward McAuley, "Promoting Physical Activity Among Older Adults: From Ecology to the Individual," *American Journal of Preventive Medicine* 25(2003): 184-192.

[648] Baum and Fisher, "Why Behavioural Health Promotion Endures Despite its Failure to Reduce Health Inequities."

[649] American College Health Association, "American College Health Association-National College Health Assessment Survey."

[650] DeAnnah R. Byrd and Kristen J. McKinney, "Individual, Interpersonal, and Institutional Level Factors Associated With the Mental Health of College Students," *Journal of American College Health* 60(2012): 185-193.

[651] The National College Health Assessment (NCHA) does provide some insight into the context of mental health and other major campus health issues; for example, students report on how often they have felt depressed, hopeless, overwhelmed, etc., and the extent to which a range of physical and psychological health concerns have impacted their school work in the last academic year. Such data is helpful to identify the prevalence of the health concerns reported, but the cause is less clear. Further, sedentary behavior is wholly absent from the survey, meaning researchers have little data to help them understand why, where, and how long students sit each day. In contrast, a study by Buckworth and Nigg tried to measure not only how long students sit on average, but also why; regarding the latter, the authors identified two categories of sedentary behavior: recreational and obligatory. Recreational sedentary behavior is due to activities like watching TV or playing computer games; obligatory sitting time is related to activities such as studying or reading for classes. Buckworth and Nigg, "Physical Activity, Exercise, and Sedentary Behavior Among College Students," 33.

[652] Hamilton et al., "Too Little Exercise and Too Much Sitting." In other words, the sedentary are not just those who fail to exercise, but rather those who sit for lengthy periods of time, no matter how much exercise they do or do not get.

understanding student health needs: for example, through the NCHA survey, we can learn the number of students who fail to meet physical activity guidelines (approximately 50%) and, under previous definitions, would be considered "sedentary."[653] Yet these data leave obscured the unique risks and causes of prolonged sitting, particularly those beyond individual motivations and actions, and therefore offer limited insights for planners and designers because they do not acknowledge environmental contexts of these health concerns. In short, the American College Health Association (ACHA) has identified the need to create healthy social and physical environments in their HealthyCampus 2020 program (mentioned above), yet the ACHA's primary evaluation tool (the NCHA) focuses solely on individual determinants of health.

What is needed to resolve this disjunction is an evaluation framework that takes into account broader, more distal determinants of health, in other words, one that places the individual in environmental context.[654] For example, in contrast to the individual paradigm assumed in Berkeley's *be well to do well* initiative and the aforementioned NCHA survey, one of the primary goals of the U.S. Government's Healthy People 2020 (HP2020) initiative is to "create social and physical environments that promote good health for all."[655] To achieve this goal, HP 2020 is guided by a multi-pronged, social determinants of health model that includes a number of elements relevant to educational settings (indicated in bold): economic stability, **education**, **social and community context**, **health** and health care, and neighborhood and **built environment**. Further, pertinent to the discussion of campuses as healthy places, in the HP2020 model, "place" is defined as the "conditions (e.g., social, economic, physical) in…various environments and settings (e.g., school, church, workplace, and neighborhood)" and includes **material attributes, "patterns of social engagement, and sense of security and well-being**."[656] Designing interventions into these more distal determinants of health can facilitate greater improvements to population (student) health than would a focus on individual (proximal) determinants.

The Ecological Approach

The American College Health Association's Healthy Campus 2020 (HC2020) initiative similarly advocates an ecological approach to student health and uses a model by Kenneth McLeroy and colleagues to articulate the ways in which health is affected by intrapersonal, interpersonal, institutional, community, and policy-level factors.[657]

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[653] This is extrapolated from the survey report that 50.4% of students meet physical activity guidelines. The NCHA also tells us that the number of students who get *no* moderate-intensity or vigorous exercise in the course of a typical week, yet neither figure accounts for the amount of sitting students do. American College Health Association, "American College Health Association-National College Health Assessment," 12.

[654] Satariano and McAuley, "Promoting Physical Activity Among Older Adults." In essence, the unit of analysis should be neither the individual nor the community, but rather then "person-in-environment."

[655] HealthyPeople.gov, "Social Determinants of Health," HealthyPeople2020, accessed October 29, 2015 http://www.healthypeople.gov/.

[656] Ibid.

[657] American College Health Association, "Ecological Model," HealthyCampus2020, accessed May 7, 2017 https://www.acha.org/HealthyCampus/Implement/Ecological_Model/HealthyCampus/Ecological_Model.aspx

Yet, as long as individual interventions and assessments prevail in the practice of student health promotion, the multi-level, relational influences of health implicit in these ecological models will remain obscured.[658] Instead, physical inactivity must be reframed as a health risk that transcends leisure time and can—and should—be resolved in many spatial institutions (work, home, school) through behavioral (taking breaks, assuming a variety of postures), environmental (furniture that allows for a range of postures, and easily accessible stairs and walkways), and cultural (welcoming and encouraging postural variation and movement) change (Table 5).[659] Administrators and designers need to assess the availability and use of particular resources relating to themes of physical activity and fitness (sedentary behavior), and further, we must expand environmental assessments to include the creation of whole campuses designed, used, perceived, and experienced as health promoting environments.[660]

Table 5. Factors that Impact Movement and Sedentary Behavior in Four Contexts

	Gymnasia	Classrooms	Offices	Museums
Behavioral and Attitudinal	Engagement in physical activity, dance, sports, posture courses, etc. Knowledge about role of movement in health	Sitting for long periods of time (norm) Taking breaks Moving or adapting furniture Working in various postures	Sitting for long periods of time (norm) Taking breaks Moving or adapting furniture Working in various postures	Viewing collection by standing or walking (norm) Siting or resting occasionally Engaging in activities (e.g., at SCMAH)
Pedagogical	Recognition of the body as subject of education	Recognition of the body (or not) as part of the educational process	Offering choice in working location and furniture (e.g., Airbnb)	Design of spaces and experiences for engagement (e.g., SCMAH)

[658] For more on the relational approach, see Cummins et al.," Understanding and Representing 'Place' in Health Research: A Relational Approach." Though the ecological model is productive in illuminating the multi-level factors that influence health behaviors and outcomes, the limits of ecological models include their frequent failure to acccont for interactions between and among levels and for change over time. Kaplan's ecological model (see above) attempts to resolve the latter issue by adding a lifecourse perspective. Kaplan, "What is the Role of the Social Environment in Understanding Inequities in Health?"

[659] See Cranz, *The Chair*; Opsvik, *Rethiking Sitting;* and DeClercq and Cranz, "Moving Beyond Sedentary Learning Environments."

[660] Research regarding sedentary physiology requires us to reconsider *all* spaces and behaviors that comprise our day, most notably the time spent at work (e.g., sedentary computer work) and at home (e.g. sedentary television-watching).

	Instruction of the body via Body Mechanics, sport, physical education classes (e.g, at Vassar)	Recognition of the role of movement in learning, memory Allowing for breaks, a range of postures, and/or movement Moving or adapting furniture as part of teaching practice (shape room to support teaching, e.g., d.school)	Provision of individual and collective resources like furniture (e.g., Airbnb)	Consideration of how patrons experience space, collection, and each other Consideration of movement and postural variation in experience
Built	Design of campuses to include gymnasia and other facilities for activity (e.g., playgrounds and hallways at Vassar) Location of gymnasium in an accessible site Design of interior spaces to accommodate physical activity	Designs that include movable furniture (tables, chairs, etc.) Availability of standing- or adjustable-height furniture (e.g., d.school) Designs that foster both individual and group work Use materials that invite use and engagement (e.g., d.school)	Designs that include movable furniture Availability standing- or adjustable-height furniture (e.g., Airbnb) and unassigned workstations Designs that foster both individual and group work	Availability of furniture for occasional rests that invites a range of postures (sit, stand, perch) Facilities that accommodate group activities Experiences and environments that engage users actively (e.g., SCMAH)

Cultural	Value assigned to physical education and movement in regard to its relationship to (liberal) education Value assigned to movement in realms beyond physical education and physical activity	Cultural assumptions regarding sitting and respect Value assigned to movement as regarding its role in learning Cultural assumptions regarding who sits, stands, and moves in classrooms and what each means	Prioritization of worker health as an organizational responsibility Cultural assumptions regarding the need for standard furniture Cultural assumptions regarding siting still and productivity	Recognition of museums as movement-centered learning institutions Recognition of the value of community and cultural institutions in promoting movement

This ecological approach implies a systems perspective, a transdisciplinary approach, and a range of methods.[661] Further, we can imagine, as social epidemiologist George Kaplan shows us, that these health impacts exist across the lifecourse (Image 16, Chapter 1). In fact, university settings are also one of the most significant environments in which many young people spend the "emerging adulthood" years of their lives and establish their independence and identity and form long-term behavior patterns. As reported in earlier chapters, Melissa Nelson and colleagues demonstrated that college student behaviors regarding physical activity are associated with healthy behaviors later in adulthood.[662]

We might infer a link, too, between sedentary behaviors at and beyond college as the seated posture in these classroom environments bears a great resemblance to that assumed in (and required by) workplaces post-college. Recall that only 72% of 9th graders met guidelines for physical activity, and by 12th grade, only 56% did.[663] This trend continues into and beyond higher education: according to the 2016 National College Health Assessment Survey,[664] only 50% of students met recommended guidelines for physical activity, and an estimated 5% of the total US population gets the recommended level of exercise.[665] Given what we know about the value of movement

[661] Satariano and McAuley, "Promoting Physical Activity Among Older Adults."
[662] Nelson et al., "Emerging Adulthood and College-Aged Youth."
[663] Frank et al., *Health and Community Design.*
[664] American College Health Association, "American College Health Association-National College Health Assessment," 12.
[665] In fact, many educators are aware of this link, though the older students get, the less we tend to think about the need for bodily movement. Of course, biological changes make people less active over time; however, environmental (social and built) impact the rate of decline. Rowland, 1999, cited in Jensen, *Teaching With the Brain in Mind,* 80.

to cognition, creativity, learning, and brain development, Jensen considers it "educational malpractice when only about a third of K-12 students take part in a daily physical education class."[666] The same can be said about institutions of higher education, so the college campus, too, is an important environment in which to implement health promotion programs aimed at both short- and long-term healthy behaviors.

As demonstrated in Chapters 1, 2, and 3, student health has long been a preoccupation of college administrators and health professionals, yet definitions of health—and the methods and programs of intervention they imply—have changed over time. Above, I critiqued the status-quo of campus health evaluations that reflect and perpetuate an individual approach to student health and, using the example of sedentary physiology, suggested the value of a multi-level, socio-ecological approach to identify the need for multi-level assessments and interventions.[667] This systems view of student health helps to illuminate many, inter-related levers for change, and it also demonstrates the difficulty of individual behavior change if desired behaviors are not supported by social and environmental factors.[668]

Additionally, this perspective shifts the burden for change away from individuals to include policy-makers, campus leaders and educators, social networks, and designers and planners. Regarding this link between health and design—and health and design professionals—landscape architect Kristina Hill cautions that: "contemporary ideas about health don't support the idea that design and planning are healing arts. And in turn, most designers and planners don't claim these skills."[669] In response, Hill encourages us to ponder: "What if 'health' and 'disease' were redefined in ways that included a role for environmental design"?[670] This chapter is one attempt to redefine campus health in socio-ecological terms and, in so doing, expose the stake that designers have in rethinking—and redesigning—campuses as healthy places.

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[666] Jensen, *Teaching With the Brain in Mind*, 63.

[667] Importantly, moving from an individual assessment of campus (student) health to an assessment of the healthy campus illuminates the ways in which place is imbricated in student health—meaning, in particular, that individuals are nested in complex socio-environmental contexts that shape behaviors, access to resources, and risks and salutogenic factors—and therefore can better inform more meaningful evaluation methods and environmental interventions.

[668] Systems Perspective: The ecological model, explored above, exposes the shortcomings of the current, individually-focused approach to student health and, in so doing, illuminates a multi-level system of risks and resources that must be addressed in order to effectively address mental health concerns and deleterious health outcomes related to prolonged sitting. Yet I argue that this system approach also exposes the value of exploring these two health issues in tandem. Indeed, physical activity and mental health are intimately related, as suggested by the *Be Well to Do Well* posters that encourage stressed students to go outside and engage in physical activity. Pertinent to our purposes, seeing these health concerns in tandem (comorbidity) can—and should—be taken into account in evaluations of campus health. For example: Do students engage in physical activity as a way to alleviate stress? If so, how often, and which resources do they use? If not, what barriers prevent this activity? Understanding this information can help to evaluate existing settings, resources, and also inform interventions including design. Additionally, can we better understand the link between the amount of sitting a student does in a day and her perceived mental health? The integration of a mind/body perspective is particularly salient in educational settings, where academic outcomes are affected by movement and postural variation.

