

“A GREAT CIVILIZING AGENT”:
Architecture at MIT, Drawing Education, and Boston’s Cultural Elite, 1865-1881

by

Katherine Pearl Dubbs

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Submitted to the Department of Architecture
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Signature of Author: _____
Department of Architecture
May 14, 2021

Certified by: _____
Arindam Dutta
Professor of the History and Theory of Architecture
Thesis Supervisor

Accepted by: _____
Leslie K. Norford
Professor of Building Technology
Chair of the Department Committee on Graduate Students

Committee

Arindam Dutta, PhD
Professor of the History and Theory of Architecture
Advisor

Mark Jarzombek, PhD
Professor of the History and Theory of Architecture
Reader

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Abstract

This thesis examines the origin of architecture as an American discipline and its relationship to the concurrent promotion of public drawing education in the second half of the nineteenth century. In postbellum Massachusetts, textile manufacturers and their professional networks took control of local drawing education. Part of the perceived antidote to national disunity — as well as a justification for growing financial inequality — was the control of design knowledge through the creation of pedagogical programs and cultural institutions. Drawing simultaneously negotiated a multifarious identity as an industrial skill, a leisure activity, and a specialized profession. Bolstered by the rise in disposable wealth, Boston-based elites invested in drawing as a symbol of class status and industrial control in an increasingly stratified city.

This development coincided with the mid-century emergence of architectural education in American universities. In 1865, architectural educator William Robert Ware was hired to create the architecture department at the Massachusetts Institute of Technology (MIT), the first architecture department in a university and the oldest architecture program in the country. For the duration of his tenure, Ware was part of a powerful network of arts patrons and professionals in Massachusetts who ascribed a civilizing purpose to art, an idealized category which included architecture. As part of this effort, he was not only the founder of MIT’s architecture department but also a founding instructor at two other cultural institutions in Boston. Underpinning these elite ambitions, in Ware’s case, were both economic and intellectual aspirations to elevate architecture as a profession and to cultivate the architect as a cultural connoisseur. This thesis argues that Ware capitalized on the evolving status of drawing — as a manual labor, a contractual document, a cognitive act, and a cultural marker — to craft architectural education as an intellectual undertaking worthy of its university setting. This history is illustrated through Ware’s contemporaneous involvement in the promotion of local drawing education, his advocacy for professionalism in architectural education, and his design of new printed material.

Thesis Supervisor: Arindam Dutta
Professor of the History and Theory of Architecture

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Introduction

This thesis examines the origin of architecture as an American discipline and its relationship to the concurrent promotion of public drawing education in the second half of the nineteenth century. In postbellum Massachusetts, textile manufacturers and their professional networks took control of local drawing education. Part of the perceived antidote to national disunity — as well as a justification for growing financial inequality — was the control of design knowledge through the creation of pedagogical programs and cultural institutions. Drawing simultaneously negotiated a multifarious identity as an industrial skill, a leisure activity, and a specialized profession. Bolstered by the rise in disposable wealth, Boston-based elites invested in drawing as a symbol of class status and industrial control in an increasingly stratified city.

This development coincided with the mid-century emergence of architectural education in American universities. In 1865, architectural educator William Robert Ware was hired to create the architecture department at the Massachusetts Institute of Technology (MIT), the first architecture department in a university and the oldest architecture program in the country. For the duration of his tenure, Ware was part of a powerful network of arts patrons and professionals in Massachusetts who ascribed a civilizing purpose to art, an idealized category which included architecture. As part of this effort, he was not only the founder of MIT's architecture department but also a founding instructor at two other cultural institutions in Boston. Underpinning these elite ambitions, in Ware's case, were both economic and intellectual aspirations to elevate architecture as a profession and to cultivate the architect as a cultural connoisseur. This thesis argues that Ware capitalized on the evolving status of drawing — as a manual labor, a contractual document, a cognitive act, and a cultural marker — to craft architectural education as an intellectual undertaking worthy of its university setting. This history is illustrated through

Ware's contemporaneous involvement in the promotion of local drawing education, his advocacy for professionalism in architectural education, and his design of new printed material.

Ware was an influential figure in American architectural education: first, he founded MIT's program, later he founded Columbia University's department, and he taught the future professors of leading architecture programs in the country.¹ Yet, relatively little has been written about Ware's career. The only detailed history of Ware's early years at MIT is John Andrew Chewning's MIT dissertation in 1986.² Particularly useful are Chewning's detailed appendices that trace the career trajectories of Ware's students. However, Chewning dismissed the significance of the concurrent state of arts education, the architectural profession, and the circulation of architectural publications in Massachusetts and relegated this information to the footnotes. He ultimately argued that Ware's extensive involvement in drawing education was irrelevant to his work at MIT. Instead, Chewning described MIT's architecture department as a piecemeal appropriation of French, German, and English architectural training with no unifying threads in style or theory. This thesis challenges this assertion that architectural education and drawing education were disconnected and centers these Massachusetts developments as driving factors rather than as footnotes.

The first chapter of this thesis examines the elite network of textile manufacturers and educational supervisors including Ware who spearheaded the passage of the 1870 Massachusetts Drawing Act and leveraged interest in drawing education to form new cultural institutions. Drawing became an intellectual act and a well-paid skill in the hands of foreign-born technicians. To transfer control and decrease costs, textile manufacturers and educational supervisors

¹ Dinner to Mr. Ware at the Tavern Club, Boston, November Twenty-eighth 1903, Box: 1, Folder: 33, William R. Ware Collection, Avery Architectural & Fine Art Library, Columbia University, New York, New York.

² John Andrew Chewning, "William Robert Ware and the Beginnings of Architectural Education in the United States, 1861-1881," PhD Dissertation, Massachusetts Institute of Technology, 1986.

including Ware appropriated the British educational model to simultaneously promote drawing as an industrial skill for the working classes and as a leisure activity for the upper classes. This activity reflected the growing segregation by class within Boston society physically, socially, and financially at all hours of the day.

The postbellum establishment of voluntary cultural associations in Boston is often discussed as singular institutional histories that cultivated elite taste and promoted cultural hegemony.³ While subsequent histories have connected the formation of one institution to another, the first chapter considers the entire network of textile manufacturers, educational supervisors, and cultural connoisseurs and their formation of multiple committees, three schools, and one law. This chapter also extends the rich history built by Mary Ann Stankiewicz by providing evidence of the Lowell family's involvement in drawing education that was earlier and more extensive than she described.⁴

The second chapter reconsiders Ware's curriculum in MIT's Architecture department through an analysis of his early lectures. Ware positioned the architect at the top of the building hierarchy and as the sole controller of the design. He sought to validate architecture as a gentlemanly profession equal in status to an elite clientele. As a result, Ware divorced architectural design from drawing, instead crafting the architect as a mechanical and artistic expert. Ironically, this characterization hindered his students, who trained as drafters in local architecture firms.

³ For a more recent example of this narrative, see Alan Wallach, "The Birth of the American Art Museum," in *The American Bourgeoisie: Distinction and Identity in the Nineteenth Century*, edited by Sven Beckert and Julia Rosenbaum (New York: Palgrave Macmillan, 2010), 247-256.

⁴ Her work explored the events around the Massachusetts Drawing Act and the founding of Massachusetts Normal Art School. Ware and MIT were featured as occasional anecdotes and footnotes. Mary Ann Stankiewicz, *Developing Visual Arts Education in the United States: Massachusetts Normal Art School and the Normalization of Creativity* (New York: Palgrave Macmillan, 2016).

In part based on Chewning's attempt to posit MIT's department as preparation for the Ecole des Beaux-Arts' entrance examinations, Ware's appropriation of European pedagogy has subsequently been utilized in architectural histories to chart an inevitable progression towards Beaux-Arts training and neoclassical ornament.⁵ Ware, too, promoted this narrative in his reflections at the end of his pedagogical career.⁶ While MIT's department was eclectic in its acceptance of architectural precedents, as was the Boston building industry at the time, this thesis illustrates how Ware's work reflected the values, ambitions, and circumstances of his American colleagues in drawing education, building, and publishing. In addition, histories of architectural professionalization deem university training as relatively unimportant in the formation of the discipline, in part due to its initial eclecticism, perceived as disorder.⁷ Furthermore, when histories describe the department's pedagogy, too much attention has been placed on the student thesis drawings, which were completed by only a small percentage of the students.⁸ In the second chapter, this thesis reframes Ware's program by noting its students' brief attendance and heterogeneous instruction in styles to evaluate how a university education facilitated employment.

⁵ Indeed, in his conclusion, Chewning described MIT as a preparatory program for the École. Chewning. See also Caroline Shillaber, *Massachusetts Institute of Technology School of Architecture and Planning, 1861-1961: A Hundred Year Chronicle* (Cambridge: Massachusetts Institute of Technology, 1963). A more recent and revised history characterized MIT's early years as a hybrid of Beaux-Arts and German polytechnical training, still fixated on the appropriation of European precedents. Michael Lewis, "1860-1920: The Battle between Polytechnic and Beaux-Arts in the American University," in *Architecture School: Three Centuries of Educating Architects in North America*, edited by Joan Ockman and Rebecca Williamson (Cambridge/Washington DC: MIT Press/Association of Collegiate Schools of Architecture, 2012), 68-89.

⁶ William Robert Ware, "Preface," in *American Vignola* (Boston: The American Architect and Building News Company, 1902), v.

⁷ Mary N. Woods, *From Craft to Profession: The Practice of Architecture in Nineteenth-Century America* (Berkeley: University of California Press, 1999). and Dell Upton, *Architecture in the United States* (New York: Oxford University Press, 1998). Woods in particular argued that Ware was losing students to offices, while the program was, instead, set up from its inception in relation to office work, as discussed in chapter 2.

⁸ Lewis; Kimberly Alexander-Shilland, "Architecture at MIT: A Brief History," *Thresholds*, no. 12 (Spring 1996): 9-13; and Mark Wigley, "Prosthetic Theory: The Disciplining of Architecture," *Assemblage*, no. 15 (August 1991): 6-29.

The third chapter reveals the overlapping ambitions of drawing education and architectural education through Ware's formation of the architectural text-book. Ware's text-books negotiated public and private knowledge to promote architectural education as an advancement of secondary drawing education. These publications illustrate Ware's endeavor to link MIT's architecture department to the local drawing education movement and to capitalize on the growing interest in drawing as a vehicle of middle- to upper-class taste. In addition, the withholding of knowledge in these materials supported the existence of architectural education in a university setting.

The creation of the American architectural text-books in the 19th century is rarely discussed. Architectural historian and curator Henry-Russell Hitchcock traces the first American architectural publication to 1775. This work, however, was merely an American printing of *The British Architect*.⁹ Throughout the 19th century, builders and aspiring architects in America published builders' guides that often paraphrased, translated, or plagiarized British, French, and German publications.¹⁰ Ware's books, however, were some of the first American publications for classroom instruction. In the most recent and comprehensive history of early American architectural education, the chapter on "Books" is a blind spot: the first American publication mentioned is Ware's *American Vignola*, while 19th-century publications are ignored.¹¹

Rich histories of drawing education in European empires have illustrated how modern design and visual perception were reimagined in relation to industrialization and capitalism in

⁹ Henry-Russell Hitchcock, *American Architectural Books: A List of Books, Portfolios, and Pamphlets on Architecture and Related Subjects Published Before 1895* (Minneapolis: University of Minnesota Press, 1962).

¹⁰ There are fantastic histories of builders' guides, house pattern books, and architectural journals: Dell Upton, "Pattern Books and Professionalism: Aspects of the Transformation of Domestic Architecture in America, 1800-1860," *Winterthur Portfolio* 19, no. 2/3 (Summer-Autumn 1984): 107-150; Mary N. Woods, "The American Architect and Building News 1876-1907," PhD Dissertation, Columbia University, 1983.

¹¹ Alan J. Plattus, "Books," in *Architecture School: Three Centuries of Educating Architects in North America*, edited by Joan Ockman and Rebecca Williamson (Cambridge/Washington DC: MIT Press/Association of Collegiate Schools of Architecture, 2012), 240-247.

the second half of the 19th century.¹² This history considers the transatlantic appropriation of these concepts for the American context. Unique factors in the United States included the radical reconstruction of both economy and society after the Civil War, the emergence of new universities, the doubling of the construction industry, the competition among prominent cities, the limited power of organized labor, and the undefined status of the architect. These developments fostered the self-conscious categorization of American culture that reimagined European precedents.¹³ As Ware’s business partner Henry Van Brunt wrote about the future of American architecture, “All the past is ours ; books, engravings, photographs, have so multiplied, that at any moment we can turn to and examine the architectural achievements of any age or nation.”¹⁴ Ware gathered the sources of European history, and he commandeered them to establish a pedagogy suitable for Boston, the “Athens of America.”¹⁵

A Brahmin Breeding: Ware’s Precedents and the Cultivation of Elite Identity

The crafting of architecture as an intellectual discipline within a university and the promotion of architectural educators as cultural connoisseurs required an endorser who projected an elite identity. Ware grew up as an aspiring member of Massachusetts’ elite society. Inter-connected families traced their lineage to the earliest Massachusetts Bay colonists and further

¹² For British drawing education in England and in its colonies: Arindam Dutta, *The Bureaucracy of Beauty: Design in the Age of its Global Reproducibility* (New York and London: Routledge, 2007). For French drawing education: Molly Nesbit, *Their Common Sense* (London: Black Dog Publishing, 2000).

¹³ Lawrence W. Levine described the hierarchical categorization of 19th-century American culture. I extend this by arguing that these categories also extend towards positioning American culture in relation to its European inspirations. Lawrence W. Levine, *High Brow Low Brow: The Emergence of Cultural Hierarchy in America* (Cambridge: Harvard University Press, 1988).

¹⁴ Henry Van Brunt, “Introduction by the Translator,” in *Discourses on Architecture*, by Eugène Emmanuel Viollet-le-Duc, translated by Henry Van Brunt (Boston: James R. Osgood & Company, 1875), x.

¹⁵ Charles D. Gambrill, Professor W. R. Ware’s Outline Dark Lined by Charles D. Gambrill, Correspondence, MIT, 1865-1866, Box: 1, Folder: 2, William R. Ware Papers, Massachusetts Institute of Technology, Libraries, Department of Distinctive collections, Cambridge, Massachusetts.

back to their English origins. Flippantly coined by Oliver Wendell Holmes, Sr. as “the Brahmin caste of New England” in *The Atlantic Monthly* in 1860, a familiar set of surnames appeared in the lists of Harvard alumni, social club memberships, institutional boards of trustees, and marriage notices.¹⁶ The Ware name appeared in many of these circles, although neither William Robert Ware nor his family members were members of the most exclusive clubs.¹⁷ Ware’s sister Emma authored *Ware Genealogy*, which traced their familial line back to Robert Ware in Massachusetts Bay colony in 1642 and to the English “Weares”.¹⁸ The book was published by Massachusetts pastor Charles Henry Pope, who published several genealogies of Boston families and included his own family in his work, *The Pioneers of Massachusetts*.¹⁹ These books featured not the most well-known families, such as Lowell, Lawrence, Adams, and Cabot, but lesser-known families who tried to connect their lineages to these prestigious names. Admittance to elite Boston spaces was linked to familial lineage, Harvard connections, financial success in textiles or banking, cultural expertise, Protestant denomination, or a combination of these factors.

Ware attended and maintained connections to prestigious private educational institutions. Ware attended Milton Academy and later Phillips Exeter Academy, one of a few boarding schools that were feeder institutions for Harvard College.²⁰ Harvard was known as “the nation’s leading elite-producing institution” of its day, and William Robert Ware was one of three Wares

¹⁶ Oliver Wendell Holmes, “The Professor’s Story,” *The Atlantic Monthly* 5, no. 27 (January 1860): 93.

¹⁷ For example, the Wares were not members of the Saturday Club, which included self-defined intellectuals such as transcendentalist Ralph Waldo Emerson, *The Atlantic Monthly* editor James Russell Lowell, Harvard art professor Charles Eliot Norton, and Holmes, Sr.

¹⁸ Emma Forbes Ware, *Ware Genealogy; Robert Ware, of Dedham, Massachusetts, 1642-1699, and His Lineal Descendants* (Boston: Charles H. Pope, 1901).

¹⁹ Charles Henry Pope, *The Pioneers of Massachusetts: A Descriptive List, Drawn from Records of the Colonies, Towns and Churches and Other Contemporaneous Documents* (Boston: Charles H. Pope, 1900). Pope also authored genealogies of the Pope, Hooper, Loring, Merriam, Paine, Pettingell, and Willard families.

²⁰ Laurence M. Crosbie, *The Phillips Exeter Academy: A History* (Exeter: Phillips Exeter Academy, 1923), 103; Ronald Story, “Harvard Students, the Boston Elite, and the New England Preparatory System, 1800-1876,” *History of Education Quarterly* 15, no. 3 (Autumn 1975): 281-96.

in his Harvard class.²¹ Ware's father, grandfather, and two brothers also attended Harvard.²²

After he graduated, Ware, known there as "Billy Bobby," maintained his connections to Harvard by attending alumni dinners and joining the nominating committee for the institution's Board of Overseers.²³

Ware's architectural training also built a strong network of connections, many of which helped secure employment at MIT. He attended Harvard's recently created Lawrence Scientific School, attended by many future MIT professors.²⁴ He then worked for Boston Brahmin and local architect Edward Clarke Cabot, who was on MIT's early instructional committees and would subsequently join committees in art education that included Ware.²⁵ On the

²¹ E. Digby Baltzell, *The Protestant Establishment: Aristocracy & Caste in America* (New Haven and London: Yale University Press, 1964), 144. Ware was a member of various societies and fraternities at Harvard, including the short-lived and enigmatic Harvard Lodge of the Independent Order of Odd Fellows (IOOF). The club diverged from the international organization from which it received its name. Instead of "Friendship, Love, and Truth," the IOOF's motto, Harvard club's motto was "*Procul Este Profani*," a line from Virgil meaning "keep far away, profane ones." Ware was the Secretary, whose title ended with the same initials as every member's title, "A.S.S." Club meetings were held in members' rooms, and the club's invitations stated, "Bring thy unholy body to [unnamed dormitory] as the midnight clock strikes the hour of eight and it shall be done unto you as you desire." Club meetings were flippantly alluded to as "orgies," and the Harvard faculty disbanded the society in 1850. Grace Williamson Edes, *Annals of the Harvard Class of 1852* (Cambridge: Harvard University Press, 1922), 348-354.

²² Forbes Ware and Edes.

²³ Ware was on the nominating committee for the Board of Overseers, the Physics Examination Committee, and the Fine Arts committee with Charles Callahan Perkins. "Harvard College. Meeting of the Overseers," *Boston Daily Advertiser* 95, no. 58 (March 8, 1860); "Harvard College," *Boston Daily Advertiser* 107, no. 92 (April 18, 1866); "Multiple Editorial Items," *Boston Daily Advertiser* 115, no. 75 (March 29, 1870): 1; "Harvard College," *Boston Daily Advertiser* 130, no. 108 (November 3, 1877).

²⁴ This included John D. Runkle, to whom Ware advocated for his employment at MIT. Kimberly Alexander-Shilland, "Ware and Van Brunt: Architectural Practice and Professionalization (1863-1881)," PhD Dissertation, Boston University, 1999, 15 and William Robert Ware, Letter to John D. Runkle, 27 April 1865, Correspondence, William Ware, 1865-1866, Box: 2, Folder: 3, William R. Ware Papers, Massachusetts Institute of Technology, Libraries, Department of Distinctive collections, Cambridge, Massachusetts.