[669] Kristina Hill, "Design and Planning as Healthy Arts: The Broader Context of Health and Environment," in *Ecology and Design: Frameworks for Learning,* ed. Bart R. Johnson and Kristina Hill, (Washington, DC: Island Press, 2002), 203.

[670] Ibid.

Future Directions

Recognizing the problem of prolonged sitting as intrinsic to the unique cultural and physical contexts of the college setting, in this section I advocate for new mechanisms to design innovative and meaningful health interventions to reduce sedentary behavior. Whereas Chapters 2 and 3 focused on campus gymnasia, this strand of research will focus on the design of another campus learning space: the classroom. The classroom is a deliberate choice in that it serves as an exemplar of the need to consider change along several axes—behavioral, pedagogical, built, and cultural—in order to realize movement-centered learning practices.[671] Indeed, integrating movement into classroom settings can broaden somatic experiences, promote comfort, encourage student engagement and participation, facilitate interactive learning, and achieve student-centered practices. Yet doing so is a complex, multi-faceted project. Thus, below I propose several strategies for change, informed by research on educational environments and adjacent institutions of learning and work—offices, museums, and K-12 and design thinking classrooms. Importantly, these recommendations illustrate the need for a range of interventions, from modifications in individual behaviors to changes in objects and built environments to deeper pedagogical and cultural changes.

Recommendation #1: Conduct Evaluations of the Healthy Campus

The above data makes clear that health assessments must be reformed to include individual *and* environmental measures in order to uncover multi-level influences that affect mental health and sedentary behavior. As mentioned above, despite the serious challenge that sedentary behavior poses to the health of students, the National College Health Association's survey of student health does not measure sedentary activities, nor does the Healthy Campus 2020 initiative name sedentary behavior as a health concern, rendering the magnitude and impact of these behaviors invisible.[672] To my knowledge, only one study has investigated the quantity and context of sedentary behaviors in the specific context of college campuses: Janet Buckworth & Claudio Nigg's landmark investigation found that the duration of students' sedentary behavior far transcends the recommended 3 hours of sedentary behavior.[673] Further, the authors identified two types (contexts) of sedentary behavior: recreational (for example, watching TV or playing games on the computer) and obligatory (studying). I argue that we need to question this idea of "obligatory" sedentary behavior; to do so requires a careful consideration of the contexts of prolonged sitting. In other words, what is it about the act of studying that requires a seated posture? The answer, I believe, has little to do with the activity itself (especially given the range of observed postures in which

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[671] As evidenced at the d-school at Stanford University and in the writing of Donna Huse, movement-centered spaces and pedagogies typically correspond to learner-centered spaces and pedagogies. Thus, I argue that my research also implies movement toward student-centered learning environments and practices, among other benefits. See Huse, "Restructuring and the Physical Context."

[672] DeClercq and Cranz, "Moving Beyond Sedentary Learning Environments."

[673] See Hamilton et al., "Too Little Exercise and Too Much Sitting" and Buckworth and Nigg, "Physical Activity, Exercise, and Sedentary Behavior Among College Students."

students engage in studying behaviors);[674] rather, it is the environments in which this activity typically occurs that reinforce the perception and reality of study as a sedentary activity: classrooms, libraries, study halls, cafes, and dormitories are filled with desks and chairs, the objects assumed to be required for academic work. However, in a recent study of a campus library conducted by Professor Galen Cranz and her students (myself included) at the University of California, Berkeley, we found that in fact students displayed a range of postures that illuminate new possibilities for rethinking the context of student work in campus settings.[675]

Use POEs to uncover ecological insights. Post-occupancy evaluation (POE) studies—evaluations of built settings in use—are not new to the field of design;[676] however, I argue that they can serve a new purpose: to uncover novel insights about the health implications of person-environment interactions. For example, recognizing sedentary behavior as a "hidden health need" among college students, we decided to investigate the social and environmental contexts of sitting as part of a POE a newly-designed campus library.[677] Through observations, interviews, and questionnaires, we learned that, not surprisingly, the vast majority of patrons sat at the library and did so for long periods of time, as many patrons used the library as a study space. Yet we also found that those who made quick visits to the library—for example, to check out books—were more active, sitting less and walking and standing more, and that a small number of patrons choosing to study at the library for longer periods of time used environmental affordances to assume postures beyond the normative seated position: some used bookshelves as standing-height desks; others sat or laid down on the floor; and a few used chairs as footrests to enable them to sit in a lounge position in chairs that otherwise were designed for a 90-degree seated posture.

We also learned that students saw libraries as formal environments in which they would feel uncomfortable moving furniture to meet their needs—for fear of making too much noise—or using features like staircases as ersatz furniture as is done elsewhere on campus. This study offered not only a rare look into the context and duration of students' sedentary behavior, but also resulted in a variety of recommendations to promote postural variation in the library (and other campus settings).[678] Additionally, by focusing on the context of sedentary behavior in a library setting, we demonstrated the value of POE to uncover factors relating to health behaviors—in this case, prolonged sitting—at many levels of the ecological model described above.[679] Further, POEs can help illuminate the interactions between levels--

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[674] DeClercq and Cranz, "Moving Beyond Sedentary Learning Environments."
[675] Ibid. Additionally Gifford & Sommer found that students who studied on their beds had same GPAs as those who used more conventional, upright chairs. Robert Gifford and Robert Sommer, "The Desk or the Bed? *Personnel and Guidance Journal* 46(1968): 876-878.
[676] For more on POEs, see Craig Zimring, "Post-Occupancy Evaluations and Organizational Learning," in *Learning from our Buildings: A State-of-the-Practice Summary of Post-Occupancy Evaluation*, Federal Facilities Council Technical Report no. 145, ed. National Research Council, (Washington, DC: National Academy Press, 2001), 42-53.
[677] DeClercq and Cranz, "Moving Beyond Sedentary Learning Environments."
[678] For more, see: DeClercq and Cranz, "Moving Beyond Sedentary Learning Environments."
[679] For example, formality of space, availability of lockers, task or type of work, design/availability of furniture all impacted if, where, and how long patrons sat. These ecological insights underscore the need to consider how factors

for example, how intrapersonal-level factors (such as knowledge and behavior) intersect with institutional-level factors (like organizational rules or built environments) because they allow for many levels of analysis.[680] In this way, POEs can both address and overcome the shortcomings of ecological models of health by demonstrating person-environment dynamics.

Recommendation #2: Conduct Research Regarding Learning and Movement

One barrier to integrating movement into learning environments is concern that it can distract students or take time away from other in-class learning activities.[681] Therefore, in addition to the above environmental evaluations, we need to evaluate and quantify the impact (benefit) of movement on learning: in particular, how is learning affected by movement-based interventions.[682] This promises to be a rich area of study, as indicated by the work of educational scholar Eric Jensen, who argues that "movement can be an effective cognitive strategy to (1) strengthen learning, (2) improve memory and retrieval, and (3) enhance learner motivation and morale."[683] A recent article in the *New York Times* adds that movement stimulates the brain and, in so doing, fosters motivation, cognition, and memory, all things that can help kids excel academically in school; thus, the *NY Times* article concludes, "kids shouldn't sit still in class."[684] On that note, Heather Erwin and colleagues, in a review of a range of classroom-based interventions to promote movement and physical activity in elementary school classrooms, found that such programs led to: increased physical activity (e.g., a greater number of steps for those with intervention vs. those in control group), improved learning and cognitive outcomes (e.g., reduction in noise levels in classroom post-intervention; higher reading comprehension scores, improved concentration and "on-task" behavior), and other health outcomes (e.g., increased tibia bone density and increase in bone mineral content in lumbar spine). Ultimately, the authors concluded that: "research suggesting that physical activity may foster improved academic performance ... challenges the notion that increasing academic time and reducing physical activity time is the most effective method for improving learning outcomes."[685] Additionally, for children with Attention Deficit Hyperactive Disorder (ADHD), exercise can be particularly therapeutic, leading to improved brain function and cognitive ability.[686] In other words, increasing opportunities for movement improves student outcomes in a range of dimensions. Yet, as a recent article in *The*

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at many different levels—social, environmental, individual—impact sitting behaviors. DeClercq and Cranz, "Moving Beyond Sedentary Learning Environments."

[680] My thanks to Linda Neuhauser for clarifying my thinking on this.

[681] For more on these concerns, see Heather Erwin, Alicia Fedewa, Aaron Beighle, and Soyeon Ahn, "A Quantitative Review of Physical Activity, Health, and Learning Outcomes Associated with Classroom-Based Physical Activity Interventions," *Journal of Applied School Psychology* 28(2012), 14-36.

[682] Erwin et al., "A Quantitative Review of Physical Activity, Health, and Learning Outcomes."

[683] Jensen, *Teaching With the Brain in Mind,* 60.

[684] Donna De LA Cruz, "Why Kids Shouldn't Sit Still in Class," *The New York Times*, March 21, 2017.

[685] Erwin et al., "A Quantitative Review of Physical Activity, Health, and Learning Outcomes," 15.

[686] Pontifex et al., "Exercise Improves Behavioral, Neurocognitive, and Scholastic Performance in Children with Attention-Deficit/Hyperactivity Disorder."

Atlantic makes abundantly clear, despite abundant research linking movement to educational outcomes, the gap between research and practice in this area is staggering. Citing a study by Charles Hillman and colleagues regarding the benefits of exercise to children with ADHD, James Hamblin, writing in *The Atlantic,* acknowledged that such work provides "support for [the idea of] physical activity ... improving childhood cognition and brain health." Yet, Hamblin cautioned:

> If it seems odd that this is something that still needs support, that's because it is odd, yes. Physical activity is clearly a high, high-yield investment for all kids, but especially those attentive or hyperactive. This brand of research is still published and written about as though it were a novel finding, in part because exercise programs for kids remain underfunded and underprioritized in many school curricula, even though exercise is clearly integral to maximizing the utility of time spent in class.[687]

The implications are twofold: first, research regarding the benefits of movement to educational outcomes must be met by and leveraged toward equal investment in funding and administrative support to translate findings into meaningful, effective interventions; second, and following, such a commitment to movement-centered educational interventions is predicated on a change in how the body is valued and incorporated into school curricula.

Recognizing the value of interrupting the sedentary norm of learning environments, Eric Jensen recommends a 40-minute mid-day break for all students, which can be used for physical activity or reflection upon learning, both of which can "maximize the cognitive effects" of learning.[688] These small breaks can themselves be a powerful intervention to reduce the negative impacts of prolonged sitting,[689] though a single break is not likely to fully compensate for an entire day of sitting. Even recognizing the benefit of—and encouraging—something as simple as doodling can be powerful. A form of movement that helps to keep the brain alert and source of respite from an overload of information, doodling—which many people do while taking notes during class—isn't a distraction from, but rather a boon for learning: it's good for memory, stress relief, focus, and creative problem-solving. Other similar interventions include providing space for and allowing stretch breaks in classrooms and setting norms of a range of postures, including standing, laying, and transitioning between several postures during class time.[690] Importantly, faculty and other leaders play an important role in such interventions, as they can help establish norms through their behavior and that which they encourage in others. Additionally, incorporating movement into staff and faculty practices and spaces could help with broader institutional and individual behavior change.

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[687] James Hamblin, "Exercise is ADHD Medication," *The Atlantic*, September 29, 2014, accessed May 7, 2017 https://www.theatlantic.com/health/archive/2014/09/exercise-seems-to-be-beneficial-to-children/380844/.
[688] Jensen, *Teaching With the Brain in Mind,* 67.
[689] Healy et al., "Breaks in Sedentary Time."
[690] Cranz, *The Chair*.