²⁵ Cabot was an early member of the American Institute of Architects, was on the American Social Science Association's Special Art Education Committee, and was chair of the board of the School of Drawing and Painting of the Museum of Fine Arts, all with Ware. Cabot was also on MIT's first executive committee, approved by the Massachusetts legislature in 1861. For his AIA involvement: American Institute of Architects, "To the Public," 1859, MssCol 3115, Box: 13, Folder: 13, Richard and Richard M. Upjohn Papers, The New York Public Library, New York, New York. For his ASSA involvement: Charles Callahan Perkins, "General Intelligence – Home: Art in Education," *Journal of Social Science: Containing the Transactions of the American Association*, no. 2 (1870): 217. For his MFAS involvement: Museum of Fine Arts School of Drawing and Painting, *Third Annual Report of the Permanent Committee in Charge of the School* (Boston: Alfred Mudge and Son, 1879), 19, 24. For his MIT involvement: John D. Runkle, "Massachusetts Institute of Technology: President's Report," in *Reports of the President, Secretary, and Departments. 1871-72* (Boston: A. A. Kingman, 1872), 6.

recommendation of a member of the wealthy and well-connected Schuyler family, he studied as an unpaid intern in the New York City atelier of École-trained architect Richard Morris Hunt for less than a year.²⁶ Ware may have attended early meetings of the American Institute of Architects (AIA), of which Hunt was a founding member. Ware subsequently formed a partnership with civil engineer Edward S. Philbrick, the brother of prominent educator John D. Philbrick, who was also on MIT's early instructional committees and who subsequently oversaw the state's department of education.²⁷ Ware ultimately partnered with fellow Harvard alumnus Henry Van Brunt, who supplemented his work in architecture as a writer for *The Atlantic Monthly* and as head of the Boston Society of Architects.²⁸

Ware also profited from his family's connections with the Unitarian intelligentsia. His grandfather and father were Unitarian ministers and professors at Harvard Divinity School.²⁹ Ware's father was one of the editors of the Unitarian journal, *The Christian Examiner*. After his father's death, the remaining editors founded The Examiner Club in 1863, a social club that sought to preserve the dying publication.³⁰ William Robert Ware was a member, along with Ralph Waldo Emerson and Harvard art professor Charles Eliot Norton. A couple years later, Ware & Van Brunt won the competition to design Harvard's Memorial Hall, whose building

²⁶ Although Ware's narrative of the atelier after Hunt's death were overly complimentary, the short duration of the experience in comparison with the multi-year commitments of his contemporaries as well as an allusion in a rhyming poem to architect and friend Charles D. Gambrill implied that Ware disagreed with Hunt's philosophy, mostly due to favoring Gothic Revival. William Robert Ware, Letter to Charles D. Gambrill, 10 November 1863, Correspondence Pre-MIT, 1863-1864, MC14, Box: 1, Folder: 1, William R. Ware Papers, Massachusetts Institute of Technology, Libraries, Department of Distinctive Collections, Cambridge, Massachusetts.

²⁷ Both Philbrick brothers had deep ties to MIT. This connection is further explored in the first chapter. For further information, see Alexander-Shilland, "Ware and Van Brunt: Architectural Practice and Professionalization (1863-1881)" and Stankiewicz.

²⁸ Van Brunt also trained under Richard Morris Hunt in his New York atelier. For more on Van Brunt, see: John William Hennessey, "The Architectural Works of Henry Van Brunt," PhD Dissertation, Columbia University, 1979.

²⁹ Ware, Jr. was known as the mentor and later conservative opponent of Ralph Waldo Emerson. John Ware, *Memoir of the Life of Henry Ware, Jr.*, 2 vols. (Boston: J. Munroe, 1846).

³⁰ J. H. Allen, "Examiner Club: 1863-1888," October 29, 1888. www.examinerclub.org. The archives of the Examiner Club are located at the Massachusetts Historical Society.

committee was chaired by Norton.³¹ Ware & Van Brunt also won the commission to design Boston's First Unitarian Church and began their career designing ecclesiastical buildings.³²

Ware further capitalized on these ideals by imbuing architecture with a missionary power. In his public manifesto on American architectural education, Ware ended his lecture to the crowd of MIT trustees with a subtle nod towards Protestantism as the rightful religion of the United States. After celebrating the intelligence of Americans, noting architecture's function with the verb "minister" and foretelling a positive "moral temperature," Ware stated that like the ancient Jewish people,

The people of the United States are equally conscious of being a chosen people, set apart to preserve the sacred ark of Liberty, and to transmit the true faith to the nations ; ... of all the arts, Architecture has most immediately to do with the greatness of the commonwealth. It is by the aspect of its buildings that a great country asserts its greatness.³³

Ware's mention of the ancient Jews before this declaration was a frequently used link at the time of this publication. Prominent Unitarians such as *The Atlantic Monthly* editor James Russell Lowell would link Hebrew, the ancient Jews, and the Old Testament to their Puritan descendants, the ancestry of the Boston Brahmin, and to their current Unitarian views.³⁴ This curated linear narrative justified the dissemination of their shared religious and cultural values. In this case, Ware attached an elitist sentiment for religious homogeneity, or "transmit[ting] the true faith," to the role of architecture in the United States. Architecture, and by proxy architectural education, could be infused with missionary ideals.

³¹ Chewning, 37.

³² Edward S. Philbrick was also involved in the church construction. Alexander-Shilland, "Ware and Van Brunt: Architectural Practice and Professionalization (1863-1881)," 32.

³³ William Robert Ware, *An Outline of a Course of Architectural Instruction* (Boston: John Wilson and Sons, 1866), 35-36.

³⁴ Baltzell, 88-89.

Ware's proclivities and private musings suggest that he characterized religion as a civilizing instrument rather than as a sacred truth.³⁵ Despite Ware's familial connections to Unitarianism and his membership in the Examiner Club, in his journal documenting thoughts during the Civil War years, for example, Ware wrote more on ancient Greek philosophy and theater than he did on religion. On May 10, 1862, Ware wrote, "[Christianity], so called, is like all other forms of Religion a system of theological dogmas, and devout practices crystallised around a myth."³⁶ He then criticized Martin Luther and claimed, "Protestant Religion is an absurdity."³⁷ Despite these private thoughts, Ware's public reference to Protestantism in architecture echoed the proclamations of his contemporaries.³⁸ This promotion of ethnic and religious unity, an aristocratic form of white supremacy, also resembled the values of elite Boston society, subsequently characterized as "White Anglo-Saxon Protestant."³⁹

Ware wrote in his proposal for MIT's architecture department that education was "a great civilizing agent,"⁴⁰ and his first foray into education reflected this viewpoint. During the Civil War, Ware proposed a Sunday School series of lectures, which appear not to have transpired. In the draft of his first lecture to male and female children, Ware proselytized,

If you were all born savages and wild indians you would not have to come to Sunday

³⁵ Along with the veiled indiscretions described in Ware's Harvard club membership, sprinkled in his archives are vague mentions of bachelorhood along with homoerotic desires. A notable example is Ware's description of flirting to a male stranger: "At breakfast I entertained a lovely youth who sat near us, and who looked like an English boy, by telling James the story...The twinkle in the fellow's *deux beaux yeux*, too civil to laugh outright, was my reward for thus sharing hospitality to a stranger." William Robert Ware, William R. Ware to Emma Ware, 1872, Correspondence, 1868-1873, MC14, Box: 2, Folder: 5, William R. Ware Papers, Massachusetts Institute of Technology, Libraries, Department of Distinctive Collections, Cambridge, Massachusetts.

³⁶ William Robert Ware, Journal, 1849 – 1871, MC4, Box: 2, Folder: 11, William R. Ware Papers, Massachusetts Institute of Technology, Libraries, Department of Distinctive Collections, Cambridge, Massachusetts.

³⁷ Ibid.

³⁸ In particular, Ware's message resembled the prior work of architect Thomas U. Walter, a self-defined Protestant and a founding member of the AIA, with whom Ware was tangentially affiliated. Architectural historian Bryan Norwood linked Walter's work and architecture's professionalization in the antebellum period with the infusion of Protestant ethnonationalism. Bryan E. Norwood, "The Architect's Knowledge: Imagining the Profession's Historical Body, 1797-1883," PhD Dissertation, Harvard University, 2018.

³⁹ Baltzell.

⁴⁰ Ware, *An Outline of a Course of Architectural Instruction*, 34.

School or indeed any school at all; you would grow up just as you were and I dare say make very fair savages without any special pains being taken either by yourselves or any one else...But as it is you are born into a Christian + Enlightened land, the most Enlightened community in the world. The world has been going on hundreds and hundreds of years growing newer + better all the time and the people and country that have made most progress in all this time are just this New England + this Massachusetts that we live in, + that you are growing up to be citizens of.⁴¹

Ware's description of American indigenous peoples as "savage" and "wild" reflected the contemporaneous narrative of the "noble savage" and the dissemination of Christian and intellectual values as a panacea. A contemporaneous Unitarian interpretation was the belief in a person's capacity for self-improvement, a notion that was twisted into promoting assimilation, particularly of foreign-born Americans.⁴² Like the Unitarian narrative linking the ancient Jews to Puritanism to Unitarianism, Ware connected the Enlightenment with Christianity and implied that education contributed to a linear narrative of historical "progress." His words also reflected Ware's view of the superiority of his local region, with the prioritization of citizenship in "New England and this Massachusetts" rather than in the currently divided Union.

The translation of these civilizing values into capitalist enterprise was visible in the activities of Ware's circle during the Civil War, just before his tenure at MIT. After the Dred Scott decision, Ware resolved to practice "patriotism and architecture together by drawing some porches for the Kansas Free State Hotel, thus planting the seeds of the arts in the virgin soil."⁴³ This response reflected Ware's Republican affiliations as well as his ambition to capitalize on westward expansion and architecture's involvement. Although Ware recruited for the Union army and two of his brothers enlisted, Ware likely did not enlist and stayed in Massachusetts.⁴⁴

⁴¹ Ware, Journal, 1849-1871.

⁴² Baltzell, 90.

⁴³ The Kansas Free State Hotel was where anti-slavery northerners would stay during Bleeding Kansas. William Robert Ware, William R. Ware to Emma Ware, March 16, 1857, MC19, Box: 1, Folder: 2, William R. Ware Papers, Massachusetts Institute of Technology, Libraries, Department of Distinctive collections, Cambridge, Massachusetts.

⁴⁴ Ware, Journal, 1849-1871

During his period of recruiting Union soldiers, Ware advocated “to preserve the Union,” “for free and democratic institutes,” “for free labor and free speech,” but also to preserve “the inheritance that was purchased for us by our fathers’ blood, or by our own blood to confirm the land as a free possession to our children.”⁴⁵ Simultaneously, Ware’s current business partner, Edward S. Philbrick, Ware’s brother Charley, and his sister Harriet were involved in the Northern transformation of former plantations into a wage system in which land was possessed and resold by Union officers from Massachusetts.⁴⁶ Philbrick was considered a leading figure in this scheme and was credited as the superintendent of 13 plantations in South Carolina that employed freed people in 1863.⁴⁷ He was criticized by contemporaries as a “human vulture” who exploited freed slaves, both by seizing land that was to be given to freed people and by prioritizing a restructuring of the economy over elevating the freed slave in society.⁴⁸ It is undocumented whether Ware was directly involved with the activities of his business partner and his siblings. In his only known built project with Philbrick in Massachusetts, Ware was credited as the architect and the Philbrick family were named as the main sponsors.⁴⁹

Ware embodied the elite persona of his time: a white, Harvard-educated, Unitarian gentleman from a distinguished lineage. This thesis illustrates that during his tenure at MIT, Ware continued to foster connections within his Boston network and to promote its paternalistic, civilizing, and capitalist ambitions. These values translated in the dissemination of industrial

⁴⁵ July 19, 1862 entry. Ibid.

⁴⁶ Elizabeth Ware Pearson, *Letters from Port Royal Written at the Time of the Civil War* (Boston: W. B. Clarke Company 1906). For more information, the Edward A. Atkinson Papers are at the Massachusetts Historical Society.

⁴⁷ Jacob Chapman, *A Genealogy of the Philbrick and Philbrook Families, Descended from the Emigrant, Thomas Philbrick, 1583-1667* (Exeter: Exeter Gazette Steam Printing House, 1886), 59.

⁴⁸ Rufus Saxton to E. S. Philbrick, June 15, 1864, Box: 1, Folder: 2, Rufus B. and S. Willard Saxton Papers, Manuscripts and Archives, Yale University Library. New Haven, Connecticut.

⁴⁹ Alexander-Shilland, “Ware and Van Brunt: Architectural Practice and Professionalization (1863-1881),” 34.

drawing education, the formation of new cultural institutions, and the printing of new instructional material.

Chapter 1: Industrial, Artistic, and Architectural Drawing Control in Postbellum Boston

The formation of three cultural institutions in Boston – the Massachusetts Institute of Technology (MIT), the Museum of Fine Arts' School of Drawing and Painting (MFAS), and the Massachusetts Normal Art School (MNAS) – intersected with the increased advocacy for drawing education. William Robert Ware was a founding instructor at all three institutions. He was part of an elite network of manufacturers, supervisors, and connoisseurs who envisioned drawing training to civilize society and influence the physical, social, and financial landscape of Boston.

First, this chapter considers drawing as an industrial language that textile manufacturers aspired to disseminate to American-born workers. The fostering of adult drawing education in Massachusetts, culminating in the passage and implementation of the 1870 Massachusetts Drawing Act, is traced to the Lowell family and their network of manufacturers, advocates, and institutions. This chapter argues that this elite promotion of drawing education reflected a concentrated effort by textile manufacturers to transfer technological control from the foreign-born skilled laborers to the upper tiers of the industrial hierarchy. This movement to increase access to knowledge of reading and making drawings among adult workers attempted to displace the increasingly powerful skilled laborers, who were trying to organize. Leveraging pragmatic language with nativist statements against socialist-leaning immigrants, textile manufacturers in Massachusetts ultimately aspired to shift all aspects of workers' lives to productive time and, in turn, quell political, social, and cultural formations counter to the acceleration of business.

Second, this chapter illustrates how drawing education was integral in the formation of middle- and upper-class cultural institutions. At the same time as state-sponsored drawing education for working class Bostonians, drawing became an act of leisure, predominantly for

white, Protestant women with disposable incomes. The privatization of drawing education elevated it as an artistic act beyond a manual labor, further segregating the elite from the rest of Boston.

Third, this chapter frames Ware's involvement in drawing education in relation to his development of architectural education. Ware sought to divorce the identity of the architect from that of the drafter. Due to drawing's new position in general education, he mitigated the significance of drawing knowledge in architectural training and characterized architectural drawing as specialized. Ware also leveraged concurrent arguments for drawing education to acquire his positions in Boston's cultural landscape.

The Lowells' Mobilization for Massachusetts' Drawing Education

The Lowell family was a powerful alliance of wealthy textile manufacturers who wielded financial, social, and cultural influence in midcentury Massachusetts. Francis Cabot Lowell introduced textile mills to the country by successfully appropriating the designs, technologies, and organization of British and Scottish mills.⁵⁰ By the second half of the nineteenth century, treasurers of these mills, such as John Amory Lowell, were increasingly detached from the company's day-to-day operations. While owners and proprietors lived and spent more time in Boston, only a train ride away, agents and their managerial teams reported on the company's labor.⁵¹ This lack of involvement and accumulated wealth allowed Amory Lowell to establish

⁵⁰ Further history about Francis Cabot Lowell and the Lowell family can be found in: Nina Sankovitch, *The Lowells of Massachusetts: An American Family* (New York: St. Martin's Press, 2017). Interestingly, the book skips from 1864 to 1888, neglecting this thesis' primary focus of study and an active period of drawing education. For further information on the political and economic influence of the Lowell family during the first half of the nineteenth century, see: William F. Hartford, *Money, Morals, and Politics: Massachusetts in the Age of the Boston Associates* (Boston: Northeastern University Press, 2001) and Robert F. Dalzell, Jr., *Enterprising Elite: The Boston Associates and the World They Made* (New York: Norton, 1993).

⁵¹ Alfred D. Chandler, Jr., *The Visible Hand: The Managerial Revolution in American Business* (Cambridge: Belknap Press, 1977), 68.

control over intellectual and pedagogical pursuits as well as oversee new institutions. Amory Lowell became the first trustee of the Lowell Institute, a free series of public lectures aimed at enhancing the intelligence – and, by extension, productivity and profitability – of the residents of Massachusetts.⁵² Amory Lowell and the Lowell Institute maintained strong ties with the city’s leading universities – Harvard and MIT – as well as with other institutional networks, such as the American Social Science Association (ASSA) and the Massachusetts Historical Society.⁵³

The Lowell Institute first advocated for drawing education as vocational training for select males in 1850, when it established its free School of Drawing (LISD).⁵⁴ The program

⁵² The Lowell Institute was founded by textile manufacturing heir, businessman, and former Massachusetts State Senator John Lowell, Jr. In his will, Lowell, Jr. bequeathed a portion of his finances to this formation, since “the prosperity of my native land, New England, which is sterile and unproductive, must depend on the intelligence and information of its inhabitants.” Edward Everett, *A Memoir of John Lowell, Jr.* (Boston: Charles C. Little and James Brown, 1840), 66. The first free public lecture series were from December 1839 through 1840, having included talks on Lowell, Jr., geology, Christianity, and botany. Harriette Knight Smith, “A List of Lecturers and the Subjects of their Lectures in the Lowell Institute, 1839-1898,” in *The History of the Lowell Institute* (Boston: Lamson, Wolfe and Company, 1898), 49-94. Lowell, Jr. did not mention the specific demographics to which these lectures aspired to cater, although an article in the *Boston Daily Atlas* mocked the large number of bonnet-wearing women in attendance at the geology lecture series. Quoted in Zeolite, “Geology and the Ladies,” *National Intelligencer* 28, no. 8440 (March 4, 1840).

⁵³ Historian Samuel Eliot Morison credited Amory Lowell for the selection of Harvard’s President in 1862, Unitarian minister Thomas Hill, as Lowell was the senior fellow of the Harvard Corporation and “dominated” the committee, having stacked it with his family and friends. Samuel Eliot Morison, *Three Centuries of Harvard, 1636-1936* (Cambridge: Belknap Press, 1986), 304. The Lowell Institute’s relationship with MIT will be further explored later in this chapter. As will be discussed later in this chapter, Amory Lowell became one of the founding vice-presidents of MIT. In addition, in 1866, he orchestrated a deal with MIT that Lowell Institute students could attend lectures for free, known as the “Lowell Free Courses of Instruction in the Institute of Technology.” Lowell Institute Records noted that courses were offered in architecture, science, and English, all taught by MIT professors. History of the Early Days of the Lowell Institute and the Beginning of MIT, A26, Box 6/16, Folder 290, Northeastern University Lowell Institute School Records, 1883-2008, Northeastern University Archives, Boston, Massachusetts and History Lowell Institute School, 1941-58, A26, Box 6/16, Folder 292, Northeastern University Lowell Institute School Records, 1883-2008, Northeastern University Archives, Boston, Massachusetts. The Lowell Institute was also paying rental fees for their lectures in MIT’s Rogers Building in the 1870s. Edward Weeks, *The Lowells and Their Institute* (Boston: Little, Brown and Company, 1966), 85. In addition, many of the lectures at the Lowell Institute were given by current and aspiring professors at Harvard and MIT. MIT Presidents William Barton Rogers, John Daniel Runkle, and Francis Amasa Walker all presented several lectures at the Lowell Institute. Both the ASSA and the Massachusetts Historical Society presented lecture series through the Lowell Institute. The ASSA’s lectures included a series on American art education by Charles Callahan Perkins, a Boston Brahmin who would be intricately involved in drawing education and institutional formation. Two other supervisors in drawing education – Ware and Massachusetts State Director of Art Education Walter Smith – also gave lectures series at the Lowell Institute. Smith, 49-94.

⁵⁴ History of the Early Days of the Lowell Institute and the Beginning of MIT, 5.

advertised the course as for “Mechanics’ Apprentices.”⁵⁵ Although the course was free, further stipulations limited its entrants. The selection process was overseen by physician and Harvard alumnus Benjamin E. Cotting.⁵⁶ He advertised a general requirement about “good moral character” and “a taste for design and drawing” that potentially excluded non-Protestants and less educated workers.⁵⁷ Literacy was required, for Cotting stipulated that “Applications must be made in the handwriting of the applicants.”⁵⁸ Given the high illiteracy rate among foreign-born and African-American Bostonians, these populations were likely excluded from selection.⁵⁹ In addition, applicants were required to submit “certificates from employment,” which further excluded entrants to employers respected by Cotting and valued by the Lowell Institute.⁶⁰ This prerequisite also excluded unemployed workers, who could utilize drawing instruction for procuring employment. Furthermore, the 7pm class time excluded most of the mills’ workforce, whose 12-hour shifts ended at the same time.⁶¹ Although gender remained unmentioned, the industrial thrust of the program’s marketing and future marketing for courses only for women suggested a primarily male demographic.

⁵⁵ Benjamin E. Cotting, “Lowell Institute – Free Drawing School,” *Boston Daily Atlas* 23, no. 53 (September 1, 1854).

⁵⁶ “Benjamin E. Cotting ’34,” *The Harvard Crimson*, May 24, 1897.

⁵⁷ Cotting.