In sum, movement is of central importance to education, yet as we have increasingly valued the mind over the body in educational settings (see Chapters 1-3), student bodies have become more sedentary. How, then, do we bring the body back into (higher) education and do so in a productive way? Donna Huse, an advocate for the value of the body in educational settings, studied innovative educational reform efforts (for example, The Whole Language Movement in New Zealand, German Comprehensive Schools, and the Reggio Emilia Project in Italy) and associated these student-centered pedagogical reforms with greater and more sensitive attention to students' bodies in classroom settings. To Huse, the difference between typical, disciplinary pedagogies and these reform efforts centers on "whether individuals are encouraged to connect or disconnect from awareness of their physical and mental relationship to the immediate physical context."[691] Such bodily awareness and somatic engagement have positive implications for learning in collegiate settings, too, as suggested in Chapters 2 and 3 and explored below.

Reflecting on her work in studying the bodily implications of pedagogical reform, Huse reflects on the importance of (re)acknowledging the role of the body—in particular, the *moving* body—in education: "Mobility might not seem like a crucial educational issue; it certainly isn't much discussed. But I see that many students are in discomfort because of their enforced immobility for five or six hours a day. You see them, the young animal bodies, crushed into small metal chairs hour after hour, muscles bulging, hormones surging, fingers drumming, knees bouncing."[692] In contrast, Huse is encouraged by the aforementioned pedagogical reforms that acknowledge, celebrate, and integrate bodily needs into curricular and classroom practices. She explains:

> The paradigm shift is from the detached, technical performance of the mass industrial worker/student who ignores relationships, body, feelings and nature in order to problem-solve, to the involved, committed creator within the community who responds to personal relations and locates deep feeling for people and places as the source of inspiration in shaping relations within the immediate context. The aim is no longer to tune out one's own person-environment relation but to tune it in and create out of a carefully attended response to it.[693]

In this way, re-engaging the body necessarily implies the need to consider the physical student body as well as its social, cultural, and emotional dimensions. To that end, we might take a cue from artists who, Huse notes, are often good at tuning into bodily forms and experiences. Yet the work of Huse and Jensen tells us that it's not just artists and elementary students who can benefit from such practices: it's all learners, in all educational settings.

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[691] Huse, "Restructuring and the Physical Context," 290.
[692] Ibid.
[693] Ibid., 304.

Recommendation #3: Design Interventions

The above is not intended to serve as an exhaustive list of the multi-level influences on movement and sedentary behavior; rather, it suggests the limits of the current model and the strengths of moving toward an evidence-based, socio-environmental assessment of campus health that can—and should—inform planning and design practices. To that end, here I articulate a number of recommendations to promote physical activity within and beyond classroom settings. Each recommendation is rooted in empirical evidence, assumes the participation and education of users in and about the design of the space, and transcends the individual behavior change paradigm by recognizing multi-level influences on health.[694]

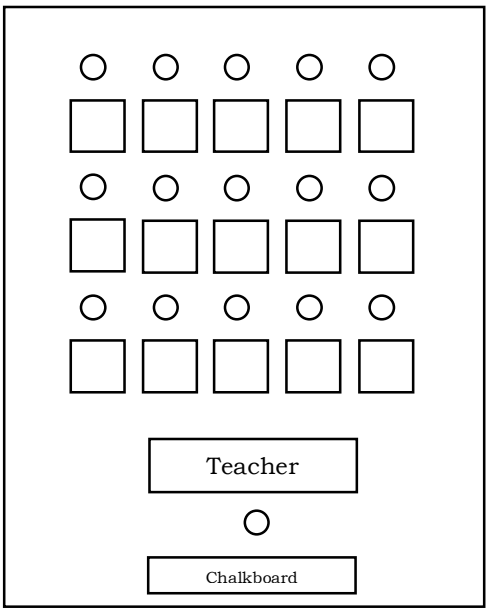

Image 48. The disciplinary classroom, which enforces an individual location, single posture, and uniform behavior, and discourages group work and conversation. *Adapted from Huse, "Restructuring and the Physical Context," Figure 1, p. 297.*

- **Move toward movement- and "meaning-centered classrooms":** In contrast to the "ideal type" of the "mass-disciplinary" classroom in which movement and group activities are minimized in favor of surveillance and uniform behavior (Image 48), Huse advocates classroom designs and pedagogical strategies that promote movement, self-direction, group work, and a variety of activities (for example, Image 49).[695] Of course, important to Huse's analysis of educational reform movements is the observation that pedagogical *and* architectural reform must work in tandem: as she explains, pedagogical models have important implications for the "physical context" of learning, which includes "how people are located in buildings, how they are related to each other in space, how they move and are expected to use their bodies… [and] whether individuals are encouraged to connect or disconnect from awareness of their physical and mental relationship" to

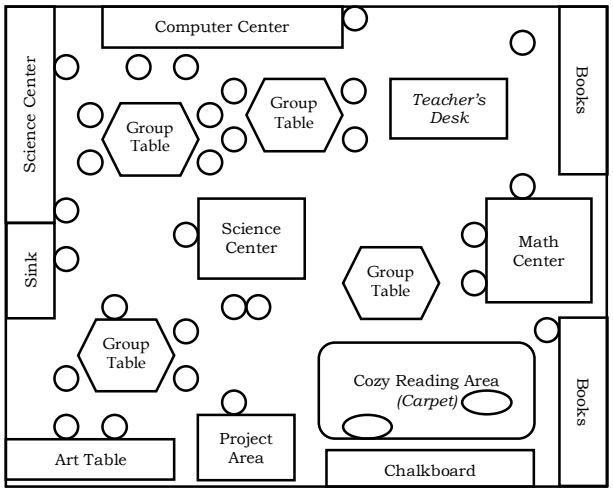

Image 49. The Whole Language Classroom, which offers choice, facilitates movement, and encourages group work. *Adapted from Huse, "Restructuring and the Physical Context," Figure 3, p. 298.*

[694] All of these suggestions are informed by educational research (as opposed to design science and the adjacent institutions of learning and work articulated in Recommendation #4).
[695] Huse, "Restructuring and the Physical Context."

the surrounding built environment.[696] In contrast to the classroom designs (and their associated pedagogy) in Image 48, Huse shows how educational "reform patterns are in the direction of expressing and cultivating relationships which are interrupted by the bureaucratic grid—the relationships of children to their own bodies, intuition, vision; to their peers and their elders; to their families and communities."[697] However, even a classroom designed for movement and group activity cannot atone for a bureaucratic, disciplinary delivery of educational material. Educational scholar Eric Jensen explains that certain practices and designs can allow greater affordances for movement in classroom settings: for example, the use of "unattached chairs and moveable desks" for "maximum comfort and flexibility," and the use of an "inflatable exercise ball as an alternative seating for certain audiences."[698]

- **Prioritize access to outdoor, green spaces.** Jensen also recommends holding classes outside on occasion as a way to stimulate the mind by confronting it with a different physical context of learning.[699] Access to green spaces—whether achieved physically through outdoor walking paths or gardens or visually through windows to pleasant outdoor views—is associated with both stress reduction and attention restoration.[700] Further, green school grounds can encourage physical activity and promote the mental, and spiritual health of students and community members alike; such green spaces can also promote a sense of community and increase social capital by attracting a range of users.[701] Being outdoors, away from purpose-built classrooms, can also provide opportunities for greater postural variation. An example of this can be seen in images of classes taught outdoors at Vassar College (Image 50): students are sitting and laying on the grass in postures that likely would not be easy to assume in a traditional classroom; additionally, the informal environment suggests that they might be able to move between postures more easily. In the Post-Occupancy Study of the East Asian Library at UC Berkeley, we observed something similar: when people were studying or engaging in other learning-related activities outdoors—especially on the campus' large Memorial Glade—postural variation was much greater than compared with students studying in the library, as was the observed frequency of people changing postures.[702] Such observations can and should inform how we design for a range of postures in educational contexts. However, a cautionary tale can also be seen in the purpose-built Outdoor Classroom at Vassar (Image 51). Once a formal space was

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[696] Huse, "Restructuring and the Physical Context," 290.
[697] Ibid., 295.
[698] Jensen, *Teaching With the Brain in Mind,* 83-84.
[699] Ibid.
[700] Roger Ulrich, "View Through a Window May Influence Recovery from Surgery," *Science* 224(1984): 420-421. Stephen Kaplan, "The Restorative Benefits of Nature: Toward an Integrative Framework," *Journal of Environmental Psychology* 15(1995): 169-182.
[701] Bell and Dyment, "Grounds for Health."
[702] DeClercq and Cranz, "Moving Beyond Sedentary Learning Environments."

Image 50. A class held outdoors at Vassar College, 1942. Notice the variety of postures assumed by students. *Archives and Special Collections, Vassar College Libraries.*

Image 51. The Outdoor Classroom, Vassar College, 1939. Note that this designed space enforces a singular posture for students who otherwise choose to be in a range of postures when not in a specialized space for outdoor classes. Caption reads: "This year [October 1939] an outdoor class has been erected, which provides seats for students. There is only one such classroom on campus. Other outdoor classes, as in former years, are conducted on the grass somewhere on the campus." *Archives and Special Collections, Vassar College Libraries.*

designed for outdoor learning, the common—and perilous—assumptions about the physical context of learning resulted in a space that assumes and enforces a singular posture: that of sitting at a 90-degree angle. In this way, prevailing ideas about classroom design took precedent over observations about how outdoor classrooms were conducted and inhabited by students and teachers alike, and thus failed to align with actual—as opposed to assumed—use.

- **Design in a way that encourages postural variation.** As noted above, prolonged sedentary behavior is associated with a host of deleterious health outcomes,[703] and the seated posture itself can cause eye strain and back pain.[704] Though the seated posture is the (assumed) norm for working and learning environments in campus settings, observations show that students desire greater postural variation while they work.[705] Adjustable sit/stand desks and a range of desk heights, as well as perch-height chairs or stools, rocking chairs, and even treadmill desks can promote a range of postures beyond sitting and, in so doing, interrupt the unhealthy, sedentary norm of campus environments (Image 52).

[703] Saunders, "Can Sitting Too Much Kill You?"
[704] See Cranz, *The Chair*.
[705] DeClercq and Cranz, "Moving Beyond Sedentary Learning Environments." See also the above example of how students adopted different postures while in outdoor classes at Vassar *prior* to the construction of the Outdoor Classroom.

- **Teach in a way that encourages postural variation.** Classroom design alone cannot guarantee movement: pedagogical practices and social norms—larger structures that shape individual behaviors—must also be deployed to that end. As stated above, classrooms are central spaces of the sociology of learning that enforces uniform behavior and minimizes movement. The still student body is considered compliant and ready to learn. Thus, if students are to be encouraged to move—which can take the form of an occasional stretching break or the freedom to move between a range of postures, from sitting to standing and laying—the norms of the classroom must be rethought. Moving bodies must be seen as ready to learn (and the work of Jensen shows us that they are), and uniformity of behavior and posture must not be assumed or enforced, for each body is different. Indeed, our POE of the East Asian Library at Berkeley brought up an interesting example of this idea: students reported that they were hesitant to move around the library too much—or even move their chairs—because they were scared to make any sort of noise in a "formal" environment like a library. In this way, though library chairs were objectively moveable, subjectively they were seen—and used—as stationary objects.[706] In short, learning environments—conceived here as unified architectural, sociological, and pedagogical spaces—should "do no harm" to student minds and bodies.[707] In fact, movement of all types is therapeutic and conducive to learning and thus should be central to education design, not its opposite.

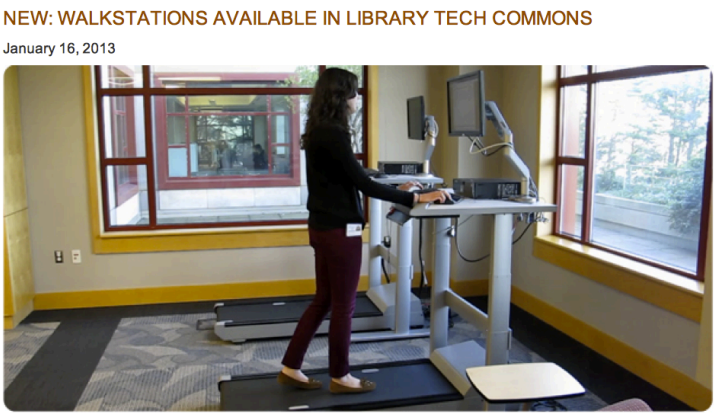

Image 52. The University of California, San Francisco recently installed treadmill desks in the library (2013). *Image from @ucsf_library, Twitter post, January 16, 2013.*

Recommendation #4: Leverage Design Sciences Toward Creative Solutions

I argued in Chapter 2 that Vassar was established as an innovative institution: the first college for women, its monumental Main Hall unprecedented in scale, and its gymnasia unrivaled in size and amenities at the time of their construction. Yet in many ways, the College was also conservative, informed by insular precedents of men's colleges and, later, other Seven Sisters colleges. Therefore, we might also question the extent to which Vassar serves as a radically innovative model of higher education. In this same way, all of the above recommendations were generated from an educational

[706] DeClercq and Cranz, "Moving Beyond Sedentary Learning Environments."
[707] Roslyn Lindheim has stated that "the environment should 'do no harm' either by using materials detrimental to health or by mutilating the ecosystem." Roslyn Lindheim, "New Design Parameters for Healthy Places," *Places* 2(1985): 17-27.

point of view; thus, they may be limited by prevailing paradigms of education as well as existing design precedents.