⁵⁸ *Ibid.*

⁵⁹ According to the 1875 census, Massachusetts’ population was 1,651,912 residents, and 103,000 were illiterate. Of those, circa 91.5% were foreign-born. Massachusetts Bureau of Statistics of Labor, *Seventh Annual Report of the Bureau of Statistics of Labor, with an Appendix Containing a History of the Bureau, and of Labor Legislation in Massachusetts* (Boston: Wright & Potter, 1876), xiii-xiv. A Boston journalist argued that illiteracy rates were worse, as public school children in Massachusetts were illiterate. Gail Hamilton, *Our Common School System* (Boston: Estes and Lauriat, 1880). The 1870 census broke down illiteracy by age, race, and gender and revealed higher illiteracy rates among “colored” people and among women. Francis Amasa Walker, “Table X. Attendance and Illiteracy in Each State and Territory, By Counties,” in *The Statistics of the Population of the United States, Embracing the Tables of Race, Nationality, Sex, Selected Ages, and Occupations. To Which Are Added the Statistics of School Attendance and Illiteracy, of Schools, Libraries, Newspapers and Periodicals, Churches, Pauperism and Crime, and Areas, Families, and Dwellings. Compiled from the Original Returns of the Ninth Census, June 1, 1870, Under the Direction of the Secretary of the Interior* (Washington, D.C.: Government Printing Office, 1872), 1:415.

⁶⁰ Cotting.

⁶¹ *Ibid* and Weeks, 58.

Conflicting histories of the Lowell Institute suggest that the students in these drawing courses may not have been as homogeneous in occupation as their organizers sought. Relatively little is known about the instructors or students in these rooms, in part because it is difficult to discern exactly which classes were LISD, which classes were state-sponsored after the Massachusetts Drawing Act, and which classes were MIT-sponsored but not through the Lowell family. All of these classes took place in the evening in the rooms of MIT. One account implied that the LISD program was popular among artists and teachers.⁶² In addition, Amory Lowell noted that in 1871-2, “At the chemical tables [in the classrooms of MIT] are to be found the principals of the High Schools of almost all the neighboring towns and quite a number of Masters of the Boston Grammar Schools.”⁶³ At the same time, the state’s Board of Education reported that the LISD courses, “conducted at the [Massachusetts] Institute of Technology, under the auspices of Hon. John A. Lowell, . . . have always been fully attended, especially by large numbers of mechanics.”⁶⁴

While drawing was characterized as a male vocational skill, the LISD simultaneously promoted drawing as a female activity for either employment or pleasure during the day. One history claimed that the Lowell Institute opened to women in the 1871-2 year, with 124 men and 127 women enrolled.⁶⁵ However, women were disparaged as the majority of lecture attendees in the institute’s first year.⁶⁶ In the drawing school, advertisements in Boston newspapers suggested

⁶² A history in the Lowell Institute’s archival records claimed that this popularity was because the Lowell Institute’s program instructed students entirely in three dimensions and never from “flat surfaces,” unlike contemporaneous drawing courses. Students then progressed from drawing solid objects to drawing live models. *History of the Early Days of the Lowell Institute and the Beginning of MIT*, 5-6; *History Lowell Institute School*.

⁶³ Weeks, 82.

⁶⁴ Joseph White, “Report of Board of Education on Mechanical Drawing,” in *Thirty-Fourth Annual Report of the Board of Education, Together with the Thirty-Fourth Annual Report of the Secretary of the Board* (Boston: Wright & Potter, 1871), 168.

⁶⁵ Mary Ann Stankiewicz, *Developing Visual Arts Education in the United States: Massachusetts Normal Art School and the Normalization of Creativity* (New York: Palgrave Macmillan, 2016), 19-20.

⁶⁶ Zeolite.

women's attendance in 1860, when a female-only drawing course was advertised.⁶⁷ Unlike its male counterpart, the "Free Drawing School for Females" was aimed at women who did not work, as the course was offered on two weekday afternoons at 2pm.⁶⁸ Although the afternoon lectures were advertised to women broadly, suggesting the inclusion of unemployed women with various means, the 1860 course was in part packaged for aspiring female teachers in public schools.⁶⁹

The LISD maintained official and unofficial links to MIT and gradually ingratiated itself into the school. Amory Lowell was involved in MIT from its inception. In 1846, Henry Rogers wrote to his brother, William Barton Rogers, referring to his conversations with Amory Lowell about the "value of a School of Arts as a branch of the Lowell Institute."⁷⁰ A decade later, Barton Rogers proposed that the LISD be integrated into the new university. He argued that this program would train students "for efficient service in the ornamental branches of manufacture, as well as in the pursuits of the mechanician, architect and engineer."⁷¹ In order to complete this training, Barton Rogers proposed that the school offer courses in geometric, architectural, and free drawing as well as the copying of textile patterns.⁷² He sought to take advantage of the Lowell Institute's existing program and its solidified funding. Barton Rogers wrote, "It is expected that the drawing school of the Lowell Institute will be brought into connection with the School of Industrial Science in such manner as to afford to the students of the latter the free

⁶⁷ Benjamin E. Cotting, "Lowell Institute. Free Drawing School for Females," *Boston Daily Atlas* 96, no. 133 (December 4, 1860).

⁶⁸ Ibid and Benjamin E. Cotting, "Lowell Institute. Free Drawing School," *Boston Daily Atlas* 98, no. 60 (September 11, 1861).

⁶⁹ History Lowell Institute School.

⁷⁰ History of the Early Days of the Lowell Institute and the Beginning of MIT.

⁷¹ Early History of Drawing at M.I.T., A26, Box 6/16, Folder 291, Northeastern University Lowell Institute School Records, 1883-2008, Northeastern University Archives, Boston, Massachusetts.

⁷² Ibid.

benefit of its instruction.”⁷³ Amory Lowell gave MIT \$50,000 in startup funds specifically for the “Lowell free evening classes for mechanics,” i.e. the drawing school.⁷⁴ When the school opened, Amory Lowell became one of MIT’s four vice presidents and also served on the Committee on Instruction.⁷⁵

The Lowell’s circle of business elites were the primary mobilizers in solidifying drawing education in Massachusetts as a legal requirement. On May 16, 1870, a law was passed that required state-sponsored drawing instruction to public school children and to adults in municipalities with more than 10,000 inhabitants.⁷⁶ The *Boston Daily Advertiser*, edited and read by Boston Brahmins, credited the passage of this act to the efforts of Francis Cabot Lowell, Jr. and “a few of his friends, mostly gentlemen largely interested in our manufacturing system.”⁷⁷ The 1869 resolve submitted through the state’s Board of Education to the state congress was signed by Cabot Lowell, Jr., Amory Lowell, and two prominent Lowell employees.⁷⁸ The resolve was also signed by other textile manufacturers and affiliates, including A. A. Lawrence & Company, a textile mill, and Jordan Marsh & Company, a prominent New England department store.⁷⁹ The other signatories were known to Amory Lowell through MIT and Harvard

⁷³ Ibid.

⁷⁴ Julius A. Stratton and Loretta H. Mannix, *Mind and Hand: The Birth of MIT* (Cambridge: MIT Press, 2005), 297 + 307.

⁷⁵ Ibid, 242.

⁷⁶ This law has come to be nicknamed the Massachusetts Drawing Act. Also, 5 years later, the law was amended to include municipalities with more than 5,000 inhabitants, increasing its jurisdiction. The law also inspired similar acts within the next five years in other states in the Northeast. For more information on the act, see the work of Paul E. Bolin: Paul E. Bolin, “The Massachusetts Drawing Act of 1870: Industrial Mandate or Democratic Maneuver?” in *Framing the Past: Essays on Art Education*, by Donald Soucy and Mary Ann Stankiewicz (Reston, Virginia: National Art Education Association, 1990); Paul E. Bolin, “Overlooked and Obscured Through History: The Legislative Bill Proposed to Amend the Massachusetts Drawing Act of 1870,” *Studies in Art Education* 37, no. 1 (1995): 55-64; Paul E. Bolin, “Bordering the Familiar: Drawing Education Legislation in the Northeastern United States, 1871-1876,” *Studies in Art Education* 45, no. 2 (2004): 101-116.

⁷⁷ “The New Arrangements of the Commonwealth and of the City, for Instruction in Drawing in Public Schools,” *Boston Daily Advertiser* 116, no. 38 (September 30, 1870).

⁷⁸ White, 164 and Stankiewicz, 50-51.

⁷⁹ Ibid.

committees. Carpet manufacturer Erastus B. Bigelow was a founding MIT trustee, and relative Jacob Bigelow was a fellow MIT vice president.⁸⁰ Their relative, Edward Bigelow, was a current representative in the state legislature. Two board members of railway corporations signed the petition, including John Henry Clifford, who was president of Harvard's Board of Overseers, for which Ware served on the nominating committee.⁸¹ In addition, imbuing the resolve with moral authority, Unitarian minister Edward Everett Hale signed the resolve, a fellow Bostonian who mingled in the same social circles as the Brahmin manufacturers and state representatives.⁸²

Competing Visions for Massachusetts

This legal enforcement of drawing education coincided with the growing political power of the state's skilled labor force. Due to their close ties with Southern slaveowners, textile manufacturers who were sympathetic to their business affiliates and lukewarm in their support of Republican abolitionist values were perceived with distrust after the Civil War.⁸³ Labor organizers perpetuated this distrust by analogizing the working conditions of wage earners in factories to slavery.⁸⁴ Working-class Bostonians took advantage of this weakening in elite authority and gained seats on the City Council.⁸⁵ The Lowells had some ties to the 1870 state legislature, many of whom attended Harvard Law School.⁸⁶ At the same time, the working class

⁸⁰ Ibid.

⁸¹ Ibid; "Multiple Editorial Items," *Boston Daily Advertiser* 115, no. 75 (March 29, 1870): 1. Amory Lowell was a trustee of the Harvard Corporation.

⁸² Hale was also involved since he opened his own free drawing school in Boston in a church the year before the drawing act's petition. White, 164 + 168 and Stankiewicz, 50-51.

⁸³ Noam Maggor, *Brahmin Capitalism: Frontiers of Wealth and Populism in America's First Gilded Age* (Cambridge: Harvard University Press, 2017), 12-13.

⁸⁴ Sean Wilentz, "The Rise of the American Working Class, 1776-1877: A Survey," in *Perspectives on American Labor History: The Problems of Synthesis*, edited by J. Carroll Moody and Alice Kessler-Harris (DeKalb: Northern Illinois University Press, 1989), 126.

⁸⁵ Maggor, 128.

⁸⁶ On the Lowells' relationship with Harvard Law School, see: Daniel R. Coquillette and Kimball A. Bruce, *On the Battlefield of Merit: Harvard Law School, the First Century* (Cambridge: Harvard University Press, 2015).

shoemakers' union successfully gained two dozen seats in the state legislature.⁸⁷ The Massachusetts Drawing Act was a state law, which circumvented local control and mobilized funds to the Lowells' advantage. This power struggle was visible in the City Council's delay of several months of Boston's and its neighboring municipalities' drawing courses due to arguments over the appropriation of city funds.⁸⁸

While unions would not gain political strength until the turn of the century, drawing legislation was a calculated distraction from a year of active local organizing. In 1869 alone, four new labor organizations were created in Massachusetts, including the Boston Eight Hour League, which advocated that the work day be reduced from 12 to 8 hours.⁸⁹ The Eight Hour League would ultimately blossom into a national organization, as would the Knights of Labor, which was founded by garment workers in Philadelphia that year. In addition, two months prior to the passage of the Massachusetts Drawing Act, the state's Bureau of Statistics of Labor passed its first annual report, which highlighted the grueling working conditions of the labor force.⁹⁰ Collective organizing was in its nascent stages but was nevertheless a looming threat to manufacturers' control over industrial operations.

As drawing skill became more valued in the chain of industrial production, the skilled workforce rose in compensation and grew in technological control. Drafters were among the highest paid positions among the wage-based employees. In 1870 Massachusetts, iron mill drafters received the second highest documented wage at \$4 per day, while foremen received the

⁸⁷ David Montgomery, *Beyond Equality: Labor and the Radical Republicans, 1862-1872* (Urbana: University of Illinois Press, 1981), 231-234.

⁸⁸ William T. Brigham, "Drawing in Public Schools," *Old and New (1870-1875)* 4, no. 1 (July 1871): 103.

⁸⁹ David A. Zonderman, "The Generation of 1869: Two Leagues, a Bureau, and a Party," in *Uneasy Allies: Working for Labor Reform in Nineteenth-Century Boston* (Amherst and Boston: University of Massachusetts Press, 2011), 114-168.

⁹⁰ Massachusetts Bureau of Statistics of Labor, *Report of the Bureau of Statistics of Labor, Embracing the Account of Its Operations and Inquiries from August 2, 1869 to March 1, 1870, Inclusive, Being the First Seven Months Since Its Organization* (Boston: Wright & Potter, 1870).

highest documented wage at \$4.60 per day.⁹¹ Analogous results were found in other professions, such as lithography and shoe manufacturing.⁹² The majority of labor leaders were skilled workers, many of whom were immigrants. Manufacturers were fearful of the translation of imported socialist ideologies into the American economy.⁹³ Drawing instruction could disseminate industrial knowledge to a larger pool of workers, whom Massachusetts industrialists could then substitute during a strike.⁹⁴

These fears of potential power shifts were reflected in the nativist advocacy for the Massachusetts Drawing Act. Lowell, Jr. and the resolve's additional signatories argued that, due to the lack of American drawing instruction, "whatever was needed in artistic work, even of the very humblest grades, in our manufacture, now falls almost invariably into the hands of foreigners educated in the European schools."⁹⁵ The Lowell circle argued that a Massachusetts law that granted drawing education provided "workmen trained here the same advantages as those enjoyed by workmen trained abroad."⁹⁶ Under John Dudley Philbrick, the Board of Education's committee formed to advocate for the drawing act was explicit about what "advantages" foreign-born workers acquired. Their report stated, "Foreign workmen occupy the best and most responsible places in our factories and workshop."⁹⁷ Indeed, these workers were perceived as gaining too much industrial control, and drawing education could cure "our native

⁹¹ Massachusetts Bureau of Statistics of Labor, *Second Annual Report of the Bureau of Statistics of Labor, Embracing the Account of its Operations and Inquiries from March 1, 1870, to March 1, 1871* (Boston: Wright & Potter, 1871), 372.

⁹² *Ibid.*, 311 + 394.

⁹³ This fear notably escalated during the nationwide railroad strikes of 1877, when industrialists believed that prior European immigration spiked interest in communism. Wilentz, 130.

⁹⁴ Some Massachusetts industrialists developed reserve labor forces at every tier of the working class in case of strikes. Alexander Keyssar, *Out of Work: The First Century of Unemployment in Massachusetts* (Cambridge: Cambridge University Press, 1986).

⁹⁵ "The New Arrangements of the Commonwealth and of the City, for Instruction in Drawing in Public Schools."

⁹⁶ *Ibid.*

⁹⁷ See Footnote 134 for more information on Philbrick. White, 165.

artisans and mechanics” of “this sad defect.”⁹⁸ In addition, Massachusetts-based manufacturers not only employed foreign-born laborers but also imported foreign designs, on which they were penalized through protective tariffs.⁹⁹ Drawing education could alleviate that additional financial burden. Furthermore, this statewide attention on artistic skill, coupled with nativist sentiment, promoted American-based manufacturing. American manufacturers were competing for the national market with international competitors, since, as one educational supervisor remarked a year after the act’s passage, “it seemed still that our walls must be hung with foreign papers, and our floor covered with foreign carpet, because our American artisans had not learned to see and use beauty of form.”¹⁰⁰ Both the quality of American goods and its perception were at stake, intertwined in the dissemination of drawing education.

The Massachusetts Appropriation of the British Model

Ironically, infused into nativist sentiments was a competitive jealousy by manufacturers and their network to appropriate European precedent for American gain. Also involved in the advocacy of the Massachusetts Drawing Act was Boston Brahmin and self-categorized cultural connoisseur Charles Callahan Perkins, an authoritative figure in hiring drawing instructors in Massachusetts and forming new cultural institutions in Back Bay.¹⁰¹ Perkins, Barton Rogers, and Ware discussed drawing instruction while at the *Exposition Universelle* in Paris in 1867.¹⁰² Barton Rogers was president of the American Social Science Association (ASSA), which

⁹⁸ Ibid.

⁹⁹ Brigham, 103.

¹⁰⁰ Ibid. Protective tariffs failed to gain political traction after the Civil War through the end of the century. Douglas A. Irwin, “The Failure of Tariff Reform, 1865-1890,” in *Clashing Over Commerce: A History of US Trade Policy* (Chicago: University of Chicago Press, 2017), 221-275.

¹⁰¹ Perkins, too, lectured at the Lowell Institute. As discussed later in this chapter, he was involved in a couple drawing education committees and helped found the MFA, the MFAS, and the MNAS.

¹⁰² John Andrew Chewning, “William Robert Ware and the Beginnings of Architectural Education in the United States, 1861-1881,” PhD Dissertation, Massachusetts Institute of Technology, 1986, 341-2.

founded the Special Committee on Art Education, chaired by Perkins and including Ware. Their strategy was moral improvement of the working class through aesthetic cultivation, an approach which then translated to increasing productivity. The committee summarized their mission as “How to promote a better taste among our people.”¹⁰³ To further this mission, they consulted with art experts from Germany, France, Italy, and England.¹⁰⁴ The committee was particularly interested in Britain’s Department of Science and Art and the exhibitions and teacher training at the South Kensington Museum. To this group of cultural professionals, the international ranking of the United States was at stake, and appropriating Britain’s system of drawing education could be a panacea. As Ware concluded in his advocacy for the Drawing Act,

At the Universal Exhibition of 1851, England found herself, by general consent, almost at the bottom of the list, among all the countries of the world, in respect of her art manufactures. Only the United States, among the great nations, stood below her. The first result of this discovery was the establishment of Schools of Art in every large town. At the Paris Exhibition of 1867, England stood among the foremost, and in some branches of manufacture distanced the most artistic nations. It was the Schools of Art and the great collection of works of Industrial Art at the South Kensington Museum that accomplished this result. The United States still held her place at the foot of the column.¹⁰⁵

The South Kensington approach, perceived as a paragon by Ware, instructed the public through multiple avenues. Likewise, for the committee, drawing education became one component of a multipronged effort to elevate art and skill in Boston. Perkins corresponded with the director of the South Kensington Museum, Henry Cole, who recommended the hiring of South Kensington-trained instructor Walter Smith.¹⁰⁶ The committee considered the passing of the Massachusetts

¹⁰³ “General Intelligence – Home: Art in Education,” *Journal of Social Science: Containing the Transactions of the American Association*, no. 1 (June 1869): 151.

¹⁰⁴ Ibid and Charles Callahan Perkins, “General Intelligence – Home: Art in Education,” *Journal of Social Science: Containing the Transactions of the American Association*, no. 2 (1870): 218.

¹⁰⁵ William Robert Ware, “Paper of Prof. Wm. R. Ware,” in *Thirty-Fourth Annual Report of the Board of Education, Together with the Thirty-Fourth Annual Report of the Secretary of the Board* (Boston: Wright & Potter, 1871), 186.

¹⁰⁶ Stankiewicz, 56.

Drawing Act, preparations for an art museum in Boston, and the hiring of Smith to form a parallel institution in Boston as jointly propelling the state of American art education.¹⁰⁷

Drawing at Night at MIT

The implementation of the Massachusetts Drawing Act for the required adult contingent was uneven. One report acknowledged that in 1871, “in many places the act was ignored, or so imperfectly carried out as to render it useless.”¹⁰⁸ In Boston and its neighboring municipalities, however, MIT provided instructors, materials, and rooms.¹⁰⁹ This gesture was likely not a gift, as an education report later in the decade noted that MIT rooms were rented by the city of Boston for drawing education.¹¹⁰ It is possible that the Lowell free drawing courses became the state-sponsored ones, as mentions of the Lowell’s evening drawing curriculum waned after 1870 and since both courses were held on the same weekdays, at the same time, and at MIT.¹¹¹

The state-sponsored course served predominantly young men who were employed in mechanical trades.¹¹² The average age of the students was 22.72 years old, skewed higher since the oldest student was 55 and the youngest was 15.¹¹³ The student population included 96

¹⁰⁷ Charles Callan Perkins, “Art Schools,” *Journal of Social Science: Containing the Transactions of the American Association*, no. 4 (1871): 95-104.

¹⁰⁸ Brigham, 103.

¹⁰⁹ The MIT courses were intended to serve the residents of Boston, Cambridge, New Bedford Fall River, and Charlestown. Ibid.

¹¹⁰ John Dudley Philbrick, “Abstracts of School Committees’ Reports. Suffolk County. Boston. Superintendent’s Report,” in *Thirty-Seventh Annual Report of the Board of Education, Together with the Thirty-Seventh Annual Report of the Secretary of the Board. 1872-1873* (Boston: Wright & Potter, 1874), 196-197.