However, if we reconceive of college campuses as sites of working and learning, then we can look to other institutions in which work and learning occur to generate additional, novel ideas for how to inject movement into learning environments. This endeavor necessarily envisions and studies something *new*; therefore, design sciences offer a helpful method to that end. According to Nobel laureate Herbert A. Simon, "design sciences, or 'sciences of the artificial' are concerned 'not with how things are, but how they might be'"[708] and have recently been used for participatory design programs in public health. Neuhauser and colleagues describe design sciences as a branch of scientific inquiry which:

> Are considered one of three major categories of the systematic study of knowledge (epistemology) that also include natural sciences and human sciences (Gregor, 2009) .... Such models focus on the challenges of simultaneously defining problems, studying them, and developing solutions. They include guidance for continuous evaluation and revision, rather than the traditional 'before and after' approach of traditional health research.[709]

Thus, design science is an especially relevant approach for the study and redesign of classroom settings. Important to the design science methodology is its inclusion of a variety of researchers, practitioners, and stakeholders to "iteratively define problems, and carefully develop, test and revise solutions over time."[710] To that end, this project necessarily engages a diverse range of users and emphasizes the evaluation of existing and adjacent institutional settings to identify relevant insights and practices to inform education design. This type of problem-definition and quick iteration process can foster creative solutions because it is not beholden to a single discipline or set of expertise; rather, such an agile framework can be leveraged to investigate a range of knowledge sets and precedents. In fact, the only constraint is the imagination of its practitioners.

Albert Einstein famously stated that no problem can be solved from the same point of view that created it; similarly, design thinking encourages its practitioners to look for novel solutions in fields and realms beyond that in which a problem rests. We might ask what, for example, a university learn from a grocery store? According to American University, quite a lot. In a recent article, educational journalist Lee Gardner explains that American University had a problem: "student services weren't working the way administrators wanted. Students found the mix of offerings confusing. Too many alumni seemed lukewarm about their campus experience."[711] Desiring to "reinvent the way it interacts with students outside the classroom,"[712] the University

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[708] Simon, *Sciences of the Artificial*, 1996, quoted in Neuhauser et al., "Community Participatory Design of Health Communication Programs," 230.
[709] Neuhauser et al., "Community Participatory Design of Health Communication Programs," 229-230.
[710] Ibid, 230.
[711] Lee Gardner, "What a University Can Learn From Wegmans," *The Chronicle of Higher Education,* July 24, 2016.
[712] Gardner explains the impetus for this desired change: "Faced with 21st-century students, the university has no

turned to Wegmans grocery store, beloved by shoppers for its superior customer service, as well as the Cleveland Clinic, a medical facility of renown in Cleveland, Ohio, for novel ideas to rethink the student experience. Why didn't American University just look at peer institutions? Because "few colleges have rethought, from the ground up, how they work;" thus, looking outside of the academy was essential to make the innovation leap they were hoping for.

One lesson learned from Wegmans was to engage all members of the university in a common, shared goal: "Everyone who works at the grocery chain, including those in the back office and on the custodial staff, is trained and expected to keep customer service foremost in mind." Applying this insight to the university context, American broke down traditional organizational siloes and engaged people from all levels of the university, not just those commonly assumed to be student-facing, to help re-envision the student experience.[713] In a similar fashion, below I demonstrate what institutions of higher education can learn from a tech office, a design thinking program at Stanford University, and a local museum.

Airbnb: learning from the workplace/freeing the body. Airbnb defines itself as "a trusted community marketplace for people to list, discover, and book unique accommodations around the world — online or from a mobile phone or tablet."[714] Via Airbnb, people from all over the world can list their properties or rooms for others to rent for short or long term visits. Since its 2008 founding, Airbnb has become popular with people all over the world and is now worth billions of dollars, making it one of the largest and most successful start-up tech companies in the Bay Area.

Image 53. The "Standing Landing" (left). Airbnb office, San Francisco, CA, encourages both postural variation and movement throughout the workspace. *Photo by author.*

The Airbnb Office in San Francisco, designed by Gensler, opened in 2013. Like the offices of Facebook, Google, and their new economy kin, this space aims to redefine the typical office setting. A recent profile of the office highlighted two important themes in the Airbnb office culture: the flexibility to work *anywhere* and the blurring of spatial practices. The building's design—which takes its inspiration from actual Airbnb listings from around the world—is

choice but to adapt…. Like many private universities, American has diversified its enrollment in recent years, increasing the numbers of first-generation, Pell-eligible, and minority students—populations that often need help adjusting to college life. In fact, all groups of students enrolling at American these days are arriving with more needs than previous generations did. The number of students seeking mental-health services, for example, has multiplied. American had about 150 cases in which a student needed clinical mental-health services in 2010-11; this past year it had more than 700 cases." Gardner, "What a University Can Learn From Wegmans."

[713] Gardner, "What a University Can Learn From Wegmans."

[714] Airbnb, "About Us," accessed May 7, 2017 https://www.airbnb.com/about/about-us.

"emblematic of not only the new economy but also a new spatial blurring ... features that used to be considered part of home—a kitchen, a library…a place to nap—are now integrated into both the space and practice known as work."[715] This blurring of work and home life matches another: the blurring of bounds traditionally delineating individual workspaces. At the Airbnb office, rather than being assigned to fixed workspaces—desks, cubicles—employees can choose where they want to work: on a couch, at the in-house café, *anywhere*.

This ethos is not unique to the San Francisco office, however. The Airbnb Call Center Office in Portland, Oregon is an interesting case-study in rethinking the traditional relationship between office work(ers) and desks. In a short film prepared for the 2015 Cannes Film Festival, the Airbnb Environments Design Team introduced how the company is rethinking the office in what it calls the "Free Address Workplace Proposal."[716] In contrast to a typical call center, defined by monotonous cubicles lacking privacy or opportunities for personalization—"a place where nobody belongs"—the Airbnb team sought to "redefine work environment the way they redefined travel." After surveying staff, the Environments Team found that people wanted to "work in a variety of positions, in a variety of ways" throughout the day—in other words, to move throughout the office building and not be confined to a single workspace and/or posture—so they developed an in-house solution: the "standing landing" (Image 53). This standing-height desk is assigned to an individual and offers a place for storage of personal items, outlets to charge electronics, and the option to work standing up (Image 54). From there, staff can choose to work in a variety of unassigned locations, all open for shared use: conference rooms, telephone nooks, traditional computer-and-desk configurations, couches, benches, and chairs. In the words of the Airbnb team, the standing landing offers a "single place to land"—meaning a single place for personalization and personal storage, and a home "desk"—but "many places to work" (Image 55).[717] This arrangement aims to offer a balance of private and shared resources. The designers explain: "by decoupling personal

Image 54. The Standing Landing at the Airbnb office: work standing up. *Airbnb, "Portland Call Center."*

[715] Eva Hagberg, "Rooms With a View," *Metropolis Magazine,* 2013.
[716] Airbnb, "Portland Call Center," Cannes Lions Archive, 2015, accessed May 7, 2017: http://www.canneslionsarchive.com/winners/entry/590505/airbnb-portland-call-center.
[717] Ibid.

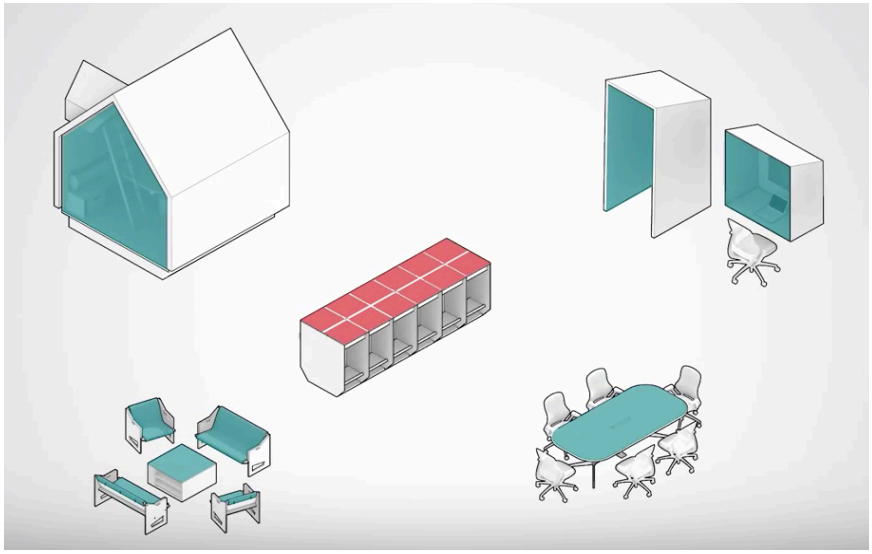

Image 55. The "Standing Landing" helps Airbnb balance shared (green) and individual (red) resources and encourage employees to work in a variety of spaces. *Airbnb. "Portland Call Center."*

space from the notion of a desk, we were able to provide this same level of variety but maintain the same square footage per person of a typical call center." In so doing, they "replaced the anxiety of free-desking with the ability to *belong anywhere*,"[718] thereby echoing the company's mantra in its built office setting.

I interviewed one of the designers at Airbnb—one of the architects of the "standing landing" solution—who explained that a keyword in thinking about the Airbnb office environment is not so much flexibility, but *variety*. Indeed, the tasks that a person does throughout a day are as varied as the spaces that Airbnb provides.[719] For example, in a typical day, a person might begin at the standing landing (assigned), drop off their belongings, charge their computer and electronic devices; from there, they might head to a collaborative space or a shared workspace (clustered and assigned at the team level); then they might have meetings in any number of unassigned locations, depending on group size; or if individual work is preferred, they might opt for a traditional task chair at a large, shared table. Typically, my informant explained, a person spends the majority of their day in their team area (assigned by function), with some time spent elsewhere; though—important to our purposes—in any location, staff can choose a variety of different ways (and postures) and places to work. Some Airbnb-specific features include lounges (coffee tables with embedded power outlets); "duck-ins," which are like wall-mounted phone booths; and "hide-outs," small nooks that larger than "duck-ins" and allow for more than one person to sit at a time.[720]

The goal of this organizational and architectural scheme, my informant explained, is to emphasize collaboration and in-person conversation, to provide opportunities for visual and acoustic privacy and a sense of control through the provision of a variety of working settings, and to acknowledge many modes of working. This particular configuration aims to ensure both sensorial comfort (through low noise, glare, and, I would add, postural variation) and psychological comfort

[718] Airbnb, "Portland Call Center." Emphasis mine.
[719] My informant at Airbnb explained that Airbnb uses a mixed strategy of how people are assigned to a variety of spaces: some are assigned to individual desks, others to activity-based workspaces.
[720] Informant Interview, Airbnb Office, San Francisco, CA, May 13, 2015.

(through fostering a sense of belonging and membership – tiers of membership, individual, team, neighborhood of adjacent teams).[721]

By radically reinventing the office, Airbnb has achieved something that traditional offices and classrooms have been slow to realize: a freeing of the body. Though staff are assigned to a certain location—or zone—they are free to choose from a variety of workspaces throughout the day, depending on the type of activity in which they will engage, with whom, and personal needs for comfort. This scheme, at least in theory, promotes movement and postural variation and is in some ways similar to the reformed classrooms that sociologist Donna Huse describes. Just as Huse argues for the productive force of bodily comfort,[722] so, too, did my informant: she talked not only about psychological comfort—belonging—but also physical comfort, and elaborated that the latter is not only about providing a range of workspaces and furniture options, but also about providing for "human functions" at hand: trash cans, food, internet, power outlets. Doing so, she said, allows mental processes to flourish without friction. Indeed, we saw something similar in our Post-Occupancy Evaluation of the East Asian Library at UC Berkeley: students were hesitant to move from their seats once they sat down because they did not have a place to safely store their belongings, and packing everything up just to grab a book, take a quick stretch break, or use the restroom was too inconvenient. Thus, library patrons simply chose to stay seated in one location.