¹¹¹ Drawing was not mentioned as a free evening course in the President’s Reports of 1872 and 1873. Mechanical drawing returned as a free evening course sponsored by the Lowell Institute in 1874, along with 18 lectures on “Architectural History and Design,” taught by Ware. Both courses were not continued in 1875. Smith advertised the state-sponsored drawing classes to take place also on Tuesday and Friday evenings at MIT. Samuel Kneeland, “Secretary’s Report: 1873-74,” in *President’s Report for the Year ending September 30, 1874* (Boston: A. A. Kingman, 1875), xxx; Walter Smith, “Education in the Industries and Arts in Massachusetts,” *Boston Daily Advertiser* 119, no. 42 (February 17, 1872).

¹¹² The absence of any mention of race and ethnicity suggests that the students were primarily white, Protestant, and American-born.

¹¹³ Brigham, 103.

occupations, and the most represented employments were “carpenters” with 155 pupils, “machinists” with 135 pupils, “students” with 117 pupils, “clerks” with 43 pupils, and “wood-carvers” with 38 pupils.¹¹⁴ The absence of women was implied in a report that encouraged women to attend in the future due to a sufficient level of “decorum” in the courses.¹¹⁵ This encouragement was for unemployed women with disposable incomes, since the class for public school teachers, which likely included many women, was separate and taught in the evenings at the Worcester Free Institute.¹¹⁶ The implied suitability of women’s attendance also suggests that the course’s attendees were white, Protestant, American-born, and educated, all suggesting a higher class status than the average mill worker. Due to application hurdles and a gradual increase in truancy, interest for the MIT drawing courses shrunk from “nearly a thousand applicants” to a final average attendance of 350 students.¹¹⁷ There is no recorded information about the application process, although educator William T. Brigham noted that “more than half” of applicants were “turned away” for want of space.¹¹⁸

After the Drawing Act, evening drawing courses at MIT became more specialized. No specific type of drawing was advertised in the Lowell’s early courses. The first year of state-sponsored courses provided two large rooms for “general drawing,” its most popular course into which students gradually switched.¹¹⁹ The largest room at MIT, fitting 100 students, was

¹¹⁴ Ibid.

¹¹⁵ “Without the whole number no cases requiring harsh discipline occurred ; and the most perfect order was preserved, almost without rules : any lady might enjoy the advantages of the school with complete comfort.” Ibid.

¹¹⁶ A. P. Marble, “Teachers’ Class,” in *Thirty-Fifth Annual Report of the Board of Education, Together with the Thirty-Fifth Annual Report of the Secretary of the Board* (Boston: Wright & Potter, 1872), 152-153.

¹¹⁷ Brigham, 103. Public documents claim there were 380 students in the evening drawing schools in 1871. *Public Documents of Massachusetts: Being the Annual Reports of Various Public Officers and Institutions for the Year 1872* (Boston: Wright & Potter, 1873), 192.

¹¹⁸ Ibid.

¹¹⁹ It is likely that this course taught free-hand drawing. Ibid.

allocated for “mechanical and architectural drawing,” a class in which there was attrition.¹²⁰ Additional rooms featured free-hand drawing and ship-drafting. The course was ultimately transformed into a multi-tiered drawing education, of which the first stage was held at MIT.¹²¹ MIT’s rooms were then divided into “linear geometry,” “mechanical and machine drawing,” “linear perspective,” “details of architectural drawing and building construction,” and “ship-drafting.”¹²² Notably, architectural drawing transitioned from a component of general drawing education to its own specialization. These courses ultimately formed the “School in Mechanical Drawing,” which taught over two hundred men a year with an average class attendance of 24.¹²³ Smith reflected on the pragmatic nature of these classes: “The greater part of the students in this school were young men engaged in some branch of industrial labor requiring skill in drawing for its most successful pursuit.”¹²⁴

Annual drawing exhibitions were held to promote the success of the Drawing Act as well as to highlight the training of new Boston institutions. Ware, Perkins, and Smith served as judges and awarded prizes. The first report notably pandered to the Drawing Act’s petitioners, as drawing schools in Lawrence and Lowell were singled out for praise.¹²⁵ The drawings from the newly formed MNAS and from MIT were eventually separated from the rest of the state’s

¹²⁰ Students may have switched because the mechanical and architectural drawing course was too advanced, and evening course students were described as having no drawing experience. Ibid.

¹²¹ The rest of the stages were held at MNAS.

¹²² Smith, “Education in the Industries and Arts in Massachusetts”; Joseph White, Papers on Drawing,” in *Thirty-Fifth Annual Report of the Board of Education, Together with the Thirty-Fifth Annual Report of the Secretary of the Board* (Boston: Wright & Potter, 1872), 150-151; Joseph White, Papers on Drawing,” in *Thirty-Sixth Annual Report of the Board of Education, Together with the Thirty-Sixth Annual Report of the Secretary of the Board* (Boston: Wright & Potter, 1873), 38-46.

¹²³ The MNAS’ courses became the coeducational “Free-Hand School.” Philbrick, 196-197.

¹²⁴ Ibid.

¹²⁵ The report noted in particular that the application of free-hand drawing in relation to industrial applications was commendable in Lowell. Charles Callahan Perkins, William Robert Ware, and Walter Smith, “Report of the Board of Examiners, Appointed by the Massachusetts state Board of Education, on the First Exhibition of Works from the Free Industrial Drawing Classes, Massachusetts,” in *Public Documents of Massachusetts: Being the Annual Reports of Various Public Officers and Institutions for the Year 1872* (Boston: Wright & Potter, 1873), 48.

exhibitions. While half of the annual state drawing exhibition was featured in Horticultural Hall, just off the Boston Common in downtown Boston, the MNAS and MIT drawings were featured in the rooms of the elite Boston Art Club, of which Perkins was president and which was along the same street as MIT in Back Bay.¹²⁶ Drawings from the MIT Architecture department and from the Lowell Course of Practical Design were ineligible for prizes and instead were distinguished as paragons of skill.¹²⁷

While admission into MIT's degree programs was highly unlikely for students in the free evening drawing courses, those students may have been able to transition into nondegree programs at MIT. Nondegree students, such as the "Special Students" in the Architecture department, circumvented the school's entrance exams, which required proficiency in core curricular school subjects, such as English and French, rather than manual training.¹²⁸ As Ware and his MIT colleagues wrote about a part-time program aimed at young mechanics, such a program would not be considered a preparatory department for MIT's degree programs, since "[s]uch a school would differ too much from the High Schools and Academies from which our students come for us to expect from it the same class of students."¹²⁹ While there were increasingly fewer barriers to access many of MIT's resources, such as attending free lectures or gaining admittance to part-time programs, barriers for obtaining a diploma were still in effect.

¹²⁶ "Progress in Art. The State and City Annual Exhibition of Drawings from the Public Schools," *Boston Daily Advertiser* 125, no. 137 (June 10, 1875).

¹²⁷ In 1874, 114 drawings from the Lowell Course of Practical Design and 150 drawings from MIT's Architecture department were exhibited. Horticultural Hall exhibited 7,000 drawings that year, and the Boston Art Club exhibited 650. Massachusetts State Board of Examiners, *Report of the State Board of Examiners on the 2nd, 4th Exhibition of Works from the Free Industrial Drawing-Classes of the State* (Boston: Wright and Potter, 1873, 1875).

¹²⁸ For more on "Special Students," see Chapter 2. For more on the entrance examinations, see MIT's President's Reports.

¹²⁹ William Robert Ware, John M. Ordway, and George H. Howison, "Report of the Faculty," in *President's Report for the Year Ending Sept. 30, 1877* (Boston: A. A. Kingman, 1878), 27.

Nondegree programs were nevertheless successful in translating classroom learning into industrial employment.¹³⁰ The Lowell Institute continued to host free lectures at night at MIT, but the Lowells also sponsored drawing training at MIT during the day starting in 1873, known as the Lowell Course of Practical Design.¹³¹ Through this MIT program, an additional nondegree program that circumvented entrance requirements, the Drawing Act petitioners achieved their goal of training industrial designers. Men and women from the program were trained by a designer from the Pacific Mills in Lawrence and were subsequently hired by textile mills in Lawrence and in Lowell as well as by carpet mills and lithography workshops.¹³²

Reading, Writing, Arithmetic, Drawing: Vocational Training in Secondary Education

Drawing was perceived as an industrial language, vital vocational knowledge to be learned at school. Concurrently, drawing education was promoted not just during the evenings for adult male workers but for public school children throughout the state. Supporting this vision was the superintendent of Boston's public schools and MIT founding advisor, John Dudley Philbrick.¹³³ He converted the city's public school system into an industrial framework that

¹³⁰ Chapter 2 discusses this success in the case of Architecture students.

¹³¹ This curriculum had multiple names in reports – the Lowell Course of Industrial Art, the Lowell School of Practical Design, and the Lowell Course of Practical Design.

¹³² Charles Kastner, "Report upon the Lowell Course of Practical Design, for 1874-75," in *President's Report for the Year ending Sept. 30, 1875* (Boston: A. A. Kingman, 1876), 34-35.

¹³³ Philbrick rose from Boston high school teacher to president of national teacher organizations and gained "international recognition as the face of American schooling." He served as Boston's Superintendent of public schools from 1856 to 1878 with one brief interlude and as a Massachusetts State Board of Education member from 1865 through 1872. Stankiewicz, 42-43. Philbrick also framed university education as an extension of secondary education. Simultaneously, he was involved in the founding of MIT, credited with the "germ of an idea for a school" in 1859 and advocated that a "department of drawing and design patterns, almost entirely neglected here [in the United States], was of great interest to the manufacturers of this country." Stratton and Mannix, 150. Philbrick signed Barton Rogers' 1861 proposal for the school and was later on MIT's committee on instruction, which likely hired Ware. William Barton Rogers, *Objects and Plan of an Institute of Technology: Including a Society of Arts, a Museum of Arts, and a School of Industrial Science* (Boston: John Wilson and Son, 1861), 29. Philbrick was also the brother of Ware's first business partner, Edward Southwick Philbrick. Jacob Chapman, *A Genealogy of the Philbrick and Philbrook Families, Descended from the Emigrant, Thomas Philbrick, 1583-1667* (Exeter: Exeter Gazette Steam Printing House, 1886).

promoted training in skills useful to textile manufacturing.¹³⁴ Philbrick packaged drawing as a valuable, utilitarian skill, an integral component in literacy, and a tool that trained perception and improvement in all facets of life. As he argued, “Everybody needs a well-trained eye and a well-trained hand.”¹³⁵

The inclusion of drawing education into school curricula required the training of teachers. As mentioned earlier, the promotion of drawing education included the hiring of Smith and the formation of a state school in “industrial drawing,” a proposal which became the Massachusetts Normal Art School (MNAS).¹³⁶ Smith negotiated drawing’s simultaneous identity as an

¹³⁴ Education historian Michael B. Katz illustrated how under Philbrick, from 1850 to 1876, Boston public schools became bureaucracies. Part of this process included the hiring of supervisors and special instructors. Walter Smith became the primary supervisor in drawing education as well as the MNAS’ principal, and the city hired six special instructors in drawing who traveled among several schools to teach only their subject. The hiring of special instructors in drawing implied that general education teachers’ training was insufficient in this area and validated the education at MNAS. Special instruction focused overwhelmingly on sewing: in 1876, there were 26 special instructors in grammar schools in sewing, which was authorized as a school subject in 1854. Michael B. Katz, “The Emergence of Bureaucracy in Urban Education: The Boston Case, 1850-1884: Part I,” *History of Education Quarterly* 8, no. 2 (Summer 1968): 159-160.

¹³⁵ School report quoted in Isaac Edwards Clarke, *Art and Industry. Education in the Industrial and Fine Arts in the United States*, vol. 1 (Washington: Government Printing Office, 1885), 206. Nativist and classist arguments for drawing instruction in Boston in the 1840s and 1850s, such as educator Horace Mann’s plea for drawing instruction to develop “pure taste” and the Boston School Committee’s urging to protect students against “low” and “debasing” pleasures, failed to bring drawing education to a large audience. See Michael B. Katz, *Class, Bureaucracy, and Schools: The Illusion of Educational Change in America* (New York: Praeger Publishers, 1975), 38-41. While nativism here was against the Irish Catholic, the nativist arguments by textile manufacturers later in this chapter were against predominantly English and German immigrants who brought both skills and socialist ideas. Philbrick saw little evidence of actual implementation of drawing education in the 1850s and continued to advocate for its insertion. Stankiewicz, 31-32. By the 1860s, drawing training was already an expanding market, in which hundreds of American drawing manuals packaged drawing as common knowledge that served various applications in life. Peter C. Marzio, *The Art Crusade: An Analysis of American Drawing Manuals, 1820-1860* (Washington, DC: Smithsonian Institution Press, 1976). Having reflected on the transformed notion of drawing education in 1872, Philbrick noted that educators’ previous perception of drawing as a “fine art, an accomplishment, an educational luxury for the wealth classes” no longer applied. Philbrick, *Thirty-Seventh Annual Report of the Board of Education, Together with the Thirty-Seventh Annual Report of the Secretary of the Board. 1872-1873*, 202. The utilitarian argument for drawing, rather than an artistic advocacy for increased ornamentation in production, justified the school committee’s increasing expenses towards the hiring of drawing instructors and supervisors. By 1864, drawing was a required subject in Boston schools, and the school committee complained in 1868 that drawing, unlike its seemingly frivolous counterpart music, required even more recognition. Stankiewicz, 31-32. In 1874, Philbrick declared the Pestalozzi-inspired principle, “Without drawing there can be no writing.” John Dudley Philbrick, *Semi-Annual Report of the Superintendent of Public Schools of the City of Boston* (Boston: Rand & Avery, 1874), 43. In practice, this meant that students copied engravings to learn handwriting, a method they would have learned from prior drawing training. Stankiewicz, 30.

¹³⁶ Smith, “Education in the Industries and Arts in Massachusetts.”

industrial skill and as a cultivator of taste. He appealed to manufacturers and adopted their pragmatic rhetoric by arguing that the school would cost less than the tithes manufacturers pay annually for imported designs and that drawing education would increase the quality and value of industrial products.¹³⁷ At the same time, in a room full of architects, Smith promoted drawing as part of educating the public in art, a trained appreciation that would increase regard for the architectural profession.¹³⁸ The MNAS was marketed as part of the same movement to found the Museum of Fine Arts (MFA), which was printed as the frontispiece of Smith's first American text-book, *Art Education, Scholastic and Industrial*.¹³⁹

Perkins, Ware, and Smith framed MNAS' curriculum as the appropriation of the English model and the promotion of European fine arts sensibilities. They compiled a journal issue meant to serve as a text-book for MNAS students.¹⁴⁰ The articles featured textual discussions on the European history of ornament and credited research to contemporaneous texts from England.¹⁴¹ Ware was a founding instructor at MNAS, where he lectured on architectural drawing and building construction. In the journal, he supplemented his article on charcoal drawing with drawings by MIT Architecture students.¹⁴² One image contained four steps in drawing a vase from the MIT students' first week of class. (Figure 1) The first drawing included only a measured outline of the object. The next drawing quantified its shadows geometrically. Shading

¹³⁷ Ibid.

¹³⁸ This lecture took place in MIT's architecture department rooms for the American Institute of Architect's annual convention. Smith supplemented his lecture with drawings that illustrated different art education systems from Europe. Walter Smith, "Address by Mr. Walter Smith," *Proceedings of the Fifth Annual Convention of the American Institute of Architects, Held in Boston, November 14th and 15th, 1871*. (New York: Committee on Library and Publications of the American Institute of Architects, 1872), 58.

¹³⁹ Walter Smith, *Art Education, Scholastic and Industrial* (Boston: J.R. Osgood & Company, 1872), frontispiece.

¹⁴⁰ Perkins was president of the Massachusetts Art Teachers' Association, and the journal volume was organized by Ware's student, Abraham Hun Berry. Charles Callahan Perkins, "Preface," *The Antefix Papers. Papers on Art Educational Subjects, Read at the Weekly Meeting of the Massachusetts Art Teachers' Association, by Members and Others Connected with the Massachusetts Normal Art School* (Boston: Printed for Private Circulation, 1875), iii-v.

¹⁴¹ The first authority listed was Owen Jones' *Grammar of Ornament*. *The Antefix Papers*.

¹⁴² William Robert Ware, "Charcoal Drawing," *The Antefix Papers*, 223-239.

was then softened with charcoal into a naturalistic portrayal of the object. This image reinforced that beneath daily visual perception was linear geometry, supporting mechanical drawing instruction at MNAS and at MIT. Ware argued that in successful drawings of textiles, “the sharp edges and flat planes could be discerned even in the softest folds of the draperies.”¹⁴³ Drawing education taught more than precision, however; drawing served as a tool through which the artist – both the painter and the industrial designer – exercised “judgment and taste.”¹⁴⁴

The insertion of drawing into the general curriculum advanced the co-education of adults and allowed for increased entrance by educated women into limited roles in the workforce. MNAS and MFAS were coeducational from the outset, with MNAS hiring some female instructors. Smith advocated for coeducation by claiming that women have a better temperament for teaching and for art teaching specifically. He wrote, “There are also many branches of art workmanship requiring delicate fingers and native readiness of taste, which could be better performed by women than by men.”¹⁴⁵ Smith’s arguments parroted the solidified gender roles of women as the “gentle sex” and men as “muscular strength.”¹⁴⁶ Women were allowed to teach school children, often at the elementary level, but were heavily supervised by male authorities.¹⁴⁷

Drawing as Elite Leisure

The cultivation of visual perception was also furthered by the formation of the Museum of Fine Arts (MFA) by the same cast of characters. The Boston Brahmin-edited *Boston Daily Advertiser* lauded the involvement of the ASSA’s art education sub-committee, of which

¹⁴³ Ware, “Charcoal Drawing,” 227.

¹⁴⁴ This purpose was contrasted with the uses of photography. Ibid, 231.

¹⁴⁵ Smith, “Education in the Industries and Arts in Massachusetts.”

¹⁴⁶ Ibid.

¹⁴⁷ Stankiewicz, 8.

Perkins, Ware, and Cabot were members, as well as the simultaneous efforts of the trustees of the Boston Athenaeum, including John Amory Lowell.¹⁴⁸ The groups gathered together at a larger meeting of the ASSA, in which “representatives” from Harvard, MIT, the Athenaeum, and the Boston Public Library were present to form the MFA.¹⁴⁹ A new committee for the development of an art museum was created, with John Amory Lowell, Perkins, and Ware as members.¹⁵⁰ Barton Rogers and Amory Lowell were among the representatives who filed the act of incorporation.¹⁵¹ In an attempt to integrate the museum’s programming with the public school system, Philbrick was on the museum’s original board.¹⁵² MIT Architecture students later exhibited architectural drawings at the MFA as part of a collaboration with the Boston Art Club, the Boston Society of Architects, and the schools at the MFA.¹⁵³

While the Massachusetts network of drawing education advocates promoted drawing as an industrial language, this group simultaneously encouraged drawing as an elite act of leisure. The Museum of Fine Arts founded its School for Drawing and Painting (MFAS) in 1876, and Perkin’s was its first President while Ware was its first Secretary of the Board. At the MFAS, artistic education allowed its elite clientele to appreciate the museum’s collections of primarily European paintings and casts. The MFAS promoted itself in reports as providing training for the next great American painter, yet it primarily catered to middle- and upper-class Bostonian

¹⁴⁸ “A Museum of Art in Boston,” *Boston Daily Advertiser* 115, no. 2 (January 14, 1870).

¹⁴⁹ *Ibid.*

¹⁵⁰ *Ibid.*

¹⁵¹ *Ibid.*

¹⁵² For complete history of the MFA, see Walter Muir Whitehill, *Museum of Fine Arts, Boston: A Centennial History*, 2 vols. (Cambridge: Belknap Press, 1970) and Hina Hirayama, *With Éclat: The Boston Athenaeum and the Origin of the Museum of Fine Arts, Boston* (Boston: The Boston Athenaeum and the University Press of New England, 2013).