One of the chief functions of offices is the organization—management—of work, so another lesson is how, despite this mobile workforce, the Airbnb office organizes its employees at a larger scale. By grouping people by teams, and teams by neighborhoods, staff are grouped by functional area (to better aid with face-to-face communication and teamwork) and thus can still be supervised and managed. Thus, the Airbnb office serves as a model for how to balance ease of oversight and ease of individual movement—two ideals that are at odds in classroom environments.

Importantly, this reinvention of space, according to my informant, requires organizational risk-taking and, I would add, a commitment to evaluation and openness to iteration: in other words, to understand how these settings are used, and to reconfigure as needed. Further, asking people to think more about their spaces—which Airbnb is committed to doing by interrupting the norm of office environments—takes a certain commitment and openness on the part of the organization: it is a dialogue that must be ongoing and sincere. To change classroom environments would similarly require engagement with a range of users, an ongoing commitment on the part of the institution to educate students and teachers alike about how to use (and modify) settings, and continual evaluation of the performance of such spaces.

The Stanford d.School: moving walls, moving bodies. Another institution that is radically rethinking the traditional use and configuration of space is the Hasso Plattner Institute of Design—the d.school, for short—at Stanford University. Part of the

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[721] Informant interview, Airbnb.

[722] Huse explains the importance of comfort: "Comfort enables self-connection. That is, if we are comfortable, then we…can be in touch with ourselves and other people and the place itself". Thus, the "aim is no longer to tune out one's own person-environment relation but to tune it in and create out of a carefully attended response to it" Huse, "Resturucturing and the Physical Context," 304.

School of Engineering and employing design thinking as its primary pedagogical tool, Stanford's d.school describes itself as:

> A hub for innovators at Stanford. Students and faculty in engineering, medicine, business, law, the humanities, sciences, and education find their way here to take on the world's messy problems together. Human values are at the heart of our collaborative approach. We focus on creating spectacularly transformative learning experiences. Along the way, our students develop a process for producing creative solutions to even the most complex challenges they tackle. This is the core of what we do.[723]

Even a casual observer will notice that, in pursuing "radical collaboration" and design thinking at the university level, the d.school has re-thought the traditional classroom, student workspace, and academic building to match their unique pedagogy.[724] The d.school is an apt case study because its key pedagogical ideas have important implications for movement, both of which are facilitated by the design thinking curriculum central to the school. For example, at the d.school, students:

- Learn by doing: The d.school's particular brand of learning is "not just about solving the problem, but about asking what the problem is."[725] This hands-on, open-ended approach often involves brainstorming, group work, and a variety of visioning activities that have little to do with the stationary, sedentary norm of traditional classrooms. As documented in the book, *Make Space: How to Set the Stage for Creative Collaboration*, authored by two leaders of the d.school's Environments Team, the emphasis on collaborative work has important implications for movement: "We want our teams to work collaboratively ... so we have generous collaborative spaces and 'bare essential' individual spaces. We want our teams to get up and try stuff, not to sit around and talk in long meetings, so we make seating uncomfortable and the tables too small."[726] These collaborative tables are most often built at bar-height so that those sitting (on stools) or standing can maintain eye contact, an essential element in collaborative practice (see Image 8, Introduction). Thus, both movement and postural variation have a role to play in the design thinking approach. We can also see this philosophy expressed in the classrooms at the d.school: classrooms are designed to be rapidly configured—from a "campfire set-up" to a "theatre in the round" to a series of raised-desk "café-type" spaces (Image 56). Importantly, teachers and students alike are seen as "stewards" of the space: "we set the expectation that…they need to care for [the space]. At the same time, if it's not working, they change it or, better yet, hack it," in other words, modify it in

[723] d.school, "Our Point of View," accessed May 7, 2017 http://dschool-old.stanford.edu/our-point-of-view/ .
[724] This is a good example of Monhan's term "built pedagogy." See Monahan, "Flexible Space and Built Pedagogy."
[725] d.school, "Our Point of View."
[726] George Kembel, in Scott Doorley and Scott Witthoft, *Make Space: How to Set the Stage for Creative Collaboration,* (Hoboken, NJ: John Wiley & Sons, Inc., 2012), 7.

whatever manner fits their needs.[727] Thus, as opposed to many educational environments in which users—especially students—are trained to take the built setting for granted (or, worse yet, clearly not trusted to make any alterations to the furniture, as evidenced by chairs and desks bolted to the ground), at the d.school, the entire built environment is up for grabs. In other words, inviting modification invites movement.

- Iterate: To iterate in the context of learning at the d.school is "to develop an unexpected range of possible solutions, and create rough prototypes to take back into the field and test with real people."[728] Again, this emphasis on creating is anything but passive or sedentary, and, though the d.school has designed spaces specifically designed to accommodate the creation of tangible prototypes, in fact all spaces invite this type of creative, physical engagement. Further, the furniture and materials used in the d.school are designed to communicate this function of engagement: first, the materials used to make the furniture are the same as those that students use to prototype with and thus invite use and modification because they convey a sense that they are not "precious;" second, prototyping materials are made visible and easily accessible in storage bins adjacent to the group collaboration area. Additionally, writable wall surfaces, purpose-built prototyping tables, and storage towers also provide affordances for the type of engagement necessary for this hands-on, iterative learning and design process (Image 57).
- Act and reflect: With an emphasis on iterative design and rapid evaluation, it is no surprise that action and reflection are of central importance to the d.school ethos. "Hiding spaces," corners, and "cul-de-sacs" at the d.school offer informal spaces for students to engage in different types of reflection, including casual conversation, small group discussions, or quiet individual reflection.[729] Indeed, reflection is important to design thinking and, argues Eric Jensen, providing spaces—temporal and spatial—to support reflective practice is essential for learning.[730] Importantly, reflective action in this sense is not merely mental, but also necessarily expressed in and through a physical context; thus, designing places for reflection necessarily requires a recognition and engagement of the body as well as the mind. My informant reminded me that, in addition to the above practices, reflection takes on another, deeper meaning at the d.school: all members of the d.school community share a commitment to reflective practice about the space. The physical elements of the school factor in to almost every conversation, as they are essential to its philosophy, pedagogy, and organizational scheme.[731]

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[727] Kembel, in Doorley and Witthoft, *Make Space*.
[728] d.school, "Our Point of View."
[729] Doorley and Witthoft, *Make Space.*
[730] Jensen, *Teaching With the Brain in Mind.*
[731] The d.school is able to conduct rapid, ongoing evaluations of their spaces because all members are "tuned into" the space; yet these evaluations are not formal (as compared to Post-Occupancy Evaluations). Informant interview, d.School, Stanford University, June 16, 2016.

What can we learn from the d.school's example? First, the Environments Team reminds us of the importance of designing "with multiple situations in mind."[732] Rather than assuming a singular use, range of activities, or pedagogy in a particular space, all spaces at the d.school are designed to support multiple possibilities; active manipulation brings them to life (and, in so doing, engage the body and mind). One interesting insight shared by my informant was that the "affordances" that foster such flexibility are not one-size-fits-all; rather, some require greater knowledge or a greater investment of energy. For example, consider the difference between changing the configuration of tables and chairs from a lecture- to campfire-style configuration versus "re-setting" a sub-divided space into a large, communal space by undoing hinges on moveable walls. Yet in this continuum of design affordances are options to inject flexibility (spatial and bodily) into all learning spaces, from seminar-style classrooms to lecture halls. Of course, welcoming such active engagement with a classroom can require a considerable amount of energy to sustain movement, via a range of activities and room configurations, over the course of the day.

Second, a lesson we might take from the d.school is the value of "design[ing] for primates"; in other words, designing for movement by "find[ing] ways to get the body moving, such as open space, nonprescriptive seating, and multiple seating heights." Doing so promotes health and also "introduces opportunities for communication through body language."[733] We might think of the range of movements the d.school fosters to that end on a scale from small gestures to middle-range postural variation to larger-scale movement of and among room furnishings. Similarly, such a spectrum of movements could prove useful as applied to other learning environments, as

Image 56. A classroom ("studio") at the d.school, Stanford University, which is equipped with a variety of different furniture types to allow users to "hack" the space and configure it according to various needs and interests. This also encourages postural variation, both through the act of moving furniture and by facilitating configurations that transcend the seated norm of classroom environments. *Photo by author.*

[732] Doorley and Witthoft, *Make Space.*
[733] Ibid., 23.

Image 57. Discussion boards and prototyping tools at the d.school, Stanford University. The location and materials of these tools help to encourage use. *Photo by author.*

not all types of movement are appropriate in all learning contexts (physical and pedagogical).

Finally, space needs to not only be designed as a central tool to help foster desired outcomes, but also continually and deliberately engaged as such. This requires designers to educate people about spaces, users to engage in the rapid evaluation of the space,[734] and organizations to encourage "hacks" on many levels: for one-time use, and also for larger changes if something isn't working. Regarding the latter, IDEO and d.school founder David Kelley reminds us: "there's not just one ideal design for collaborative space"—or, I'd argue, educational space; thus, "the people using it should be able to transform it themselves, move things around, and create what they need for the work they're doing at the moment."[735] Too often we assign this role to teachers, or relegate all elements of the built environment to professional designers, but here the call for environmental engagement is intended for all: students, visitors, staff, faculty alike.

The Santa Cruz Museum of Art and History: active learning and community engagement. Historian Eilean Hooper-Greenhill notes that "today, the educational role of museums is claimed as [their] major justification."[736] Though Hooper-Greenhill rightly argues that this emphasis on knowledge transmission has made museums disciplinary institutions similar to schools wherein "a division [is] drawn ... between knowing subjects, between the producers and the consumers of knowledge, between expert and layman" and enforced through spatial practices,[737] in fact today's museums offer two important models for thinking about educational spaces more broadly. First, though scripted, a patron's education in a museum is typically facilitated through movement, or at least a standing posture. Further, learning is self-directed, and also not confined to any particular posture, location, or duration of time. Second, museums today focus more on the patron's *experience*, a practice that requires the dismantling of

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[734] This suggestion, to include users in the evaluation of their space, is a novel one for E-B research. Novel because not just the experts engaging in evaluation, but users (who posses their own expertise about spaces and use) as well.
[735] David Kelley, in Doorley and Witthoft, *Make Space,* 5.
[736] Eilean Hooper-Greenhill explains that "knowledge is now well understood as the commodity that museums offer." But what is knowledge? More specifically, "Who are individual people expected to perform in museums? What is the role of the visitor and what is the role of the curator?" and "How are individuals constructed as subjects? What is the relationship of space, time, subject, and object?" Eilean Hooper-Greenhill, *Museums and the Shaping of Knowledge,* (London: Routledge, 1992), 2-3.
[737] Hooper-Greenhill explains: "Relations within the institution are skewed to privilege and enable the hidden, productive 'work' of the museum, the production of knowledge through the compilation of catalogues, inventories, and installations…. The seriated public spaces, surveyed and controlled, where knowledge is offered for passive consumption, are emblematic of the museum as one of the apparatuses that created 'docile bodies' through disciplinary technologies." Hooper-Greenhill, *Museums and the Shaping of Knowledge,* 190.

the traditional disciplinary apparatuses of museums and welcomes new forms of engagement and participation from a variety of bodies.[738] Museums are not only places in which learning occurs, but they are also institutions that are currently rethinking power relations and control; hence, they serve as a fruitful model for rethinking educational spaces.

At the 2012 TEDx Conference in Santa Cruz, California, Nina Simon, the Director of the Santa Cruz Museum of Art and History (SCMAH), spoke about her desire to "open up" the museum, to make it a place "where you can actively participate, connect with culture, and through those experiences, connect with each other."[739] Simon noted that, though people are generally more engaged today, the types of social and cultural engagement they pursue increasingly occur outside of traditional cultural institutions—libraries, parks, museums, and the like. Thus, as the leader of a cultural (and, she would argue, *community*) institution, Simon embarked upon a three-pronged project to rethink the SCMAH, to approach engagement in a way that makes the museum more relevant to visitors and community members.