¹⁵³ *Museum of Fine Arts, Catalogue of an Exhibition of Contemporary Art, Held Under the Direction of the Boston Art Club, the Boston Society of Architects, and the Schools at the Museum* (Boston: Alfred Mudge and Son, 1879). Preserving his Unitarian connections, Ware invited Ralph Waldo Emerson and his family to the exhibition. Ellen T. Emerson to William Robert Ware, 1 December 1879, MC14, Box: 2, Folder: 19, William R. Ware Papers, Massachusetts Institute of Technology, Libraries, Department of Distinctive Collections, Cambridge, Massachusetts.

women.¹⁵⁴ An afternoon drawing class for women was an act of leisure reserved for the elite. In the school's third year alone, 120 women attended the day class, segregated from the 40 men who also attended.¹⁵⁵ Most of the students came from economic backgrounds with disposable incomes, since of the 160 daytime students, only 10 students were on full scholarship and around 20 students paid half tuition.¹⁵⁶ There were between 50 and 60 students in the evening classes, of which there is little information on the gender and class of the student population.¹⁵⁷ Like M.I.T.'s architectural program and the state-sponsored evening drawing classes, the MFAS' courses did not have a consistent student body. For example, only five students attended the complete, nine-month program in 1879.¹⁵⁸

At the MFAS, Ware served as an enforcer of decorum, linking art education to taste, class, and refinement. Although Ware invited his MFAS students to sit in on his lectures on perspective and architectural history at MIT, Ware was primarily a supervisor rather than an instructor.¹⁵⁹ He was described by former MFAS student Winthrop Peirce as a civilizing figure who enforced etiquette as well as a quirky mentor who took male students out to lunches. The student noted that eating lunch while at the drawing board was "pronounced" by Ware as "undignified, and it was [therefore] forbidden."¹⁶⁰ Ware was the ever-observant eye keeping everyone in line. He was the recording secretary and wrote the school's publications, including

¹⁵⁴ Museum of Fine Arts School of Drawing and Painting. *Third Annual Report of the Permanent Committee in Charge of the School* (Boston: Alfred Mudge & Son, 1879), 3-4.

¹⁵⁵ *Ibid.*, 16.

¹⁵⁶ *Ibid.*

¹⁵⁷ *Ibid.*

¹⁵⁸ *Ibid.*

¹⁵⁹ William Robert Ware, "Elements of Perspective," in *President's Report for the Year Ending Sept. 30, 1876* (Boston: A. A. Kingman, 1877), 67-69.

¹⁶⁰ H. Winthrop Peirce, *The History of the School of the Museum of Fine Arts, Boston 1877-1927* (Boston: Museum of Fine Arts, 1930), 118,

the school's Rules and Regulations.¹⁶¹ Ware also warned students "in danger of being dropped."¹⁶² Imbued with authority, Ware was "robed as Sophocles" for an event, demonstrating that "there was at least one middle-aged Yankee who could come as a Greek statue, and look the part."¹⁶³ (Figure 2) Sophocles was an ideal choice for Ware as the embodiment of prestige and artistic prowess.¹⁶⁴ This act also copied former Harvard President Jared Sparks, who dressed up as Sophocles while Ware was a Harvard undergraduate.¹⁶⁵ Ware's actions paralleled a gradual shift in the MFA's priorities, as the museum transitioned from promoting general education to enforcing elite notions of taste and decorum, which included a dress code. Anything even vaguely mechanical in connotation was discarded for the promotion of fine art.¹⁶⁶

Conclusion: Drawing and Architectural Education

While drawing was characterized as an industrial skill for working classes and an ornamental activity for upper classes, it was simultaneously characterized as a "lucrative profession."¹⁶⁷ As mentioned above, drafters were among the highest paid wage earners. As drawing education became more accessible, architectural educators including Ware had to

¹⁶¹ Notebook for the Records of the Permanent Committee 1876-June 18, 1990, UA133.001799, Permanent Committee, Alumni Association bylaws, SMFA annual reports, Secretary's Records 1875-1895, 2019 accessions, 1875-2016, School of the Museum of Fine Arts Records, 1875-2020, Tufts University Archives, Medford, Massachusetts.

¹⁶² Permanent Committee Index Card, UA133.001.002, The Index of Administration and Committee Meetings, 1879-1930, January 2017 accession, 1877-2010, School of the Museum of Fine Arts Records, 1875-2020, Tufts University Archives, Medford, Massachusetts.

¹⁶³ Peirce, 20.

¹⁶⁴ Sophocles was born from a wealthy family and was highly respected as a successful playwright. He won almost all of the competitions he entered and was highly praised for his artistic skill. Like Ware, Sophocles was rumored to engage in homosexual relationships.

¹⁶⁵ Letter by Ware quoted in Grace Williamson Edes, *Annals of the Harvard Class of 1852* (Cambridge: Harvard University Press, 1922), 322.

¹⁶⁶ Whitehill.

¹⁶⁷ Walter Smith, "Art Education, and the Teaching of Drawing in Public Schools," in *Thirty-Fifth Annual Report of the Board of Education, Together with the Thirty-Fifth Annual Report of the Secretary of the Board* (Boston: Wright & Potter, 1872), 135.

negotiate an architect's identity from the drafter and the designer. As a result, Ware simultaneously promoted drawing as part of general education while he advocated for architectural drawing as specialized knowledge reserved for a select group.

The public promotion of drawing education had the potential to increase the pool of qualified architectural students at MIT. Philbrick envisioned that the advancement of drawing education generally culminated in the success of students at MIT.¹⁶⁸ Similarly, Ware wrote in support of the Massachusetts Drawing Act, “[I]f there is, as there always must be, artistic talent of a higher order lying undeveloped in the community, the general difficulty of sound instruction in Drawing is a sure way of finding it out and of making it serviceable.”¹⁶⁹ Without proper instruction, people of such skill remained undiscovered and “wasted in inefficiency and neglect.”¹⁷⁰ Nevertheless, only a few students who were awarded prizes at the state annual drawing exhibitions attended MIT during Ware's tenure, despite the fact that Ware adjudicated these exhibitions and that many of the prize-winning drawings were architectural drawings.¹⁷¹

¹⁶⁸ John Dudley Philbrick, “Abstracts of School Committees' Reports. Suffolk County. Boston,” in *Thirty-Fifth Annual Report of the Board of Education, Together with the Thirty-Fifth Annual Report of the Secretary of the Board* (Boston: Wright & Potter, 1872), 249.

¹⁶⁹ The campaign for the Massachusetts Drawing Act included the Board of Education's formation of a special committee, which included Philbrick, and the publication of a pamphlet with expert opinions. The pamphlet was printed and placed on the Massachusetts legislators' seats to sway the vote. After the act passed, the pamphlet was further edited to include nine opinions of approved drawing education experts, including Ware. “Appendix to Report of Secretary,” in *Thirty-Fourth Annual Report of the Board of Education, Together with the Thirty-Fourth Annual Report of the Secretary of the Board* (Boston: Wright & Potter, 1871), 163-217.

¹⁷⁰ Ware, “Paper of Prof. Wm. R. Ware,” 183.

¹⁷¹ In the first exhibition, a “T. Smith” from a Boston school received an “Honorable Mention” for his “Original” drawing under the category, “Ship Draughting.” Thomas L. Smith attended MIT in the Architecture department from 1878 to 1879. Also in the first exhibition, “N. Gardner” from a school in Springfield, Massachusetts received an “Honorable Mention” for his “Original” drawing under the category, “Mechanical Drawing.” Newman W. Gardner was a student at MIT in the Architecture department from 1872 to 1873. Perkins, Ware, and Smith. In the third exhibition, “E. Dewson” from Boston's Starr King Classes received an “Excellent (for set)” for “Original” drawings under the category, “Architectural.” At the same exhibition, “E. Dewson” from Appleton Street Classes received an “Honorable Mention” for an “Object” drawing under the category, “Freehand.” Edward W. Dewson was a student in MIT Architecture from 1868 to 1869, before the exhibition, and from 1874 to 1875, after the exhibition. H. H. Kendall from Boston's Starr King Classes received an “Honorable Mention” from his “Flat Copy” drawing under the category, “Architectural.” Henry Hubbard Kendall attended MIT Architecture from 1872 to 1873, a year before the exhibition. Charles Callahan Perkins, William Robert Ware, Walter Smith, and Charles D. Bray, “Report of the State Board of Examiners, on the Third Exhibition of Works from the Free Industrial Drawing Classes of the

Unfortunately, these drawings are no longer available, so it is unknown how the high school drawings compared with the drawings of MIT Architecture students, displayed at the same exhibition. Since the drawings of the Lowell Course of Practical Design, MNAS, and MIT Architecture were ultimately segregated from the rest of the drawings and exhibited at the Boston Art Club, it is likely that these drawings differed substantively from the rest of the exhibition. This separation also revealed the organizer's desire to differentiate the public school system and the elite Boston cultural institutions. Architectural drawings were further delineated as "advanced architectural" and "beginners, architectural."¹⁷²

Architectural drawing was packaged as advanced and specialized, and Ware advocated for selectivity in its instruction. Chapter 2 discusses the MIT curriculum and how the prestige of the architect relied on intangible factors divorced from the manual act of drawing. Chapter 3 illustrates how architectural drawing was promoted as part of the high school curriculum and above in new publications. At MNAS, Ware advised his students, who were aspiring art educators, that architectural drawing be taught only in the evening schools.¹⁷³ It is unknown whether the state-sponsored evening drawing classes in the 1870s had the same entrance restrictions as their Lowell-sponsored precedent in the same rooms in the 1860s. If so, an evening student was more likely to be older, male, white, American-born, and employed. Given

State of Massachusetts," in *Thirty-Eighth Annual Report of the Board of Education, Together with the Thirty-Eighth Annual Report of the Secretary of the Board. 1873-74* (Boston: Wright & Potter, 1875), 71-76. There were no overlaps among MIT Architecture students and awardees from the second and fourth exhibitions. Massachusetts State Board of Examiners. There were no students who were awarded prizes at the seventh exhibition who attended MIT's Architecture classes. "Exhibition of Free Industrial Schools," *Boston Daily Advertiser* 131, no. 144 (June 18, 1878) and "Industrial Drawing," *Boston Daily Advertiser* 131, no. 145 (June 19, 1878). MIT was not mentioned in an article about the eighth exhibition, and none of the mentioned students in the "advanced architectural" drawings were current or future MIT students. "Free Drawing Exhibition," *Lowell Daily Citizen* 29, no. 7160 (June 3, 1879).

¹⁷² "Free Drawing Exhibition."

¹⁷³ MNAS Lecture on October 18, 1875. Abraham Hun Berry, Student Notes from Architectural Courses Taught by William R. Ware at MIT and the Massachusetts Normal Art School, 1872, MC 172, William R. Ware Papers, Massachusetts Institute of Technology, Libraries, Department of Distinctive Collections, Cambridge, Massachusetts.

his enforcement of etiquette at the MFAS described above, Ware likely sought architecture students of a higher class than a typical mill worker.

In addition, the nativist arguments in favor of drawing education benefitted Ware, who successfully landed employment in three new cultural institutions as an American-born supervisor. Although he alluded to the “evils” of the state’s literary-focused education, Ware likely meant what Yale professor Thomas Bail explicitly complained about when advocating for the Drawing Act: “Why is it that a majority of our apprentices are of foreign parentage? Why is it that American boys are growing too proud to ‘learn a trade’?”¹⁷⁴ Ware also advocated for an American-born “schoolmaster” who supervised drawing students in evening schools with French, German, or English “assistants to give the instruction.”¹⁷⁵ He adopted this strategy in every institution at which he taught. At MIT, Ware hired French architect Eugène Létang to serve as his assistant in the architecture department. English professors primarily taught drawing at MNAS, whereas Ware primarily advised students and lectured.¹⁷⁶ As described above, Ware supervised students at the MFAS while a German professor taught painting.¹⁷⁷

Ware advocated for the validity of the architectural profession through conflicting portrayals of drawing. He argued that drawing education supported the architectural profession as a whole, since it brought “manual skill again into repute and counteract[ed] the growing disposition to discredit every means of livelihood that does not consist in ‘brain-work’ merely.”¹⁷⁸ In contrast, Ware also characterized drawing as an intellectual skill, a “language”

¹⁷⁴ Louis Bail, “Mr. Bail’s Letter,” in *Thirty-Fourth Annual Report of the Board of Education, Together with the Thirty-Fourth Annual Report of the Secretary of the Board* (Boston: Wright & Potter, 1871), 187.

¹⁷⁵ Ware, “Paper of Prof. Wm. R. Ware,” 185.

¹⁷⁶ Berry.

¹⁷⁷ Peirce.

¹⁷⁸ Ware, “Paper of Prof. Wm. R. Ware,” 183.

through which ideas were conveyed.¹⁷⁹ The unifying thread among the formation of multiple Boston institutions and the transformation of general education in Massachusetts was the championing of drawing as a prized skill, whether at work or at home. Drawing translated perception onto paper, but it was also an instrument with which to embellish and to create. Drawing's identity was malleable, and as discussed in the second chapter, Ware prioritized other aspects of an architect's identity upon which to elevate the profession.

¹⁷⁹ Journal, 1849 – 1871, Box: 2, Folder: 11, William R. Ware Papers, Massachusetts Institute of Technology, Libraries, Department of Distinctive Collections, Cambridge, Massachusetts.

Chapter 2: Ware's Gentleman Architect and His Student Drafters

The establishment of architectural education in universities required the transformation of the very definition of the architect. In the postbellum United States, the role of an architect was self-defined rather than a standardized, licensed occupation. An “architect,” in fact, was a title that carpenters and builders bestowed upon themselves after years in the building industry.¹⁸⁰ The distinguishing title “architect” yielded economic benefits: architects were paid significantly more than builders and carpenters and worked fewer hours per week.¹⁸¹ Ware himself used the term “architect” to advertise his first firm, “Philbrick & Ware,” in Boston newspapers, although Edward S. Philbrick was more frequently titled a “civil engineer” specializing in local railroad construction.¹⁸² Nevertheless, Ware complained in his published manifesto on architectural education in 1865, “The [architectural] profession is, at present, in the hands of mechanics...of contractors and superintendents, who are mechanics with a talent for affairs, and many of whom take the name of architects.”¹⁸³ Eager to distinguish the architect from the mechanic, Ware provoked the following question: Who was truly an “architect,” and how would architectural education foster this revised characterization?

Historian Burton J. Bledstein linked the midcentury conception of the American university to the contemporaneous search for a middle-class identity. He described these

¹⁸⁰ This history can be found in Mary N. Woods, *From Craft to Profession: The Practice of Architecture in Nineteenth-Century America* (Berkeley: University of California Press, 1999) and Dell Upton, *Architecture in the United States* (New York: Oxford University Press, 1998).

¹⁸¹ Massachusetts Bureau of Statistics of Labor, *Second Annual Report of the Bureau of Statistics of Labor, Embracing the Account of Its Operations and Inquiries from March 1, 1870, to March 1, 1871* (Boston: Wright & Potter, 1871), 347.

¹⁸² One advertisement can be found in “Business Cards. E. S. Philbrick & W. R. Ware,” *Boston Daily Advertiser* 95, no. 42 (February 18, 1860). Edward Clarke Cabot is listed as a reference. Ware and Philbrick’s business relationship is discussed in the introduction, but for biological information on Philbrick: Jacob Chapman, *A Genealogy of the Philbrick and Philbrook Families, Descended from the Emigrant, Thomas Philbrick, 1583-1667* (Exeter: Exeter Gazette Steam Printing House, 1886).

¹⁸³ William Robert Ware, *An Outline of a Course of Architectural Instruction* (Boston: John Wilson and Sons, 1866), 11.

movements as a symbiotic relationship that led to the professionalization of labor.¹⁸⁴ Bledstein's analysis generalized its findings from analyses of the most prestigious private and public institutions of the time and focused exclusively on the viewpoints of the university presidents rather than on the students' perspectives.¹⁸⁵ While he may have exaggerated the importance of a university education in the process of professionalization, since no occupation required a bachelor's degree nor considered it an asset, this history reveals the ambitions of university leaders at the time.¹⁸⁶ This chapter argues that there were a concurrent set of ambitions and discrepancies in the formation of MIT's architecture department under Ware. As an analysis of his lectures illustrate, Ware positioned the architect as the arbiter of taste, an authoritative role that would, in theory, elevate the architect above the contractor as well as validate architecture as a middle- to upper-class profession. This process of validation included divorcing architectural design from manual labor and crafting the architect's work as an intellectual activity. Yet, Ware's department trained underlings rather than architects, supplying local firms with drafters and assistants. Ironically, Ware's cultivation of the architect as the gentlemanly professional precluded his own students from immediately entering the profession and strengthened the divide between architect and drafter.

¹⁸⁴ Despite its flaws, Bernstein's history was still cited in 21st-century histories as the primary source on American professionalization in the 19th century. Burton J. Bledstein, *The Culture of Professionalism: The Middle Class and the Development of Higher Education in America* (New York: W. W. Norton & Company, 1976).

¹⁸⁵ Bledstein ignored adult educational institutions that were not universities, such as mechanics' institutes and normal schools. In addition, a significant counterargument can be found in David Allmendinger's work, which illustrated how New England universities in the antebellum period were opportunities for social climbing by poor, white men. David Allmendinger, *Paupers and Scholars: The Transformation of Student Life in Nineteenth-Century New England* (New York: St. Martin's Press, 1975).

¹⁸⁶ Roger L. Geiger, "The Era of Multipurpose Colleges in American Higher Education, 1850-1890," in *The American College in the Nineteenth Century*, edited by Roger L. Geiger (Nashville: Vanderbilt University Press, 2000), 152.

The Origins of MIT Architecture: A School for Assistants

Despite its hyperbolic language about the future glory of American architecture, Ware's 1865 manifesto, *An Outline of a Course of Architectural Instruction*, laid out his new department as an educational program for architects' assistants. In this document, Ware proposed that students simultaneously work part-time in architecture offices.¹⁸⁷ This idea became a reality: under Ware, the overwhelming majority of MIT Architecture students were "Special Students," who studied part-time while working in offices and did not seek a degree.¹⁸⁸ On the one hand, this format could be considered a marketing ploy, since architecture was not established enough as a degree program to attract four-year students who could afford to study full-time. Ware ostensibly could have been attracting the only students who would be interested in architectural training but could not afford the full program. At the same time, a non-degree program attracted older students who already had bachelor's degrees. Several MIT students, like Ware, went to Harvard for their bachelor's degree and trained as an architect afterwards.¹⁸⁹ Architect Louis Sullivan reflected that while he was at MIT in the architecture department, there were "rich men's sons," such as fellow student Arthur Rotch, as well as "poor men's sons," such as Ware's nephew, who "worked hard to become bread-winners."¹⁹⁰ On the other hand, linking architectural education at MIT to office work was economical for architects, since they could spend less time and effort training their assistants. Ware argued that the need for multiple drawings was increasing, and therefore "any prosperous architect must leave nine drawings out

¹⁸⁷ Ware, 10.

¹⁸⁸ The student names and delineations are listed in the annual course catalogues.

¹⁸⁹ John Andrew Chewing, "Appendix D. M.I.T. Architecture Students, 1868-81: Backgrounds," in "William Robert Ware and the Beginnings of Architectural Education in the United States, 1861-1881," PhD Dissertation, Massachusetts Institute of Technology, 1986, 413-431.

¹⁹⁰ Louis H. Sullivan, *The Autobiography of an Idea* (New York: Press of The American Institute of Architects, Inc., 1922), 186.

of ten to be made entirely by his subordinates.”¹⁹¹ That architect must supervise his assistants, and according to Ware, this time hindered the architect’s own work, which required “unincumbered leisure and mind at ease.”¹⁹² At the same time, his proposal may have meant to alleviate the concerns of current, self-taught architects, who worried about their loss of credibility with the advent of formalized training. Due to these various reasons, Ware leveraged the name and status of MIT, even in its nascent stages, for the promotion of “competent assistants and well-informed and trustworthy draughtsmen, furnished with properly graduated diplomas of established reputation.”¹⁹³

His proposal also validated his own appointment, since Ware was relatively inexperienced in architecture and received little training in draftsmanship.¹⁹⁴ He initially discussed MIT’s department as potentially analogous to the operations at the École des Beaux-Arts. At the time of his early proposals, Ware had only secondhand knowledge of the École and its operations.¹⁹⁵ He envisioned that MIT Architecture could be like the École’s School, where only lectures and examinations would take place. Ware falsely analogized the École’s atelier system to the local office network, as if the majority of the design and drafting education could

¹⁹¹ Ware, 11.

¹⁹² Ibid, 12.

¹⁹³ Ibid, 13.

¹⁹⁴ Ware completed his civil engineering degree at Harvard’s Lawrence Scientific School. He received further training as a drafter in Edward Clarke Cabot’s architectural office and then spent less than a year at the atelier of New York-based and École-trained architect Richard Morris Hunt. At the time of his appointment, Ware had designed two completed buildings, and Ware & Van Brunt were awarded two more commissions, including Harvard’s Memorial Hall. He had comparatively less experience than some of his Boston contemporaries, such as architect Henry Hobson Richardson, who returned to the United States in 1865 after training at the École des Beaux-Arts. For a summary of Ware’s training, see: Kimberly Alexander-Shilland, “Ware and Van Brunt: Architectural Practice and Professionalization (1863-1881),” PhD Dissertation, Boston University, 1999.

¹⁹⁵ In 1866-1867, Ware traveled around Europe and spent time studying in an atelier at the École des Beaux-Arts. Beforehand, most of his knowledge would have been from his former mentor, Richard Morris Hunt, who studied for several years at the École and was the first American to do so. Unfinished Biography, Typescript, Undated, William R. Ware Papers, Massachusetts Institute of Technology, Libraries, Department of Distinctive Collections, Cambridge, Massachusetts.

take place at work.¹⁹⁶ This misunderstanding of the atelier system implied that Ware envisioned the majority of a student's training to take place at an office. At the same time, this format prioritized the lectures, which were well-attended at MIT, unlike their optional counterparts at the École. Ware, as the primary lecturer, secured his own standing and continued employment. Paradoxically, drawing ability, championed at the École, was deemphasized in its teaching, left to architectural offices and to other MIT departments.¹⁹⁷

If much of the drafting training were to take place elsewhere, this system could explain why the architecture department shared some of its rooms with other departments. Some design training did ultimately take place at MIT, since Ware hired Eugène Létang as his assistant in 1872. While Ware lectured and supervised, Létang “had control of the architectural designing and drawing ever since [his hiring].”¹⁹⁸ Despite this design training, one drawing room was shared by architecture students and all fourth-year students.¹⁹⁹ Only a half an additional floor was allocated to architecture students, who were initially only 7 students in the 1868-1869 academic year but gradually grew to 46 students in the 1880-81 academic year.²⁰⁰ The public display of European precedents and access to intellectual knowledge were highlighted in the spatial arrangements. Two rooms consisted of the “Architectural Museum,” and another room was the “Architectural Library and Study Room.”²⁰¹ Unlike other department chairs, Ware

¹⁹⁶ Ware, 25-27.

¹⁹⁷ In regards to the full-time students in MIT's architecture department: “It will be seen that, with the single exception of mechanical drawing in the first year, there is no drawing, as such, taught in the architectural department. There is, however, considerable practice in drawing, which, of necessity, forms a part of the other studies.” In “Architectural Education in the United States: I. The Massachusetts Institute of Technology,” *The American Architect and Building News* 14, no. 658 (August 4, 1888), 47.

¹⁹⁸ Ibid.

¹⁹⁹ The floor plans are at the end of the catalogue and unpaginated. *Seventh Annual Catalogue of the Officers ad Students, and Programme of the Course of Instruction, of the School of the Massachusetts Institute of Technology, 1871-72* (Boston: A. A. Kingman, 1872).

²⁰⁰ Chewning, “Appendix B. M.I.T. Students: 1865-81, Class Sizes,” 406.

²⁰¹ *Seventh Annual Catalogue of the Officers ad Students, and Programme of the Course of Instruction, of the School of the Massachusetts Institute of Technology*.

initially did not have an allocated office. Like his students, he was relegated to his architectural firm.

The coming and going of students in MIT's architecture department under Ware suggested that the program was supplemental, a potential interlude between full-time employment or an addition to an office stay. Of the 234 students who studied in MIT's architecture department under Ware, 108 students enrolled for only one academic year, while 78 more students left after two years of study. Since the majority of students attended for only one year, it is likely that the special student program did not have a set curriculum.²⁰² 214 students left without a bachelor's degree. 29 students studied at MIT for 4 or 5 years total. 6 students studied at MIT for a year, took a gap of a year or more, and returned for another year of study.²⁰³ For these students, MIT's architecture department functioned as an interlude between employments. For the majority of students in the architecture department, the lure of employment was stronger than the need for a degree, particularly during a national recession from 1872 through 1878. A student's portfolio likely had a greater impact on securing an architectural job than degree conferral.

While MIT's department was useful training in preparation for the École's entrance examinations, the department was not entirely a feeder program for the École, as it has been formerly described.²⁰⁴ Part of this narrative was constructed by Sullivan, who described MIT's department as "but a pale reflection of the École des Beaux Arts."²⁰⁵ Of Ware's 234 students, 29

²⁰² A two-year curriculum was proposed in an issue of *The American Architect and Building News*. This was likely aspirational to get students to attend for an additional year. "Architectural Education in the United States: I. The Massachusetts Institute of Technology," 47.

²⁰³ These numbers and subsequently data in this chapter were derived from arithmetic based on the appendices of Chewning. Chewning, "Appendix C. M.I.T. Architecture Students, 1865-81: Alphabetical List," 407-412.

²⁰⁴ Chewning, 258-262.

²⁰⁵ As a result, Sullivan later studied at the École. Sullivan, 189.

were known to have continued their education for at least one year at the École.²⁰⁶ Impressed with the credential and the training, Ware was known to have encouraged his nephew, William Rotch Ware, to attend the École after his study at MIT. Ware's only enrolled female student in the department, Laura R. White, attended the École Centrale d'Architecture after her year-long study at MIT.²⁰⁷ While many more American architecture students went to the École des Beaux-Arts in the coming decades, eager for this esteemed credential, this training was not the primary purpose of MIT's architecture department under Ware.

Ware's Architect: The Gentleman in Charge

Ware framed architectural education through an aspirational definition of the architect as a technical, economic, and artistic arbiter. He introduced the architect in his 1871 MIT lectures as the synthesis of three traits, which became the three branches of training Ware provided: the mechanic, the professional man, and the artist.²⁰⁸ As the following analysis of Ware's lectures illustrate, Ware aspired that the architect be elevated to a status above the mechanic and equated with that of a Harvard-educated professional like himself. As Sullivan wrote of Ware's teaching in the 1870s, "Professor Ware conserved the worldly pose and poise of the cultural Boston of the time, –creating and maintaining thus an air of the legitimate and approved."²⁰⁹ As discussed in the introduction, Ware was eager to assimilate the architect to his elite Boston clientele.

²⁰⁶ Of the 29, 14 pupils studied under Emil Vaudremer, Létang's former instructor. Chewning, "Appendix E. M.I.T. architecture Students, 1868-81: Careers," 432-450.

²⁰⁷ Unsurprisingly, architecture was not yet available to her as a career. White became a teacher in Louisville. Chewning, 445. Female architects who landed professional architecture jobs emerged from MIT's department in the 1880s, notably Boston Brahmin and MFAS student Lois Lilley Howe of the all-female architecture firm, Howe, Manning, and Almy.

²⁰⁸ William Robert Ware, Journal, 1849-1871, MC4, Box: 2, Folder: 11, William R. Ware Papers, Massachusetts Institute of Technology, Libraries, Department of Distinctive Collections, Cambridge, Massachusetts.

²⁰⁹ Sullivan, 185.

Since the Massachusetts Drawing Act was passed and evening drawing classes for mechanics were in effect, Ware equated drawing with the mechanic. His definition of mechanical training included knowledge of building construction but highlighted drawing as a “manual skill” that every architect must have.²¹⁰ In a room full of drafting students, Ware characterized drawing as a physical labor rather than as an intellectual activity. The skill also did not distinguish the architect from the drafter. The act of drawing, therefore, was not the source of an architect’s artistic or monetary value.

Ware also treated an architect’s drawings as the private source of knowledge that should remain in the hands of the architect. He stipulated that drawings should remain the property of the architect and repeated that all copies must be returned by the client.²¹¹ Ware’s claim of ownership over drawings echoed the 1861 claim of American Institute of Architects (AIA) President Richard Upjohn in the lawsuit brought by Ware’s former teacher, Richard Morris Hunt.²¹² In addition to this legal victory for Hunt’s fee and his ownership over architectural drawings, AIA reports in the 1860s and 1870s discussed standards of compensation for preparatory and final drawings, meetings in which Ware participated.²¹³ The drawings were not a commodity to be sold but a personal property to be valued securely.

Despite his assertion that an architect was an artist, Ware’s MIT lectures prominently featured practical information needed for a Massachusetts building site and an architect’s contract. For example, he specified the amount that can be dug by one laborer per day as well as his wage. In the Boston area, soil was measured by the “square,” which equated to 2 cubic

²¹⁰ He also equated drawing with “practical skill” and “handiness.” Ware, *Journal*, 1849-1871.

²¹¹ *Ibid.*

²¹² Hunt sued his client for lack of payment and won a fee of 2.5% of construction costs. Leland M. Roth, *America Builds: Source Documents in American Architecture and Planning* (New York: Harper & Row, 1983), 216-231.

²¹³ See American Institute of Architects, *Proceedings of the Third Annual Convention of the American Institute of Architects, Held in New York, November 16th and 17th, 1869* (New York: Committee on Library and Publications of the American Institute of Architects, 1870).

yards.²¹⁴ Included in student Abraham Hun Berry's notes were multiple definitions of mechanical terminology, an in-depth look at materials and their various treatments, and additional design details. For the design of stables, for example, Ware specified the specific amount of hay per stall.²¹⁵ This training extended his early teaching in his Boston office. Architect and former student George Tilden reflected that Ware had sent his office students to lectures in other departments at MIT as well as to talks at the Massachusetts' Charitable Mechanics Association. Tilden also remembered Ware taking his students backstage at a Boston theater to examine the "ropes and reels and rigging, the wings and flies and footlights," or the mechanics of stage carpentry.²¹⁶

This imparting of mechanical knowledge was part of an attempted transference of power to the architect. After Ware published his 1865 manifesto, his friend, fellow architect, and AIA member Charles D. Gambrill poked fun at Ware's proposal by writing his own pamphlet as a rebuttal. Gambrill argued that Ware's training was both too intellectual and too mechanical. Gambrill pointed out that architects, including them, knew more information than the client needed and had "rejected essays" in their architectural portfolios that consisted of "superfluous knowledge...thrown away."²¹⁷ At the same time, concerning Ware's overly technical education, Gambrill chided,

You have ingeniously concealed beneath your eloquent rhetoric a stupendous scheme for humbugging the very public you pretend to serve. Under pretence, I say, of instructing these pupils, you propose to make your victims, (by the system of pumping you so

²¹⁴ From MIT Lecture, "Specifications + Working Drawings" on November 3, 1869. Abraham Hun Berry, Student Notes from Architectural Courses Taught by William R. Ware at MIT and the Massachusetts Normal Art School, 1872, MC 172, William R. Ware Papers, Massachusetts Institute of Technology, Libraries, Department of Distinctive Collections, Cambridge, Massachusetts.

²¹⁵ From MIT Lecture on Stables on March 8, 1871. Ibid.

²¹⁶ Dinner to Mr. Ware at the Tavern Club, Boston, November Twenty-eighth 1903, Box: 1, Folder: 33, William R. Ware Collection, Avery Architectural & Fine Art Library, Columbia University, New York, New York.

²¹⁷ Charles D. Gambrill, Professor W. R. Ware's Outline Dark Lined by Charles D. Gambrill, Correspondence, MIT, 1865-1866, Box: 1, Folder: 2, William R. Ware Papers, Massachusetts Institute of Technology, Libraries, Department of Distinctive collections, Cambridge, Massachusetts.

unblushingly recommend) ‘suck the brains’ of the mechanics for the benefit of the lazy master who shall meanwhile loll in his atelier and give himself up to the indicting of pamphlets!²¹⁸

While his zings were made in jest, his criticism reveals the underlying benefit for an architecture student’s training in the practical aspects of building construction. An architecture student learned mechanical skills not necessarily to implement them but to supervise other laborers.

Ware centered his definition of the architect around his notion of the “Professional Man,” which was how an architect “makes a livelihood” and further distinguished himself from the mechanic.²¹⁹ Ware defined this category as “a professional advisor” who is “paid for his advice” rather than for his drawings and as “an attorney or agent” who directed the building process.²²⁰ This definition cast the architect as an expert and as the client-facing actor in the building process. Ware’s stipulation also served as a corrective to his worry that in Boston, clients were “subordinating the architect to the contractor.”²²¹ He credited this subordination to the mistaken notion that architects were merely drafters and clerks who prepared drawings and contracts but did not have control over the building process.²²² As the professional man, Ware’s architect could reclaim control of the building site, even one not of his own designing. Ware told students to insert in specifications that either the architect would serve as the “Arbitrator” or an additional architect or surveyor would become the “Arbitrator” in a conflict on a building site.²²³ This assertion imbued the architect with legal authority both on and beyond his own building site.

²¹⁸ Ibid.

²¹⁹ Ware, *Journal*, 1849-1871.

²²⁰ Ibid.

²²¹ Ware, *An Outline of a Course of Architectural Instruction*, 12.

²²² Ibid. Such activity may suggest superintendence, which was stipulated in architects’ contracts until the 1880s when it was gradually removed. See Richard Michael Levy, “The Professionalization of American Architects and Civil Engineers, 1865-1917,” PhD Dissertation, University of California Berkeley, 1980. Gambrell condemned Ware for this particular comment and instead claimed that this “subordination of Architects to Builders” did not happen elsewhere. Gambrell.

²²³ From MIT Lecture on February 24, 1871. Berry.

Ware's argument for the architect as a professional akin to an attorney affirmed the elevation of an architect's status and salary. Ware was an anomaly in his Harvard graduating class as the sole architect and educator, although architects Henry Van Brunt, Charles D. Gambrill, and Henry H. Richardson would graduate later in the decade. The vast majority of Ware's classmates became doctors and lawyers.²²⁴ Doctors, lawyers, and ministers, at that time, unlike the contemporaneous status of an architect, were considered among what historian Samuel Haber characterized as the "gentlemanly professions" in 19th-century America.²²⁵ Transplanted from ideals of the English gentry, the American "gentlemanly profession" was the synthesis of education, class, and employment that formed an upper-class position not accessible to commoners.²²⁶ This definition and Ware's advocacy of the architect as a "Professional Man" validated the creation of MIT's architecture department as well as its inclusion of suggested coursework outside the department, such as knowledge in literature, philosophy, and science.²²⁷ Despite MIT's initial proposal to train both "the architect and builder" in the architecture department, an architect's university education gradually became a distinguishing trait from builders.²²⁸

The treatment of architecture as a profession also aspired to elevate the architect from his status as an underling to the same social standing as his client. Future MIT President Francis Amasa Walker lamented that American industry was composed of a fixed, hierarchical ladder of classes, which were linked to skill. Walker described the "artisan class" as including the

²²⁴ Grace Williamson Edes, "The Professions," in *Annals of the Harvard Class of 1852* (Cambridge: Harvard University Press, 1922), 341.

²²⁵ Samuel Haber, *The Quest for Authority and Honor in the American Professions, 1750-1900* (Chicago: University of Chicago Press, 1991).

²²⁶ *Ibid.*, x.

²²⁷ See course requirements in President's Reports, notably Massachusetts Institute of Technology, *Reports of the President, Secretary, and Departments. 1871-72* (Boston: A. A. Kingman, 1872).

²²⁸ *Ibid.*

“ordinary carpenter, mason, or smith,” workers who were skilled but could never rise above their present station.²²⁹ Walker proposed that the following rung were skilled laborers “for which a more elaborate education and larger training are necessary,” such as the mechanical engineer, who were, at the same time, “excluded from the professions.”²³⁰ These writings were the subject of his 1876 lectures at the Lowell Institute, the same year and place where Ware lectured on architecture. Ware’s emphasis on professionalization suggested similar thinking in inscribing architecture within stratified tiers of Boston society.

If an architect were considered a profession similar to a doctor or lawyer, then architecture would become an intellectual discipline. Ware encouraged that architects be paid for services rather than for goods. This structure of payment elevated the architect above the carpenter and builder, who were paid for their trade.²³¹ Furthermore, this categorization implied that architects had expertise, whose taste could triumph over even that of the client.²³² As discussed later in this chapter, Ware encouraged the notion that the architect was the sole controller of a building’s design. The more abstract the conception of design, the more in control of it an architect could be.

Ware’s term “Professional Man” was also specifically male. In the 1860s, Ware affectionately referred to his students in his private notes as “my boys.”²³³ In Ware’s original proposition for MIT’s department, he described the creation of a “manly” school for architectural

²²⁹ Francis Amasa Walker, *The Wages Question: A Treatise on Wages and the Wages Class* (New York: Henry Holt and Company, 1886), 195.

²³⁰ *Ibid.*, 195.

²³¹ Haber, xi-xii.

²³² As Haber writes, “The tradesmen and artisans gave their customers what they wanted. The professional gave his clients and patients what he thought was good for them.” *Ibid.*, xi-xii.

²³³ One example can be found in William Robert Ware, Letter to Emma Ware, 15 January 1865, Correspondence, William Ware, 1865-1866, Box: 2, Folder: 3, William R. Ware Papers, Massachusetts Institute of Technology, Libraries, Department of Distinctive Collections, Cambridge, Massachusetts.

education.²³⁴ In his private writings, Ware equated manliness with intellectual stimuli.²³⁵ During his 1871 lecture, women had not yet been accepted into MIT's department, nor had Ware begun to teach women in his lectures for students at the MFAS. The Massachusetts Bureau of Labor Statistics, however, noted that in 1876, women did work in Boston architecture offices.²³⁶ The report included the women along with the men as people who were "engaged in drawing and superintending," although the exact title and job functions for the female employees remain unspecified.²³⁷ These women were compensated less than the highest paid male employee (\$1,050 per year) but more than the lowest paid male employee (\$450 per year) at \$600 per year and worked the same number of hours.²³⁸ In 1871, the year of Ware's lecture, the Lowell Institute changed their policies to allow women to attend their courses, which included coursework in mechanical and life drawing.²³⁹ It is unknown how many women had access to these particular lectures, although Ware's lectures were often made available to multiple constituencies, from Massachusetts teachers to female painting students, over the course of the decade.

The third and final branch of Ware's education was the architect as an "Artist."²⁴⁰ An architect must create a design, and this design must be original. To be original was to be a genius, and Ware paraphrased his father's student and eventual rival Ralph Waldo Emerson for a definition of genius, who emphasized the importance of individualism and the act of translation

²³⁴ Ware, *An Outline of a Course of Architectural Instruction*, 23-24.

²³⁵ Ware, Journal, 1849-1871.

²³⁶ Massachusetts Bureau of Statistics of Labor, *Seventh Annual Report of the Bureau of Statistics of Labor, with an Appendix Containing a History of the Bureau, and of Labor Legislation in Massachusetts* (Boston: Wright & Potter, 1876), 347.

²³⁷ Ibid.

²³⁸ Ibid. In comparison, the average wage in Massachusetts for men and women combined in 1870 was \$422.10. Ibid, xi.

²³⁹ Mary Ann Stankiewicz, *Developing Visual Arts Education in the United States: Massachusetts Normal Art School and the Normalization of Creativity* (New York: Palgrave Macmillan, 2016), 19-20.

²⁴⁰ Ware, Journal, 1849-1871.

of oneself into action.²⁴¹ Specifically, Ware linked originality to the active state of the mind, as Ware considered architecture to be an intellectual undertaking rather than merely a manual labor. Ware continued, “It is only dullness that can copy + plagiarize, Active-mindedness + intelligence *can’t* copy.”²⁴² Through the rejection of copying, Ware divorced the architect from the drafter and the mechanic. Furthermore, this rebuffing aligned MIT’s program with the AIA’s perception of French architectural training over its English counterpart. Rather than learn through copying, considered the English method, Ware’s students were to design even at an early stage, like students at the École.²⁴³

Mimetic Design: Education Through Imitation

Ironically, despite his insistence that copying be “forbidden” in MIT’s architecture department, Ware trained his students through the continuous act of copying.²⁴⁴ Historical examples, physical buildings, and printed precedents were utilized in copying, sketching, and tracing, respectively, to build drawing and design skills. In his lectures, Ware interspersed technical descriptions of building components, such as a specific type of soil to use and the design of a staircase, with past examples.²⁴⁵ Sometimes he featured photographs and plates from MIT’s library, as he did when he lectured on the history of the Acropolis.²⁴⁶ Ware also incorporated a variety of publications in his courses. Berry cited European authors such as

²⁴¹ Ibid.

²⁴² Ibid. Emphasis and capitalization are by Ware. Emerson was popular in Ware’s circle. Cabot was an admirer of Emerson and wrote a biography on him. Perkins also quoted Emerson at length at the end of one of his art education lectures.

²⁴³ American Institute of Architects, 42.

²⁴⁴ Ware differentiated the “forbidden work of copying” with the “indispensable work of imitation” in his pedagogical manifesto. This distinction became semantic in execution. Ware, *An Outline of a Course of Architectural Instruction*, 19.