First, rather than passive, docile consumers, the SCMAH sees its patrons—and indeed, the broader Santa Cruz community—as "co-creators." This in mind, all visitors to the museum are expected to "contribute something to make the museum better," whether giving feedback, contributing a poem, or bottling up a personal memory to add to a display. This expectation echoes a theme common to both Airbnb and the d.school: users—in this case, visitors—are not just passive recipients of programming or of the museum space; rather, they are invited, *expected*, to manipulate, contribute to, engage with the setting, its spaces, and its constituent practices. Importantly, however, this type of engagement—as seen through the unique furniture and spaces at Airbnb and the d.school—needs to be supported and facilitated through design: people need to be invited to participate through some sort of structured activity, shared norm, or environmental affordance.[740] Just as the d.school's unique furniture and spaces employ "non-precious," seemingly unfinished materials that invite use and manipulation, the SCMAH's organizational commitment to engaging users invites visitors to manipulate their environment actively, to make some sort of lasting change to it—a far cry from the norm of museums in which touching is strictly off limits.

Second, artifacts at the SCMAH are not just educational, but also "*social* objects." The items on display at the museum are intended to help mediate interactions between and among visitors—even strangers—by exposing the "big conversations about where

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[738] Hooper-Greenhill summarizes how bodies are offered opportunities to engage with and circulate through museum spaces: "The subject as 'client' or 'consumer' is offered numerous opportunities for involvement—to the extent of complete immersion—in museums and galleries today. Where in the past, the experience of visiting a museum was two-dimensional, an experience of a slow, controlled, surveyed walk past completed displays designed without the needs or interests of the visitor in mind, now experiences are three-dimensional…. Many of these experiences depend on the visitor's participation to be effective: the actors offer food to the visitors; the artists are expected to talk as they work in their public studios; science demonstrators ask questions as they carry out experiments in the open gallery spaces." Hooper-Greenhill, *Museums and the Shaping of Knowledge,* 211.

[739] Nina Simon, "Opening Up the Museum," TEDxSantaCruz, November 6, 2012.

[740] For Simon, this is facilitated by helping visitors "change the way visitors see themselves as creative agents."

we've been and where we're going."[741] Again, design plays an important role here: to facilitate, physically, these social encounters, the museum offers comfortable places to sit—for more in-depth conversation—and specially designed spaces for games and activities to engage users actively in learning, conversation, or physical engagement with displays. Learning, then, happens not only via the mind, but also the body—physical and social. Similar to the Whole Language classroom in which learning occurs at various stations, and most often in small group contexts, at the Santa Cruz Museum of Art and History, engagement with objects—and other people—is fostered through the provision of specially-designed places for conversing and stations to create artifacts.

Finally, through these interventions, Simon is attempting to ensure that a museum—namely the SCMAH—is more than just a "nice-to-have" resource in the community: instead, it must *matter* by being relevant to users. In this way, the museum is *of* the community—an outcome of the collective efforts of those who have contributed to the museum in some way—and also community itself, a place that brings people together. Participation, then, is a liberating pedagogy and practice, for both mind and body.

Conclusion: Toward a New Ideal Type

To begin to understand how the above insights might translate to classroom design, we return Donna Huse's proposed "meaning-centered" pedagogy—as opposed to the disciplinary pedagogy all too common to educational institutions—which is characterized by the following: "The small group ... becomes the very instrument of achieving institutional purpose" (think of the clustering of groups at the d.school and Airbnb); individuals are encouraged to foster "sustained relationships" (for example, the interactions fostered at the SCMAH are intended to build a sense of community); and new instruments of institutional order include "conversation, freedom of movement, comfort of the body and psyche ... enhancement of family and community relations, [and] initiation of independent and group activities."[742] These tenets are evocative of many of the themes seen at Airbnb, the d.school, and the Santa Cruz Museum of Art and History: in particular, the individual is no longer the sole unit of analysis; rather, bodies are invited to cluster and collaborate according to a range of needs and interests. Additionally, relationships—with communities, peers, and even one's own bodily comfort and physical context—are reconsidered and given new opportunities for expression in space.

Regarding design, Huse emphasizes the importance of "structures [that] foster small groups and conviviality, action and mobility, experimentation and communication;"[743] for example, clustered seating arrangements vs. grids or rows, space for movement, need for storage areas, and efforts to make institutional settings more home-like (with comfortable furniture, rugs, and pillows). Each of the above case studies reveal similar themes in terms of the role of bodily comfort (or its opposite) in

[741] Simon, "Opening Up the Museum."
[742] Huse, "Restructuring and the Physical Context," 297.
[743] Ibid., 300.

achieving organizational outcomes, and the power of design to facilitate each. At the SCMAH, comfort is about connection, at Airbnb it is defined by physical and psychological ease, and at the d.school, comfort is anything but complacency—rather, it requires active manipulation of the built environment. If control is the latent function of classrooms, then we might be reminded of the power of another keyword: comfort. As Huse explains: "comfort enables self-connection. That is, if we are comfortable, then we…can be in touch with ourselves and other people and the place itself." Comfort, then, is the pathway through which the above gains can be made: "the aim is no longer to tune out one's own person-environment relation but to tune it in and create out of a carefully attended response to it."[744]

Barriers

Still, the primary barrier to initiating the kind of radical change in ordinary educational settings achieved at Airbnb, the d.school, and the Santa Cruz Museum of Art and History is (bodily) control. Schools are institutions of education, but they—like other disciplinary institutions—also seek to create docile bodies at the service of larger ends.[745] Donna Huse explains that education has, "since the 18th century, been shaped by bureaucratic delivery" and that "the principal requirement of the bureaucratic form [is] the technically rational design of uniform behavior, required of large numbers of people, in order to maximize their power in the service of corporate goals."[746] Thus, proper education is facilitated through a series of techniques that enforce bodily supervision and control: the assignment of individual location (temporal and spatial), ease of surveillance, the enforcement of a stationary body, individualization. Architectural historian Thomas Markus explains the bodily control enforced in this regime:

> In the monitorial schools the prescriptions for individual posture, gesture, and eye contact were as detailed as those for groups of bodies controlled by painted lines or brass strips on the floor and the monitor's rules. The face, especially the eyes, signified character and willingness to learn. The sloping floor, the raised master's platform, the raked gallery and the tiered desks were direct instruments for visual surveillance.[747]

Indeed, in classroom settings, sitting still is how one conveys a seriousness of learning and conforms to behavioral policies. Thus, deep, multi-level change is needed to achieve what designer and architecture professor Galen Cranz calls *body-conscious design*: (1) change in physical objects, (2) the education of users and designers, and (3)

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[744] Huse explains: "The industrial project requires that people, beginning with children in school, detach themselves from organic responsiveness, that is, from the response that the organism is having to its immediate environment, be it pain, enthusiasm, fatigue, attraction, repulsion, or simple interest in any aspect of reality not directly relevant to the purposeful accomplishment of the task at hand." Huse, "Restructuring and the Physical Context," 295.
[745] See for example Gordon et al., "Moving Bodies/Still Bodies."
[746] Huse, "Restructuring and the Physical Context," 293.
[747] Markus, 1993, 92, in Huse, "Restructuring and the Physical Context," 295.

broader cultural change, including the value assigned to objects, environments and their users.[748] We see here an echo of the multi-level change encouraged by a socio-ecological approach to health promotion, yet with deliberate attention to the interaction between and among each level.

Nowhere is this problem of the seated student body in greater relief than in lecture halls, a quintessential space of disciplinary pedagogy and bodily control.[749] As John Folkins and colleagues explain, lecture halls have a long history in the institution of higher education: "Formal lectures have been used as a teaching format since the development of the medieval university, and it is clear that those lectures were preceded by the refinement of preaching techniques for hundreds of years before that."[750] Indeed, the lecture—and its requisite hall—enjoys a long tradition at the university; to change it requires pedagogical, architectural, and broader social change. Importantly, such change cannot take the form of the compensatory model of the nineteenth century, in which movement was enforced in and relegated to spatial and temporal contexts beyond classrooms to compensate for sedentary learning. Instead, a more effective approach might be to introduce movement into classroom (and other learning) settings. Doing so promises to foster learning, creativity, engagement, and connection, but also, as Huse reminds us, requires changes to social, physical, and disciplinary spaces of classrooms. Further, this new ideal type implies a new sensorial experience: sounds and movements in particular change as bodies are invited to freely move around the classroom and engage in a range of simultaneous activities, and the familiar sight of the still, orderly classroom is also shifted toward a new aesthetic. Finally—and perhaps most importantly, movement-centered classrooms are student-centered, in that they are designed to welcome, engage, and nurture the student body as an essential element of learning.

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[748] Cranz, in *The Chair*, 2000.

[749] As Huse observes, the college lecture hall is the "epitome of the disciplinary pedagogy": no movement is allowed, bodies are held still, and all chairs face forward toward a central authority. Huse, "Restructuring and the Physical Context," 298.

[750] Haskins, 1923, 293 in Folkins et al. "University Classroom Design Principles to Facilitate Learning," 46.

Conclusion
Toward the Healthy, Movement-Centered Campus

This dissertation demonstrates how the shift from *in loco parentis* to *laissez-faire* and *risk management* paradigms of campus governance mirror a shift in public health approaches, from a focus on broad, environmental and policy interventions to approaches targeting individual behaviors and risk mitigation. At the same time—and stemming from these changes—physical education courses and programs moved from a compulsory part of the college curriculum and experience to a leisure-time pursuit facilitated (though not encouraged or mandated) by administrative practices. The result of these simultaneous shifts can be read in both campus interventions and the built environment, as movement (physical education) was relegated—both administratively and spatially (Image 58)[751]—to the periphery of campus, leaving sedentary behavior largely unmitigated.

Vassar College, founded in 1861 as the first women's college and with the explicit goal of educating student minds *and* bodies, is an essential site to understand how shifting ideas about the perils of sedentary behavior were translated to the specific context of college settings and responded to through a host of interventions over time. In particular, Vassar's physical fabric offers insight into the historical, social, and built environment contexts of sedentary behavior—and its opposite, *movement*—and the implications for student minds, bodies, and experience.

We can also see in the example of Vassar College how the still body—assumed in spaces of (mental) learning as opposed to the specialized spaces of bodily instruction—is increasingly problematic as we learn more about the perils of sedentary behavior. Indeed, given what we know today about the limits of individual, compensatory, and leisure-time interventions to reduce sedentary behavior, it is clear that the solution to reducing the perils of prolonged sitting cannot be found in these historical precedents. What is needed instead are new interventions that address the experience in the built environment outside of gymnasium (e.g., classroom, libraries, social spaces), and therefore affect a majority of students and during the most prolonged times of sedentary behavior.

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[751] Vassar College's "Standard Campus Map" denotes Kenyon Hall in the "North Campus" quadrant and the AFC and Walker in "East Campus" quadrants (Main, Avery, and Ely are in "Central Campus" quadrant); in other words, whereas the oldest gymnasia were centrally located, the three most recent gymnasia are spatially and semantically more distant. Though not part of my analysis above, we can also see in this map other athletic facilities on the periphery of campus, namely, tennis courts and Prentiss athletic fields in the "West Campus" quadrant. Vassar College, "Standard Campus Map," accessed May 6, 2017 https://info.vassar.edu/docs/map.pdf. At the University of California, Berkeley, we can observe a similar phenomenon, wherein the earliest gymnasia were located in the central campus area, while newer facilities occupy locations at the edges of campus. Further, in the 1990 Long Range Development Plan, athletic facilities are grouped into the "administrative precinct" termed the "Student Services and Recreation Zone," thereby denoting a spatial and semantic separation from the academic and administrative core of campus. Campus Planning Office, "Long Range Development Plan, 1990-2005, University of California, Berkeley," (Berkeley, CA, University of California, Berkeley, 1990), vii.

Multi-Level Interventions to Interrupt Sedentary Behavior

In fact, as sedentary behavior researchers Jordan Carlson and James Sallis explain, "many opportunities exist for environmental and policy interventions because so many environment attributes and policies in our current world have been created to facilitate, encourage, or require sitting."[752] This is particularly true with the workplaces, educational settings, and community spaces in which people spend the majority of their time. In a review of environment and policy interventions to reduce sedentary behavior, Carlson and Sallis articulate and assess a number of interventions in home, working, and learning contexts to reduce sitting time. For example, interventions at home might target screen time, a primary correlate of sedentary behavior, through restricted screen time, contingent screen time, and active screen time; at work, standing desks, computer prompts, and activity breaks can encourage movement and postural variation, both of which can interrupt prolonged sitting; school-based interventions include active lessons and standing desks. Regarding interventions into educational settings, the authors note that, though both of the aforementioned strategies are promising in terms of their ability to inject movement into an otherwise sedentary environment, they also may be hampered by costs associated with training teachers, purchasing and installing new furniture, and, regarding "active lessons," challenges posed by interrupting the social norms of classroom environments. As Carlson and Sallis explain: "current norms are for teachers to encourage young children to be still during class because moving around too much is often perceived as disruptive,"[753] a reminder, once again, that sedentary behavior is a complex cultural, environmental and pedagogical problem, not just one regarding individual behaviors.

Further, designer Brian Bell has argued that "no issue is not a design issue;"[754] however, this does not mean that the problems of classroom design are issues only for educators and architects. Instead, the convergence of educational mission, pedagogy, and facilities requires interprofessional alignment and collaboration. Because "designers find it difficult to begin without some sense of the purposes for which they are designing,"[755] it is imperative that health professionals and educators lend their voice and offer a vision for education spaces, informed by research on learning, health, and student success and by the input of student users. Such an interprofessional, student-centered process will cultivate the understanding that the complex and multifaceted nature of health requires an equally complex and layered approach to health promotion via the built environment.

Indeed, as Bill Satariano and Edward McAuley note, changing environments and policies alone likely will not lead to substantive, sustained change because community-level variables (such as environments and policies) are linked with individual-level variables: first, "the promotion of physical activity at the community level depends in large part on critical individual variables, such as a sense of control and self-efficacy";

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[752] Carlson and Sallis, "Environment and Policy Interventions," 286.
[753] Ibid, 290.
[754] Brian Bell, 2008, in Ellen Lupton, Cara McCarty, Matilda McQuaid, and Cynthia Smith, *Why Design Now? National Design Triennial,* (New York: Cooper-Hewitt National Design Museum, 2010), 122.
[755] Ibid.

second, "promotion and ... maintenance of physical activity at the individual level depends on critical community variables, such as environmental and policy factors."[756] Thus, needed instead are multi-level interventions that integrate both individual and microenvironment factors.[757] For example, efforts to encourage individuals to reduce their sitting time must take into account both environmental affordances that support standing and other forms of postural variation and social norms that might support or limit such movements.

Yet what sounds like a relatively simple call to action—to implement multi-level interventions to promote physical activity and reduce sedentary behavior—in fact is a complex undertaking, requiring as well, according to Satariano and McAuley: "the development of transdisciplinary theories from the ecologic model that will inform research and practice"; "the establishment of better measures to address the linkages across individual behavior, group behavior, and the building environment, and the temporal sequence of the interplay among biological, behavioral, and environmental factors"; "the development and evaluation of strategies for the 'translation' of research into practice and policies"; and "the training of a new generation of scholars and practitioners to develop and execute research, practice, and policy agendas in this area."[758] This dissertation is intended to serve as a model for change in each area by articulating a theory, based on trans-disciplinary research, to account for the causes and persistence of sedentary behavior in institutions of higher education (Chapter 1);

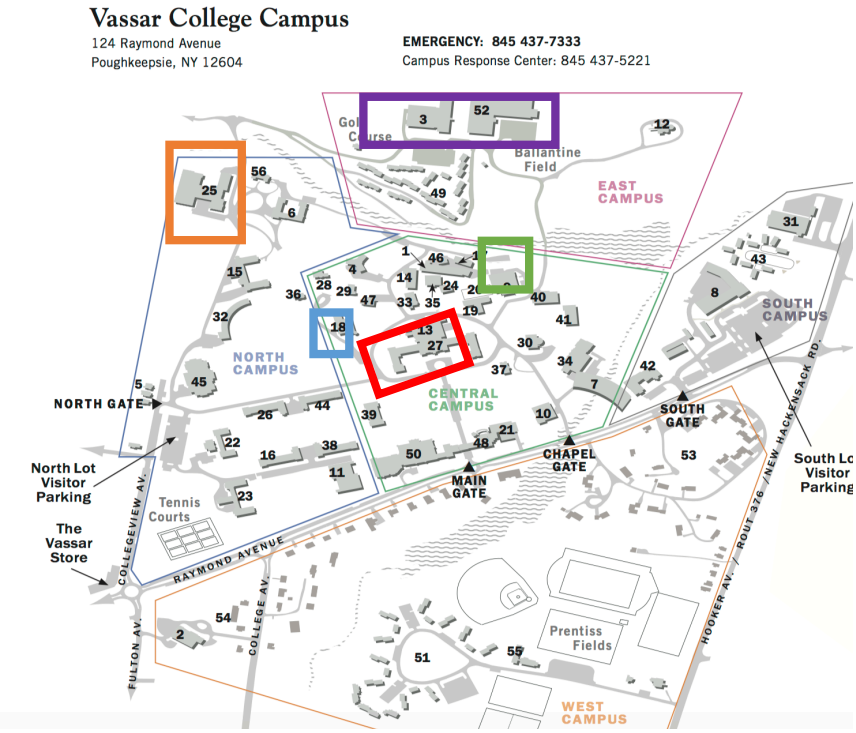

Image 58. Changing physical location of gymnasia on the Vassar College campus. Note how the gymnasia have moved further from the center of campus (Main Hall) over time and how the function of several previous gymnasia has changed. **Red**: Main Building (1865), first building on campus (originally housed entire college). **Green**: Original site of Calisthenium (1866), later called Avery Hall, one of first 3 buildings on campus. Now the Vogelstein Center for Drama and Film. **Blue**: Ely Hall (previously the Alumnae Gym, 1889); later became the infirmary; currently houses the Earth Science and Geography Departments as well as classrooms and art studios. **Orange**: Kenyon Hall (1933) gymnasium. Kenyon also houses some classrooms today. **Purple**: Walker Field House (1982) and Athletics and Fitness Center (1999). *Vassar College, "Standard Campus Map" (additions by author).*

[756] Satariano and McAuley, "Promoting Physical Activity Among Older Adults," 184.
[757] Ibid., 188.
[758] Ibid., 184-5.

suggesting methods for evaluating the context of sedentary behavior (Chapter 4); and both presenting and evaluating interventions that translate contemporary research regarding sedentary physiology into architectural, educational, historical, and public health practice (Chapter 4). In fact, this dissertation itself, a product of a scholarly perspective honed through diverse academic experience—including anthropology, education, architecture, and public health—demonstrates the value of training students in a variety of disciplines and offering opportunities to connect theories, methods, and practice agendas across each.

Rethinking the Classroom: Why Now?

Sedentary behavior has long been a preoccupation among educators and health professionals; however, prior interventions are insufficient for today's needs. The time is ripe for change as educational spaces are being rethought with new advances in technology and calls for rethinking millennial education.

MOOCs

Made possible by recent advances in online learning technologies, Massive Open Online Courses (MOOCs) are perhaps one of the most visible efforts to decouple learning from physical space, as hundreds—or thousands—of people can participate, virtually, in an online course. MOOCs and other digital technologies are prompting educators (and students) to rethink the value of learning spaces. For example, a recent blog post in the Society for Architectural Historians discusses the implications of "distance and learning" in the particular context of architectural history, a discipline long indebted to in-person sharing of visual media. The authors explain how they began thinking deeply about the role—and effects—of digital technologies on their teaching practices:

> As two assistant professors in the School of Architecture at Northeastern University in Boston, MA, we find ourselves in the midst of this transformation and have sought to address the changing expectations of our students and take advantage of new technologies as they become available. Already online content is expanding within our classrooms; in our large history survey courses we quiz students regularly through the Blackboard site, as a way to take attendance and measure comprehension; in large and small classes alike we ask students to post responses on class blogs and listservs; and we use an ever-expanding archive of images and videos available online—truly one of the most radical changes in the teaching of architectural history over the past generation.[759]

Importantly, however, though the medium has changed, all actions are still tied to place. The students and teachers on either end of these transactions are still engaging in behaviors—logging onto their computers—that are necessarily *emplaced*. In particular,

[759] Amanda Reeser Lawrence and Lucy M. Maulsby, "Distance (and) Learning: Thoughts on Online Tools in the Teaching of Architectural History," *Society of Architectural Historians (SAH) Blog*, October 31, 2014.

virtual technologies, rather than solving the problem of sedentary learning, in fact could extend the hours students (and teachers) spend seated by further tying learning to computer use, the latter of which is often used as a proxy for sedentary behavior. Thus, place still matters, and we can and should still think about the implications of sedentary behavior as more of the activities associated with learning are tied to computers and other digital devices.

The conversation about online education is a call to rethink, not ignore place as we consider this question: "How can we best participate in the growing number of conversations about how (as well as what) to teach in the context of a rapidly transforming educational landscape?"[760] For example, what if we were to rethink lecture halls as discussion halls? How might such a semantic shift ignite creative thinking about how such a space might be rethought—and redesigned—to facilitate new pedagogies and learning needs. Online teaching technologies and discussion forums have been lauded with "opening" up the classroom, in other words, providing "students with a means to express their opinions, ask questions, and craft their responses, not just those that are the first to raise their hand." In this way, such tools help, in the words of authors Amanda Lawrence and Lucy Maulby, to "overcome some of the limits of the traditional classroom." But I also wonder if such technologies (and virtual environments) have a darker side: Do they further disembody both learners and scholars and thereby exacerbate the bodily disengagement all too common in educational environments?

As pedagogy changes, so too can social and spatial relations. Yet when pondering change along either access, we also need to consider *place*, even in technology-centric realms—after all, learning is always *emplaced*. Further, questions of control and supervision remain unchallenged in these examples (though mediated through a new medium). On a positive note, the introduction of educational technologies open classrooms for creative approaches to education and obviate the need for postural conformity, both of which can help foster a move toward movement-centered—or at the very least, movement-*tolerant*—education.[761]

Table 6. Recommendations for Movement-, Body-, and Student-Centered Teaching Practices.

Engage students in the practice and evaluation of teaching • Invite students to help identify new ways of teaching and designing classrooms • Ask students to think more often (and more critically) about their spaces • Continuously evaluate and modify as needed classroom environments
Design and use environments in ways that encourage movement • Use or design classrooms that are larger in size to accommodate movement

[760] Lawrence and Maulby, "Distance (and) Learning."
[761] My thanks to Galen Cranz for this term, movement-tolerant

- Move chairs to make room for floor-sitting
- Use pavement markings to promote movement indoors and out (e.g., a walking maze can encourage movement in a fun and therapeutic way)
- Provide access to green or open space
- Offer standing or perch-height desks
- Ensure all furniture in classrooms is movable
- Include carpeted spaces in classrooms to promote floor-sitting and other types of postural variation
- Offer storage (so students can walk around without worrying about their belongings being in the way or stolen)
- Design classroom environments for comfort

Engage the environment as part of pedagogy/teach with postural variation in mind

- Examples: invite students to stand to ask questions; work in groups in different parts of the room; write notes on poster paper on walls; invite students to write on the black board or white board at the front of the room; ask students to stand up/sit down or move to different parts of the room to signify their answers to questions; stand up/sit down/move to learn mathematical concepts like addition and subtraction*
- Allow breaks
- Allow (or teach) stretching in class
- Record lectures so students can listen to them while walking (or exercising in another fashion)
- Hold classes outside
- Take students on a walking tour to demonstrate/observe relevant concepts

Encourage movement at organizational and cultural levels

- Offer academic credit for physical education or other physical activities
- Include physical education as part of curriculum
- Make engaging with classroom environments (e.g., moving furniture) the norm rather than the exception

** My thanks to Galen Cranz for this suggestion regarding teaching addition and subtraction by moving bodies.*

Rethinking Classrooms

In the last decade, many books have been dedicated to innovative classroom design, much of it prompted by the introduction of technologies to classrooms.[762] General trends include the desire to rethink classroom hierarchies, to make space for

[762] See for example Diana G. Obliger, Ed., *Learning Spaces,* (Washington, DC: Educause, 2006); OWP/P Cannon Design, *The Third Teacher: 79 Ways You Can Use Design to Inform Teaching & Learning,* (New York: Abrams, 2010); and Folkins et al., "University Classroom Design Principles to Facilitate Learning."

group learning, and to provide flexible furniture to accommodate a range of activities. All of these are positively intentioned; however, a recent article in the *Planning for Higher Education Journal* demonstrates that such practices serve to obscure as much as they reveal: several of the recommendations author John Folkins and colleagues make serve as a cautionary tale of how "innovative" pedagogical and spatial practices can further constrain student bodies, if the need for movement is not explicitly considered.[763]

Furniture designer Herman Miller's education research website proves this point:[764] through a series of provocations about innovative classroom designs that promote student learning and engagement, we see a call for action that might, at first glance, feel empowering and radical to anyone who has recently spent time in a standard academic classroom:

> **Classroom design can increase levels of student and faculty interaction through formal and informal means.** When teachers can move around the room freely and easily connect with the student who is struggling or questioning something, then the level of interaction improves significantly. [Educational scholar Alexander] Astin states that regular interaction with faculty is more strongly related to "satisfaction with college than any other type of involvement." Students who have interaction with their teachers are more likely to express satisfaction overall with their college experiences. The more student-faculty interaction occurs, the better the outcomes.