²⁴⁵ MIT lectures on November 3, 1869 and December 21, 1870, for example. Berry.

²⁴⁶ MIT lecture on February 20, 1871. Ibid.

English architect Joseph Gwilt, English architect and design theorist Owen Jones, French architect and restorer Eugène Viollet-le-Duc, Italian architect Sebastiano Serlio, English architect and art history professor Matthew Digby Wyatt, and Italian architect Giacomo Barozzi da Vignola.²⁴⁷ Referenced writings were from the Italian Renaissance or from Ware's lifetime.²⁴⁸ These references also included the direct copying of figures. For example, Ware paraphrased the written material and listed the measurements for roof construction from Gwilt's *Encyclopedia of Architecture*.²⁴⁹ Berry copied figures from this chapter in the margins of his notes, and then he set aside a new page for larger scale copies of Gwilt's engravings. (Figures 3-9)

Berry also used trace paper to further his training, a recent innovation in the United States.²⁵⁰ In one instance, he traced a set of Classical moldings, attached the trace paper to the notebook, and copied the same drawing below on the white page.²⁵¹ (Figure 10) This exercise was the reverse of art critic John Ruskin's exercise in *The Elements of Drawing*, in which Ruskin directed the student to first copy the outlines from a book, then trace that same image, and finally compare the two in order to correct the copy.²⁵² Both strategies suggest that meticulous imitation was an important method to learning design. In addition, Berry wrote that Ware encouraged the

²⁴⁷ MIT lectures on April 13, 1870, December 12, 1870, December 21, 1870, February 6, 1871, and on May 1, 1871. Ibid.

²⁴⁸ Ware traced architectural history back to Pharaonic Egypt, with notably gaps. He theorizes about Greek and Roman architecture and then skips to Medieval art and architecture beginning with Giotto. Ibid.

²⁴⁹ See sketches after MIT lecture notes on April 13, 1870. Ibid.

²⁵⁰ While translucent paper existed in the 18th century, the production of tracing paper in the 19th century was more extensively documented and patented, due to concurrent innovations in the paper industry as a whole. Tracing paper for professional use was produced by American mills beginning in 1862. American patents for trace paper, made of vegetable parchment, have been traced to 1871. Claude Laroque, "History and Analysis of Transparent Papers," *The Paper Conservator* 28, no. 1 (2004): 24.

²⁵¹ See trace paper after MIT lecture notes on May 29, 1871. Ibid. Sullivan recalled his tracing of the Classical Orders, treated as "eternal verities." Sullivan, 187.

²⁵² John Ruskin, *The Elements of Drawing*, 2nd ed. (London: Smith, Elder, & Co., 1857), 8. Ruskin's historical texts, rather than his drawing guides, were in the MIT architectural library: Catalogue of Books in the Architectural Library and of the Stereoscopic Slides in the Collection of the Department, 1880, Massachusetts Institute of Technology, Department of Architecture Records, AC-0260, Massachusetts Institute of Technology Department of Distinctive Collections.

use of trace paper instead of white paper when studying plans in particular and to avoid erasing.²⁵³ This copying suggests that the horizontal layout of a building was standardizable, with the design component to be found in the elevation.

Ware translated the act of copying as a historically grounded act of design. In his 1871 lecture notes, Ware claimed that as a result of Italian, Spanish, French, German, and English attempts at copying Roman architecture, each “produced five distinct + mainly original styles.”²⁵⁴ His idea suggested that design emerged as an extension of historical precedent. In fact, Ware told his students that Darwin’s theory of evolution was “applicable to Architecture,” meaning that architectural design progressed as time moved forward.²⁵⁵ One example Ware gave of Darwin’s applicability was the use of the mansard roof in America. His reasoning was that these roofs imitated “foreign taste,” were cheaper, and were more convenient than a sloping roof. The applicability of Darwin’s biological theory to the social sciences, known as Social Darwinism, was popular among 1870s thinkers. Social Darwinism was often utilized to justify *laissez-faire* capitalism, nationalism, racism, and eugenics. In the case of the mansard roof, Ware’s example was a capitalistic endeavor: mansard roofs disguised an additional story in buildings and, as a result, circumvented a tax on that upper story.

Ware’s additional example in his argument about the imitative nature of design was the “American portfolio of photographs at the R.I.B.A.”²⁵⁶ In 1867, Ware gifted to the Royal Institute of British Architects (RIBA) a collection of more than 60 drawings and photoprints of the works of American-based and American-born architects.²⁵⁷ Meant as a portfolio of AIA

²⁵³ MIT lecture on December 12, 1870. Berry.

²⁵⁴ Ware, Journal, 1849-1871.

²⁵⁵ MIT lecture on roofs on November 14, 1870. Berry.

²⁵⁶ Ware, Journal, 1849-1871.

²⁵⁷ This collection is at the RIBA British Architectural Library, including a part-isometric, part-perspectival design by Ware called “A Group of Shops in the Gothic Style” and photoprints of Ware & Van Brunt’s First Unitarian Church in Boston.

members, the works primarily featured photoprints of buildings in New York, Massachusetts, and Cincinnati. Primarily taken by professional photographers and sometimes submitted to state clerk offices as proof of construction completion, Ware's portfolio transformed the photoprints into an art collection.²⁵⁸ Each photoprint was mounted and labeled, and Ware curated them into a collection along the walls of the RIBA meeting room.²⁵⁹ All of the examples were revivalist styles, which included both Classical and Gothic inspirations. If the American translation of Gothic and Classical styles were considered original design, then Ware celebrated an ahistorical approach to architecture, in which the translation of historical styles represented "the condition of architecture of the United States."²⁶⁰

None of the American photoprints or drawings featured interiors. Instead, the building façade was an ornamental finish. The design of the surface was Ware's indicator of style, rather than overall layout, materials, or building techniques. This thinking echoed the English design principle of negotiating industrial delimitations in material by emphasizing "the surface as the bearer of the aesthetic."²⁶¹ As discussed later in this thesis, in his text-book, Ware depicted a wooden house that could be clad in a wood, brick, or stone exterior.²⁶² (Figure 11) The elevation became an envelope divorced from its contents.

Despite Ware's penchant for Gothic Revival styles in his own buildings, both Berry's lecture notes and MIT's early thesis collection suggest no preference by Ware for one style over another in an architect's training. Instead, style became interchangeable, an ornamental choice

²⁵⁸ The photographs are preserved individually at the RIBA Royal Architectural Library.

²⁵⁹ William Robert Ware, "On the Condition of Architecture and of Architectural Education in the United States," in *Papers Read at The Royal Institute of British Architects, Session 1866-67* (London: Royal Institute of British Architects, 1867), 81-90.

²⁶⁰ Ibid.

²⁶¹ Arindam Dutta, *The Bureaucracy of Beauty: Design in the Age of its Global Reproducibility* (New York and London: Routledge, 2007), 117.

²⁶² William Robert Ware, *Examples of Building Construction, with Suggestions to Teachers and Pupils for Their Practical Use* (Boston: L. Prang and Company, 1880), plate no. 43.

made by the architect for the given site or assignment. Ware taught Classical moldings, Gothic roofs, and local building practices in the same year of lectures.²⁶³ He advised his students to follow the precedent of English Architects who did not “construct decoration” but instead “decorate[d] construction.”²⁶⁴ Style became a secondary step, an aesthetic container for the building structure and its mechanical operations.

Photographs of the early years of MIT’s architecture department show that in the department’s first building, the classrooms for design were connected to the library. Students were found referencing and tracing books whilst working on their own designs. (Figure 14) While architectural history and the contents of MIT’s architectural library may have been perceived as a reservoir of applicable knowledge, Ware’s lyrics to one of MIT Architecture’s school songs, however, suggested a more flippant approach to historical precedent:

If you want a receipt for the popular mystery
Commonly known as the Style of Queen Anne,
You must first study up architectural history—
And then mis-remember as much as you can !

Drawings and photographs, prints and descriptions
(Sift all the meal out and keep all the bran) ;
Temples and tombs of the ancient Egyptians ;
Pagodas and such like about Hindustan ;

Taverns and windmills ; the Louvre and Tuileries ;
Gothic cathedrals from Cork to Milan ;
Domes and basilicas, prisons and pillories—
Houses of all sorts from here to Japan ;

The woodwork of Cairo, the stucco of Cordova ;
Charis and four-posters the ‘Mayflower’ brought over ;
Every old tumble-down staircase and mantel-piece ;
Sunflower, griffin, or peacock-eyed fan-tail piece,--
Don’t be particular as to the names,
Francis, Elizabeth, Henry or James :

²⁶³ Berry.

²⁶⁴ MIT lecture on January 30, 1871. Ibid.

Take of these elements all that's adaptable,
Likely to make habitations more hab'table ;
Turn aside neither for reason nor witticism,
And the thing that you get will be far beyond criticism.²⁶⁵

Ware's lyrics suggested that architectural history was merely a source of forms from which one could "sift" through and select one's favorites. The MIT architectural library, similarly, was painted as a receptacle from which to select and to discard. In Ware's words, these historical architectural "elements" were "adaptable."

Ware's Contract: The Architect over the Contractor

Given the overwhelming amount of construction in wood, Ware's Architect competed with carpenters, who often served as building contractors. After the Civil War, carpenters in Massachusetts subdivided into four trades, one of which was building construction.²⁶⁶ At the same time, the mechanization of production and the pressure to increase the speed of production transformed the carpentry industry. Rather than working under one employer for decades, by the end of the century a carpenter worked for over twenty employers a year.²⁶⁷ The carpenter transformed from an apprenticeship system into an itinerant worker, and brotherhoods and unions did not support the industry until the 1880s. This reorganization profited the architect, who could more easily assume a higher position in the building hierarchy.

Unsurprisingly, Ware's contract template for his students described the building process as hierarchical, with the architect as the primary liaison between the owner and the rest of the laborers. Ware described the role of the contractor as under the approval of the architect. The

²⁶⁵ Dinner to Mr. Ware at the Tavern Club, Boston, November Twenty-eighth 1903.

²⁶⁶ Mark Erlich, *With Our Hands: The Story of Carpenters in Massachusetts* (Philadelphia: Temple University Press, 1986), 25.

²⁶⁷ Ibid.

contractor, according to him, was required to remove excess dirt, stone, rubble, and shrubbery, with the recycling of such material as stipulated by the architect. His idea of a contract required that after an analysis by the site surveyor, any replacement of battens or other materials must be replaced at the contractor's expense.²⁶⁸ The contractor completed what Ware called "Rough Work," which include the bringing of timber from the market to the site, the assembling of a wooden frame, and the formation of the wooden elevation in country houses.²⁶⁹ It is likely that he used the terms "carpenter" and "contractor" interchangeably, as their responsibility included primarily the woodwork.²⁷⁰ Ware also stipulated that it was the contractor's job to purchase insurance for the construction, not the architect's.²⁷¹ Indeed, he sought to circumvent the liability of the architect by stipulating that in specifications it be noted that the Mason was the "Responsible Party" in urban construction and the Carpenter was the "Responsible Party" in rural projects.²⁷²

This building hierarchy was also cemented by the architect's handling of payments. Ware explained that there were two different strategies in paying contractors. The first strategy was that the architect was the "agent" of the owner and therefore controlled the purse strings.²⁷³ The alternative was that the contractor is a separate party paid by the proprietor, with the Architect "having nothing to do but certify that such + such work has been done."²⁷⁴ Ware, in championing the architect's control, preferred the first strategy.²⁷⁵ Contractors, unlike architects, were paid by the day, just as other laborers were.²⁷⁶ Ware encouraged his students to write in their

²⁶⁸ Ware delineated the roles within the building industry in his MIT lecture on April 13, 1870. Berry.

²⁶⁹ MIT lecture on November 4, 1869. Berry.

²⁷⁰ Berry titled his notes "Carpenter's Work" and then proceeded to write about what the contractor does. Ibid.

²⁷¹ Ibid.

²⁷² MIT lecture on "Relation of Contractor + Proprietor" on February 8, 1871. Ibid.

²⁷³ Ibid.

²⁷⁴ Ibid.

²⁷⁵ Ibid.

²⁷⁶ Ibid.

specification that an architect had the authority, after 3 to 10 days' notice, to deduct payment from contractors if construction were delayed.²⁷⁷ "Extra work" was stipulated in the specification to be paid at the architect's discretion.²⁷⁸ Ware also specified that architects should put a clause in the contract with the stone mason about forfeiture of payment due to delays, although he noted that these clauses are nonbinding and do not stand up in court.²⁷⁹

Ware treated the architect's drawings as a key component of a contract between a proprietor and an architect. Indeed, he stipulated that a contract included a variable number of drawings as well as the specification.²⁸⁰ Berry noted that the number of drawings varied depending on what was required to properly explain the work to the contractor. Ware also deemed the requisite number of drawings to be at the discretion of the architect, further cementing his control.²⁸¹

He also detailed the contents of a good specification, which included information on payment, the role of the architect, the role of the contractor, strategies for building delays, and stipulations on potential arbitration. The primary oversight responsibilities were given to the contractor, who handled city regulation and the hiring of overseers.²⁸² The primary responsibilities of the architect were drawings and "Interpretation."²⁸³ Ware reiterated his claims that architects were professionals, in his definition, by stipulating in the specification that a proprietor paid an architect for "*services*" rather than for drawings.²⁸⁴ Berry noted again that the proprietor "has no claim" for the drawings and paid extra when the architect presented owners

²⁷⁷ MIT lecture on February 24, 1871. Ibid.

²⁷⁸ Ibid.

²⁷⁹ Ibid.

²⁸⁰ MIT lecture on February 15, 1871. Ibid.

²⁸¹ Ibid.

²⁸² Ibid.

²⁸³ Ibid.

²⁸⁴ Ibid.

with copies.²⁸⁵ Ware noted twice in his lectures that drawings must be returned to the architect before the final payment.²⁸⁶ He also noted that any copies of drawings needed by the carpenter, such as an extra set for the stonecutter, must be made at the contractor's expense.²⁸⁷ "Interpretation" was "to be left entirely to" the Architect.²⁸⁸ A clause must be put in the contract that a decision made by the Architect is binding.²⁸⁹ At the same time, Ware encouraged the stipulation in the contract that an architect has the right to make alterations during the building process.²⁹⁰

After three decades in architectural education, Ware reflected, "It is the purpose of a course in design, in a school of architecture, or elsewhere, to make its students acquainted with the means by which, when they come to the practice of their profession, they may produce buildings marked both by good sense and by good taste."²⁹¹ Ware had various notions of "good sense." An architect's job, as said by Ware and transcribed by Berry, was to "make work as decorative art to satisfy the eye, the moral, intellectual, aesthetic sense."²⁹² This prescription translated the subjective eye for beauty into an objective training of the architect, further validating the architect as the designer. In addition, Ware's notion of "good sense" also included a basic understanding of building techniques, i.e. "not to put a buttress where there is nothing to hold up or a window where no light is needed," substantiating the architect's mechanical training.²⁹³

²⁸⁵ Ibid.

²⁸⁶ Ibid.

²⁸⁷ Ibid.

²⁸⁸ Ibid.

²⁸⁹ MIT lecture on February 24, 1871. Ibid.

²⁹⁰ Ibid.

²⁹¹ William Robert Ware, "Drawing, Designing, and Thinking," *Architectural Record* 26, no. 3 (September 1909): 159.

²⁹² Commas added by the author for clarity. MIT lecture on January 30, 1871. Berry.

²⁹³ Ibid.

Ware's notion of "good taste" was not explicitly defined, likely relating to beauty and breeding. To Ware, an architect's role included the recognition of beauty and the means of creating it. As seen in Ware's lectures on the definition of the architect, Ware considered this skill to require training. In an analogy that would be favored by MIT's benefactors in the textile industry, Ware argued, "Every body can make the woven material of a building with its door + windows or with sculpture here + there as dots of embroidery upon the fabric – but only an artist can do it well."²⁹⁴ To Ware, an artist did not have an innate eye for beauty but a trained one. Superiority in taste was a key part of Ware's definition of being a professional, and by extension, an architect.

The Concurrent State of the Profession and Ware's Relationship with the AIA

On the one hand, Ware's advocacy of the architect as an elite profession appeared to align with the first national organization for architects, of which Ware, his friends, and his former teachers were members. The AIA was first founded in 1836 by an equal number of builders and architects. When the organization was reformed in 1857 and began meeting regularly in 1867, the AIA was composed of a select group of architects, including Ware.²⁹⁵ This second group modelled their organization after a private men's club to differentiate themselves from builders.²⁹⁶ With the contributions of Ware on their education committee, the AIA sought to develop national standards in architectural education as part of their overall mission.²⁹⁷ Despite the organization's grand ambitions, however, architectural practice and education

²⁹⁴ Ibid.

²⁹⁵ Notable early members included Richard Morris Hunt, under which Ware studied, and Edward Clarke Cabot, Ware's first architectural employer.

²⁹⁶ Woods, 24.

²⁹⁷ American Institute of Architects, *Proceedings of the Eighth Annual Convention of the American Institute of Architects, Held at the Rooms of the New York Chapter, October 22nd and 23rd, 1867* (New York: Raymond & Caulon, 1867).

remained heterogeneously operated through the end of the century. Furthermore, the ascendancy of the architect in the building industry's hierarchy was not a reality. As late as 1894, for example, a Houston newspaper described Ware in 1894 as "a carpenter and builder."²⁹⁸ This delineation contrasted with his contemporaneous assertion that in a school of architecture, Ware trained "a body of generously educated architects, gentlemen, and scholars."²⁹⁹

On the other hand, his department at MIT may have been dismissed by the more senior members of the AIA, who had their own ambitions to oversee architectural education. Gambrill, Ware's friend and AIA member, wrote that the New York circle of architects were "delighted" by Ware's *Outline*, although Gambrill jokingly chided Ware for not crediting the AIA enough for bringing architects together and moving towards professionalization.³⁰⁰ Nevertheless, in the early years of MIT's architecture department, MIT and Ware were seldom mentioned in the AIA's annual reports, which always focused a few pages on the state of architectural education in the country. Instead, the AIA's education committee, on which Ware was the last signatory member and was not yet elected chair, proposed to create a "Grand Central School of Architecture," a national training program under the control of the AIA.³⁰¹ In their proposed curriculum, architecture was characterized as for advanced students, having already taken courses for two years in drawing, mathematics, languages, and construction.³⁰² Part of this curriculum also included evening classes for mechanics, during which students would learn only polytechnical aspects of architecture rather than its perceived fine arts' qualities. The attention to

²⁹⁸ "Pedagogues Arrive," *Galveston Daily News* 53, no. 278 (December 26, 1894).

²⁹⁹ William Robert Ware, "Professional Draughtsmen as Special Students in the School of Architecture," *The School of Mines Quarterly* 18 (1897): 427.

³⁰⁰ Gambrill.

³⁰¹ American Institute of Architects, *Proceedings of the Third Annual Convention of the American Institute of Architects, Held in New York, November 16th and 17th, 1869*, 15-16.

³⁰² American Institute of Architects, *Proceedings of the Eighth Annual Convention of the American Institute of Architects, Held at the Rooms of the New York Chapter, October 22nd and 23rd, 1867*, 14-15.

the mechanic and its division from the architecture program implied the building hierarchy that the AIA sought to establish. Inspired by their own training at the École des Beaux-Arts, senior members of the AIA envisioned the link between architecture and the fine arts as the “distinguishing quality” of an architect’s education.³⁰³

The Subsequent Employment of MIT Architecture Students

Although Sullivan credited his MIT experience for learning how to “draw very well” and for spending a lot of time in the architectural library, his final anecdote about the school in his autobiography hinted at the dismissal of the program by Ware’s contemporaries.³⁰⁴ When he reminisced about his interview with Philadelphia-based architect and AIA member Frank Furness the year after he left MIT, Sullivan wrote,

[Furness’] first question had been as to Louis’s experience, to which Louis replied, modestly enough, that he had just come from the Massachusetts Institute of Technology in Boston. This answer was the detonator that set off the mine which blew up in fragments all the schools in the land and scattered the professors headless and limbless to the four quarters of earth and hell. Louis, he said, was a fool. He said Louis was an idiot to have wasted his time in a place where one was filled with sawdust, like a doll, and became a prig, a snob, and an ass. As the smoke blew away he said: ‘Of course you don’t know anything and are full of damnable conceit.’³⁰⁵

Furness’ exaggerated reaction suggested that at least some of Ware’s presentation of architects as gentlemanly was not approved by all of his architect comrades. At the same, part of Furness’ strategy was to belittle Sullivan’s training so that he could hire him without pay.³⁰⁶ Despite this perceived slight towards MIT, Furness hired Sullivan. MIT’s training had to be sufficient. In fact, he was no exception. Of all the students Ware taught, 69 students are known to have

³⁰³ American Institute of Architects, *Proceedings of the Third Annual Convention of the American Institute of Architects, Held in New York, November 16th and 17th, 1869*, 42.