Empowering students is a laudable goal, but we might ask why, in this proposal, only teachers are given the freedom to move. Certainly, encouraging movement and self-direction on the part of students could achieve some of the same goals—connection, involvement—meanwhile offering greater opportunities for control and postural variation, both of which are offer important psychological and physiological outcomes.

Yet similarly, Folkins and colleagues articulate the possibilities of designing lecture halls to facilitate the principles of active learning: "special-purpose lecture halls can be designed to incorporate many of the principles discussed below for active learning classrooms (e.g., technology for student feedback, movement of students in and out quickly, movement of instructors and teaching assistants around the lecture hall) that can give the lecturer effective tools to maximize learning."[765] This perspective is limited in two ways: first, it still assumes a teaching-centered paradigm;[766] second,

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[763] Folkins et al., "University Classroom Design Principles to Facilitate Learning."

[764] Herman Miller "Rethinking the Classroom: Spaces Designed for Active and Engaged Learning and Teaching," Zeeland, MI: Herman Miller, Inc., 2008, accessed May 5, 2017 http://www.hermanmiller.com/research/solution-essays/rethinking-the-classroom.html.

[765] Folkins et al., "University Classroom Design Principles to Facilitate Learning," 47.

[766] In this example, "teaching-centered" refers to pedagogical practices that center around teacher activities, rather than the activities and/or learning outcomes of students. In contrast, another interpretation of "teaching-centered" approaches might be to adopt a "students as teachers" model in which students take an active role in educating their peers (such an approach is common in "flipped classroom" models). This latter definition has the potential to be much more activity-centered than the former, because if students are invested with more power to teach and lead

movement serves very different purposes for students and teachers. Students' movement is discussed only insofar as it enables a large number of people to move efficiently into and out of the classroom (and then assumes a seated, still posture once in class). Yet for teachers, movement is assumed to be fundamental to the act of teaching: the need to circulate around the classroom to monitor learning. Though this proposal does design for movement, it does so for all but the student body. Thus, "active" student learning is too often just cognitive, not bodily. To that end, a second provocation by Herman Miller sounds more promising:

> **Comfortable classrooms—physically and psychologically— promote a sense of well-being, keep minds focused, and limit distractions.** Comfort is not always a quantifiable phenomenon. But we know that when people are uncomfortable, they are distracted. Temperature, lighting, and furnishings all play a role in a person being comfortable. Psychological comfort is also important. Environments that are intimidating or uninviting will influence the depth of learning that can take place. Herman Miller has researched the effects of comfort in the workplace. Those findings indicate that giving people some control over their surroundings adds to their sense of well-being. When given ergonomically designed furniture and work areas, their ability to stay focused and on task is improved. In a sense, a comfortable environment clears the mind of the distractions that impede the work or learning that needs to be done.

Yet one glance at the accompanying photo demonstrates the assumption that the workspace to help achieve these outcomes necessarily includes a chair (Image 59). Similarly, in a section of their article entitled "moving people," Folkins and colleagues explain that "in active learning classrooms, it is often important for instructors and teaching assistants to move from table to table to interact with students."[767] To facilitate this activity, the authors observe that fixed tables with center aisles "[allow] the instructor and the teaching assistants to move around the room during discussions and be able to reach more groups." In contrast, "if the only aisles are on the sides, then the instructor can feel confined to the front of the room. This is not only a problem to those interacting with groups, but also for those with a lecture style using a lot of movement."[768] Why is it that the active learning practices explored in this article assume movement on the part of the teacher, not the learner? I see this as symptomatic of the cultural beliefs that the ideal learner is stationary and that movement is antithetical to learning, as well as the desire to control student bodies in classroom contexts. Change, therefore, is needed on many axes: while rethinking classrooms, need to rethink assumptions and values about space, student bodies, and movement in education.

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classroom activities, they may naturally gravitate toward more movement-centered practices (or at least have more flexibility to experiment with different techniques). My thanks to advisor Linda Neuhauser for helping to illuminate this contrast.

[767] Folkins et al., "University Classroom Design Principles to Facilitate Learning," 55.

[768] Ibid.

Redesigning Education: Student-Centered Practices

Again, I return to design thinking and the d.school, where an effort to rethink the university in the twenty-first century is currently underway. A recent talk by d.school Executive Director Sarah Stein Greenberg featured on the d.school's website, exposed a number of out-dated assumptions and practices all too common in university settings and, in charting a course for proposed change, illuminated some of the ways in which bodily freedom can be achieved in tandem with broader institutional and cultural change. Greenberg began her talk with a reflection on the lecture hall, noting that such spaces say a lot about how we believe people learn:[769] learning happens most effectively when the student is seated, assumes an expert to whom a (fixed) audience is paying attention, is best achieved in a limited configuration, with limited interaction with others (and chairs thus bolted to the ground). These ideas, to Greenberg, are old and outdated.[770] And the lecture hall is an apt metaphor for the current debate about the value and form of education today: if our goals, in twenty-first century society, are to train students to be "creative, daring, problem-solvers," and teachers to be co-learners with students, then the built pedagogy of the lecture hall is at odds with these ideals. Instead of creativity, it breeds conformity; rather than problem-solving, it promotes passivity.

Thus, the question posed at the Stanford d.school is this: "what is the future of the on-campus experience in an age of online learning?" To answer this question, a group of students and faculty engaged design thinking and employed a range of methods: they interviewed students about their experiences in college and visited a range of sites and studies how learning occurs in other contexts. For example, a visit to Cirque du Soleil illuminated how the acrobats, many of them at the top of their field, still engaged in ongoing training to continually perfect their craft, and an afternoon at Homeboy Industries demonstrated the power of trusting "students" to show up when they were ready (rather than on a particular time table). The result of this research—conducted both at and beyond the university context—was a series of four "provocations" for what education should look like in the next century: (a) the open-loop university: reframe college from a single, four-year point in a person's life to a resource that can support students over an entire lifetime, a place they can loop in and loop out of as needed or desired; (b) paced education: students move at their own pace through the curriculum, organized in terms of actions such as "explore, focus, practice" rather than through a standard four-year program students move at own pace; (c) axis flip: a college degree should not simply convey the accumulation of information and record of classes, but rather should express the unique skills and competencies a student developed; and (d) purpose learning: students should declare missions, not

[769] This is the "hidden program" or "hidden curriculum" of the classroom: the tacit, underlying beliefs that shape the space and practices therein. For more, see Herb Childress, *Landscapes of Betrayal, Landscapes of Joy: Curtisville in the Lives of its Teenagers,* (Albany, NY: State University of New York Press, 2002).

[770] Sarah Stein Greenberg, "A Problem We Should All Be Interested In," *Wired by Design*, 2014, accessed May 5, 2017: https://dschool-old.stanford.edu/fellowships/2014/10/02/a-problem-we-should-all-be-interested-in/

majors (or apply to the School of Hunger, for example, rather than the Department of Mathematics).[771]

Though these provocations do not speak directly to the idea of injecting movement into classroom settings, they do provide a template for radically rethinking what higher education is, can, and should be, and offer important reminders of the power of interrupting the paradigm of the classroom and the need to think beyond technology when considering large-scale change. Additionally, this example echoes similar themes seen in the aforementioned case studies of office, school, and museum settings: the importance of self-direction, the need to change the meaning of objects and environments, and the power of engaging users. Finally, Greenberg urges designers interested in this issue to "put students at the center of conversation for meaningful change."[772]

A new approach, then, to campus governance, might very well be one that overcomes the shortcomings of previous eras and engages students alongside campus officials to understand and find new solutions to meet burgeoning health needs, meanwhile preserving the autonomy students have enjoyed since the dismantling of *in loco parentis*. I see as well in this call to action an echo of the work of Donna Huse in that

Image 59. Screen shot of the webpage for Herman Miller's Education Design Research work. Note that, though the furniture has been updated, the basic posture of learning—seated—has not. Thus, we might ask how innovative these solutions actually are. *Herman Miller, "Rethinking the Classroom."*

[771] Greenberg, "A Problem We Should All Be Interested In."
[772] Ibid.

practices that are student-centered are, or at least hold the potential to be, both body- and movement-centered (see Table 6 for examples and recommendations). As such a student-centered approach also suggests a re-centering on the student *body*, which has long been obscured by efforts to educate the mind.

Toward the Health-Promoting School

Introducing movement into classroom settings and interrupting the sedentary norm of college environments is one facet of a broader goal to rethink campuses as healthy places. The World Health Organization in 2003 introduced the idea of a health promoting school, which is: "a school constantly strengthening its capacity as a healthy setting for living, learning, and working."[773] Central to this vision are the following tenets: "A healthy physical and social environment; community engagement; equal access to educational opportunities; [empowerment] of individuals to cope, take action, [and] change; and curriculum [that is] relevant to student and community needs."[774] This definition positions learning as a function of health and also echoes many of the lessons drawn from looking at learning and working at Airbnb, the d.school, and the Santa Cruz Museum of Art and History. Though no example is a perfect model, each serves to demonstrate how thinking about and engaging physical bodies in the act of learning and working is a way into these broader goals.

Transcend the Campus

The above examples remind us of all that can be learned when looking beyond the classroom; and in fact, much of the learning and living students do necessarily transcends campus settings. Geographer and public health researcher Steven Cummins and colleagues explain: "Individuals can become relationally embedded in multiple health damaging and health promoting environments, across time and space, and at multiple scales is crucial if we are to further understand the importance of 'place' in the generation of health inequalities."[775] This perspective illuminates the need to consider the many spatial and social locations that comprise daily life patterns; in other words, considering only educational *or* office *or* residential settings would underestimate a person's exposure to both salutogenic and pathogenic factors. Daniel Stokols and colleagues reiterate the relevance of this approach to occupational health: "Employees' other life settings, such as their residential environments, their modes of commuting to and from work, and the community health care system that exists beyond the workplace" all impact employee health.[776] Thus, moving from an individual assessment of student health to an assessment of the healthy campus illuminates the ways in which place is imbricated in health and therefore can inform meaningful environmental design interventions to promote student health. Further, this

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[773] Nutbeam, "Health Promotion Glossary," 357.
[774] World Health Organization, 2003, in Bell and Dyment, "Grounds for Health," 78.
[775] Cummins et al., "Understanding and Representing 'Place' in Health Resarch: A Relational Approach," 1835.
[776] Daniel Stokols, Kenneth R. Pelletier, and Jonathan E. Fielding, "The Ecology of Work and Health: Research and Policy Directions for the Promotion of Employee Health," *Health Education Quarterly* 23(1996): 137-158. In this dissertation I consider college campuses the workplace of students.

perspective necessarily includes a range of expertise, including policy-makers, campus leaders and educators, and designers and planners. This chapter is a call to redefine campus health in environmental terms and, in so doing, reiterate and celebrate the role designers play in rethinking and redesigning campuses as healthy places.

Yet the implications of this broader charge—to make campuses healthy places—necessarily transcend the borders of campus: many of today's workplaces are called campuses; therefore, just as college health programs have long informed broader public health efforts,[777] the lessons learned from this ecological approach to college campuses are apt for to corporate settings as well. In fact, the much-anticipated campuses of Silicon Valley tech firms will soon be the workplaces of today's college students whose exposure to the programs, values, and resources of the healthy campus paradigm advocated above will shape their demands for a healthy, productive work setting. Thus, while we can laud the creation of healthy campuses at both work and school, we must not limit access to healthy places to the moneyed offices of the new economy or elite educational institutions. A truly healthy campus—as with any place—is one that is accessible to and therapeutic for all bodies.

[777] Prescott, *Student Bodies*.

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