³⁰⁴ Sullivan, 186-188.

³⁰⁵ Oddly, the autobiography was written in the third person. Ibid, 191-192.

³⁰⁶ Sullivan claimed that he ultimately negotiated to 10 dollars a week as an honorarium. Ibid, 192.

secured employment in an architecture office for the year after they attended MIT, 49 of them in Boston.³⁰⁷ Within 10 years of leaving MIT, at least 109 former students are known to have become drafters, clerks, or assistants at architecture offices.³⁰⁸

MIT's architecture department ultimately trained students who became architects, but it took longer than for Ware and his generation at the AIA. 67 of Ware's students are known to have become name partners of architecture firms throughout the country. For 23 of these students, this process took more than a decade. The median length of time was 7 years, while Ware and his contemporaries generally formed their first firm within five years of graduation. With two exceptions, the students who formed their own firms within five years worked either in the Midwest, in a smaller Northeastern city, or at a firm that folded after one year.³⁰⁹ More prominent cities with established AIA members were more competitive marketplaces.

The persona of the architect as a gentleman, promoted in part by Ware, both helped and hindered his students' success. The credential of studying at MIT architecture seemed sufficient for a drafting position but insufficient in transforming students into architects as fast as they previously could. Office experience still triumphed as the primary prerequisite, even over training at the École. Nevertheless, Ware supplied Boston with a workforce trained in this perception of the architect.

Conclusion: The Elite Architect in Back Bay

In contrast to the writings of Ware and his students, a contemporaneous portrayal of a fictional Boston architect suggested that Ware's conjuring of the architect as a gentlemanly

³⁰⁷ Chewning, "Appendix F. Firms Employing M.I.T. Architecture Students," 451-459.

³⁰⁸ Ibid, "Appendix E. M.I.T. Architecture Students, 1868-81: Careers," 432-450.

³⁰⁹ Ibid.

professional was, in fact, a façade. *The Atlantic Monthly* editor William Dean Howells, a prominent writer and Lowell Institute lecturer, published *The Rise of Silas Lapham* in 1885. While the novel was fictional, it was in the style of American realism, meant to mirror aspects of contemporary life. The novel followed the rise and ultimate fall of Silas Lapham, who became wealthy due to success in his painting business but ultimately lost his wealth in financial speculation. The novel centered around the construction of a new house in Boston's Back Bay, where Howells wrote the novel. The house was the primary symbol for Lapham's rise and fall in class status: Lapham invested much of his means in the construction, only for the house to suddenly burn down.

Howells presented aesthetics, particularly in architecture, as volatile and morally repugnant, just like the rest of the global capitalist marketplace. The architect, mostly referred to by his title rather than his name, was portrayed as aligned with the elite and whose involvement validated the Lapham's rise with the trappings of success.³¹⁰ At the same time, Howells presented the architect as a charlatan:

The beginnings of the process by which Lapham escaped from the master builder and ended in the hands of an architect are so obscure that it would be almost impossible to trace them. But it all happened, and Lapham promptly developed his idea of black walnut finish, high studding, and cornices. The architect was able to conceal the shudder which they must have sent through him. He was skilful, as nearly all architects are, in playing upon that simple instrument Man.³¹¹

Howells characterized Lapham's financial and aesthetic investment into his house as trickery by the architect, just as Lapham lost much of his property in a faulty speculation scheme. To Howells, the architectural ornaments have no real value.

³¹⁰ The architect proposed a design on Beacon Street in Back Bay and argued that Howells' house would "become one of the finest ornaments of that exclusive avenue." William Dean Howells, *The Rise of Silas Lapham* (Boston: Ticknor and Company, 1885), 27.

³¹¹ *Ibid*, 54.

Ironically, the portrayal of architecture in *The Rise of Silas Lapham* suggests that late-19th-century architects, regardless of the efficacy of Ware's lectures, were eventually perceived as arbiters of taste. As discussed in chapter 3, as the city of Boston became increasingly more segregated by class in both its physical and social landscapes, the architect promoted these class divisions and benefitted both in employment and in status.

Chapter 3: The American Architectural Text-Book

This chapter explores the validation of American architecture as a discipline through the crafting of printed material. As illustrated in the first chapter, Ware and his powerful network of Boston elites utilized drawing education—and by extension architectural education—to perpetuate their civilizing ideals. These values included the cementing of class distinctions. Simultaneously, Ware cultivated the architect as an elite arbiter of taste in his pedagogical program to elevate the architect as a middle- to upper-class profession, as revealed in the second chapter. This chapter investigates a significant component of this interconnected effort: the creation of the American architectural text-book.³¹²

Ware prepared and published his first architectural text-books while at MIT, reformulating his university lectures for the American drawing student and the public consumer.³¹³ While these publications presented various material in different formats, taken together, these books projected the elite values of Ware and his Boston network. This chapter highlights how Ware capitalized on the Boston elite's cultural priorities, particularly on the growing interest in drawing as a vehicle of middle- to upper-class taste. In characterizing architectural knowledge as advanced and in the withholding of technical knowledge and design components in the publications, Ware propelled the architect as the authority figure and the architectural educator as a vital component of university education.

³¹² Architectural historian and curator Henry-Russell Hitchcock traces the first American architectural publication to 1775. This work, however, was merely an American printing of *The British Architect*. Throughout the 19th century, builders and aspiring architects in America published builders' guides that often paraphrased, translated, or plagiarized British and French publications. Ware's books, however, were some of the first American publications for classroom instruction. Henry-Russell Hitchcock, *American Architectural Books: A List of Books, Portfolios, and Pamphlets on Architecture and Related Subjects Published Before 1895* (Minneapolis: University of Minnesota Press, 1962).

³¹³ The Oxford English Dictionary defines "text-book" as "a book used as a standard work for the study of a particular subject; now usually one written specially for this purpose; a manual of instruction in any science or branch of study, esp. a work recognized as an authority." "text-book, n.," OED Online, September 2020, Oxford University Press.

Intellectual Validity in the American Architectural Library

Integrated in Ware's initial thoughts on architectural education was the primacy of the written word. In a journal entry shortly before his European collecting trip and four years before the passing of the Massachusetts Drawing Act, Ware reflected,

The art idea of a thing is more complete, more real, more individual than the literary idea, and the intellectual habit this culture induces is more practical, nearer the heart of things, closer to nature. Drawing is a language just as much as words are, a means of conveying ideas, and the education founded upon it is as enlarged and as enlarging. It presents the whole world anew, from a point of view which makes it a new world. It is as useful as reading and writing. Every body ought to be trained in it.³¹⁴

Ware ascribed intellectual validity to drawing and to drawing education through this comparison with literature and language. As seen in chapter 2, he continued to analogize architecture to literature in his MIT lectures, seemingly eager to elevate architecture as a worthy discipline.³¹⁵ Indeed, literature was the paragon to which everything was to be judged. Ware himself was raised in what he called a "literary culture," having studied at Harvard, whose curriculum prioritized "language, literature, and rhetoric."³¹⁶ Since Boston was a American hub of publishing activity in the 19th century, the Boston Brahmins considered language as central in their presentation and identity.³¹⁷ This emphasis persisted after the Civil War, when the Boston

³¹⁴ In his journal on April 8, 1866, four months before Ware's European collecting trip, Ware discussed what appears to be a confluence of former teacher Richard Morris Hunt's views and his own views towards the literary nature of society and the current state of education. William Robert Ware, Journal, 1849 – 1871, MC4, Box: 2, Folder: 11, William R. Ware Papers, Massachusetts Institute of Technology, Libraries, Department of Distinctive Collections, Cambridge, Massachusetts.

³¹⁵ Ware's argument was evocative of Ralph Waldo Emerson's *Self-Reliance*, a transcendental advocacy of individualism that Ware cited in an MIT Lecture on May 29, 1871. Abraham Hun Berry, "Student Notes from Architectural Courses Taught by William R. Ware at MIT and the Massachusetts Normal Art School," 1872, MC 172, William R. Ware Papers, Massachusetts Institute of Technology, Libraries, Department of Distinctive Collections, Cambridge, Massachusetts.

³¹⁶ Ware competed in rhetoric competitions while at Harvard. Ware, Journal, 1849 – 1871 and Deborah Hartry Stein, "The Visual Rhetoric of Charles Callahan Perkins: The Early Renaissance and a New Fine Arts Paradigm for Boston," PhD Dissertation, Boston University, 2017, 333.

³¹⁷ Stein, 332.

Athenaeum's Standing Committee voted to remove its fine arts collection in order to make room for more books.³¹⁸ By 1895, Harvard had 29 libraries. Guide books promoted Boston as having two of the three largest libraries in the country: Harvard's University Library and the Boston Public Library, which was on Boylston Street along with MIT.³¹⁹

The literary nature of architectural education was further argued for in the development of architectural libraries. To a select group of Boston and New York architects, university architectural libraries were not only an important component in architectural education but also a selling point for the departments' existence. As a group of members of the American Institute of Architects (AIA)—including former mentor Richard Hunt, former employer Edward Clarke Cabot, and future business partner Henry Van Brunt—stated during its formative years, “The first step to be taken [in the improvement of American architecture], it is plain, is the establishment of an Architectural Library, to which the public at large, as well as professional men, may at all hours of the evening as well as the day have access.”³²⁰ Existing architectural libraries were described as cherished and secured in offices. These collections housed foreign tomes that were deemed too expensive for personal purchase.³²¹ Van Brunt, who studied with Ware at Hunt's atelier and was later Ware's business partner, recalled that while Van Brunt and Ware were apprentices under Hunt in the 1850s, “books and prints were carefully secluded from

³¹⁸ In the Athenaeum's mission statement was the implication that the fine arts would not get in the way of the organization's literary mission. The Perkins family was a primary benefactor of the Boston Athenaeum, and as described in chapter 1, Charles Callahan Perkins was very involved in the promotion of drawing education and of the fine arts in Boston in the late 1860s and 1870s. There was a lot of overlap among the people who were involved in the Athenaeum and the people who founded the MFA. Deborah Hartry Stein, “Charles Callahan Perkins: Early Italian Renaissance Art and British Museum Practice in Boston,” *Journal of Art Historiography*, no. 18 (June 2018): 20 and Hina Hirayama, *With Éclat: The Boston Athenaeum and the Origin of the Museum of Fine Arts, Boston* (Boston: The Boston Athenaeum and the University Press of New England, 2013), 42-49.

³¹⁹ *Rand, McNally & Co.'s Handy Guide to Boston and Environs* (Chicago: Rand, McNally & Co., 1895), 83, 88.

³²⁰ American Institute of Architects, “To the Public,” 1859, MssCol 3115, Box: 13, Folder: 13, Richard and Richard M. Upjohn Papers, The New York Public Library, New York, New York.

³²¹ *Ibid.*

inspection by any rival” in “their master’s locked bookcase.”³²² Architects surrounding Ware viewed library access as an exclusive site of architectural knowledge.

A key motivation for ascribing intellectual heft to architectural education was its price tag. As stated in the Report on the Statistics of Labor in Massachusetts in 1876, “occupations involving chiefly mental and literary qualifications are considered as salaried; those involving manual labor and skills in the use of tools, as wage.”³²³ Salaried income was substantially higher than wage earnings. That year, wage workers included “Carpenter (house)” and “Mechanic.”³²⁴ Salaried workers included “Architect” and “Designer (pattern).”³²⁵ Drawing ability was not the distinguishing factor, as a “Draughtsman” fell under both categories, although the earnings of drafters tended to be higher than other listed laborers.³²⁶

Concurrently, there was an increasing interest in Boston in the fine arts both as emblematic of elite taste and as visual learning apparatuses for the public. The Boston Art Club was founded in 1855 and revived by Perkins in 1871, renting a space on Boylston Street near MIT.³²⁷ The club was an exclusive site of interaction among select painters and their businessmen clientele. As discussed in chapter 1, the founding of the MFA was intertwined in a larger effort to import the British system of drawing education in order to promote design knowledge to all classes.

³²² Henry Van Brunt, “Richard M. Hunt,” *Proceedings of the Twenty-Ninth Annual Convention of the American Institute of Architects, Held in St. Nicholas Hall, St. Louis, October 15, 16, and 17, 1895*, edited by Alfred Stone (Providence: E. A. Johnson & Co., 1895), 78.

³²³ Massachusetts Bureau of Statistics of Labor, *Seventh Annual Report of Statistics of Labor, with an Appendix Containing a History of the Bureau, and of Labor Legislation in Massachusetts* (Boston: Wright & Potter, 1876), 3.

³²⁴ *Ibid*, 5, 9.

³²⁵ *Ibid*, 205.

³²⁶ *Ibid*, 7, 205.

³²⁷ Nancy Allyn Jarzombek, “A Taste for High Art: Boston and the Boston Art Club, 1855-1950,” *Antiques & Fine Art Magazine*, October 2000.

The creation of American architectural publications coincided with the development of favorable conditions in the publishing industry and an expanding market for printed visual material. Innovations in transportation, postal law, and publishing technology allowed for mass circulation of printed material.³²⁸ Publishing houses, such as Ware's publishers, Prang and Osgood, took advantage of the United States' railroad network and distributed publications throughout the country and occasionally internationally.³²⁹ In addition, the mechanization of paper production and of hand presses resulted in paper as a cheaper resource and in the ability to produce thousands of copies of printed material simultaneously.³³⁰ In 1860s and 1870s Boston, notable innovations were the introductions of the heliotype process and chromolithography. Championed by Osgood, the heliotype process was an English printing method that circumvented the use of wood engraving and allowed for the mass production of drawings.³³¹ Popularized by Prang, the German-created chromolithograph allowed for color pictures and low-cost, high quality art reproductions.³³²

MIT's architectural collection began as a hybrid of two-dimensional and three-dimensional visual material that conjured a perceived continuity between Europe's architectural history and America's burgeoning architectural education. Soon after Ware received his appointment at MIT, he spent thirteen months in Europe, partly to observe European schools and

³²⁸ Hyungmin Pai, *The Portfolio and the Diagram: Architecture, Discourse, and Modernity in America* (Cambridge: MIT Press, 2002), 13.

³²⁹ Prang's stock books list addresses primarily in Boston, New York, Philadelphia, and Chicago, but there were orders placed in Mississippi, Arkansas, San Francisco, London, and Japan. Memo & Stock Books: 1861-1903, Huntington Library Louis Prang Collection, The Huntington Library, Art Collections, and Botanical Gardens, San Marino, California.

³³⁰ Mary N. Woods, "The American Architect and Building News 1876-1907," PhD Dissertation, Columbia University, 1983, 28-30.

³³¹ *Ibid.*, 5-6.

³³² See Michael Clapper, "Art, Industry, and Education in Prang's Chromolithograph Company," in *The Cultivation of Artists in Nineteenth-Century America*, edited by Georgia Brady Barnhill, Diana Korzenik, and Caroline F. Sloat (Worcester, Massachusetts: American Antiquarian Society, 1997), 121-138; Katharine Morrison McClinton, *The Chromolithographs of Louis Prang* (New York: Clarkson N. Potter, Inc., 1973).

partly to purchase an architectural library.³³³ Ware obsequiously appealed to the Royal Institute of British Architects (RIBA) that “the photographs, casts, prints, books, business documents, drawings, and sketches” that RIBA could donate to him would “form our educational apparatus” at MIT.³³⁴ Ware procured books, architects’ business documents, 2,000 photographs, 500 prints, 400 plaster casts, 200 crayon drawings, 40 watercolor pictures, 30 architectural drawings, 100 sheets of working drawings that were “mostly tracings,” and an assortment of tiles, ceramics, and stained glass.³³⁵ The majority of books were English, French, and German publications, as were the visual materials.³³⁶ The collection continued to expand: by 1875, MIT’s architecture library had 378 books, 2240 photographs, 465 card photographs, 660 stereoscopic views, 250 glass slides, 810 drawings, 963 prints and lithographs, 77 drawings specifically from the École des Beaux-Arts, 746 plaster casts, 35 stained glass items, 32 architectural models, 95 lecture diagrams, and an assortment of tiles and terracotta.³³⁷ This collection took up three rooms of MIT’s Roger’s Building: one room was a library and study for MIT architecture students, while two rooms formed an “Architectural Museum,” which boasted several hundred visitors during its

³³³ Ware advocates for a library in his published pamphlet, *Outline of a Course of Architectural Instruction*. He also discusses his European trip in detail in what is attributed as an unfinished biography by his nephew, William Rotch Ware, but is more likely an autobiography. William Robert Ware, *An Outline of a Course of Architectural Instruction* (Boston: John Wilson and Sons, 1866). Unfinished Biography, Typescript, Undated, William R. Ware Papers, Massachusetts Institute of Technology, Libraries, Department of Distinctive Collections, Cambridge, Massachusetts.

³³⁴ William Robert Ware, “On the Condition of Architecture and of Architectural Education in the United States,” in *Papers Read at the Royal Institute of British Architects, Session 1866-67* (London: Royal Institute of British Architects, 1867), 87.

³³⁵ William Robert Ware, “Department of Architecture Report,” in *Reports of the President, Secretary, and Departments. 1871-72* (Boston: A. A. Kingman, 1872), 36. Many of these items are missing from today’s collection. It is unclear whether Ware brought some of this collection to Columbia University. The casts were ultimately given to the MFA as described in Walter Muir Whitehill, “The Battle of the Casts,” in *Museum of Fine Arts, Boston: A Centennial History* (Cambridge: Belknap Press, 1970), 1:172-217.

³³⁶ Catalogue of Books in the Architectural Library and of the Stereoscopic Slides in the Collection of the Department, 1880, AC-0260, Massachusetts Institute of Technology, Department of Architecture Records, Massachusetts Institute of Technology Department of Distinctive Collections.

³³⁷ “Summary of the Collections of the Department of Architecture,” in *President’s Report for the Year Ending Sept. 30, 1875* (Boston: A. A. Kingman, 1876), 199.

first year.³³⁸ The MIT architectural library was the department's warehouse of knowledge as well as the public-facing validation of the department's capabilities.

What Makes Architecture American

Ware and other architecture professors from recently founded programs began to publish manuals, treatises, text-books, hand-books, journal articles, and plate collections for their own students as well as for the public consumer. These publications could be interpreted as merely a discrete effort to capitalize on these educators' growing stature as university professors. In Ware's case, however, his text-books were actually used by MIT architecture students. A near complete set of tracings from *Examples of Building Construction* were drawn by MIT architecture student Edwin James Lewis, Jr.³³⁹ (Figures 15-20) A copy of Ware's *Modern Perspective* was in the MIT architecture library by the 1880s as well as copies of the architecture journal *The American Architect and Building News*, which featured the serialized version of his perspective text-book, *Papers on Perspective*.³⁴⁰ Furthermore, the student notes of Abraham Hun Berry illustrate that content from Ware's lectures on building construction and on perspective overlaps with material found in both text-books, respectively.³⁴¹ (Figures 21-23) In his perspectival drawing of two houses, for example, Berry labels one tangent "V2" and the horizon line "H," which precisely follows the labelling system described in Ware's published work.³⁴²

³³⁸ Ware, "Department of Architecture Report," 36-37.

³³⁹ Edwin James Lewis, Jr., Architectural Drawings in Manuscript, UF//L58, Boston Athenaeum, Boston, Massachusetts.

³⁴⁰ Catalogue of Books in the Architectural Library and of the Stereoscopic Slides in the Collection of the Department.

³⁴¹ Berry.

³⁴² William Robert Ware, "Papers on Perspective II. Phenomena Relating to the Picture," *The American Architect and Building News* 3, no. 108 (January 19, 1878), 20.

Despite his extensive purchasing of foreign publications, Ware argued that the European publications failed to entirely serve his students' needs and that American models must be created.³⁴³ Ware later elaborated on why specifically these publications failed to serve American architecture students. First, Ware argued that the European texts were published in foreign languages that students were not required to know.³⁴⁴ This problem would soon be rectified: many renowned architectural texts were translated and printed by American publishers. Ware himself published *Greek Ornament*, a hand-book which comprised of a list of relevant quotations by European art critics such as John Ruskin, Owen Jones, and Gottfried Semper.³⁴⁵ Second, Ware noted that these books followed the metric system, while the United States used the imperial system since 1824.³⁴⁶ Ironically, Ware signed a pledge with other architects to convert to the metric system. The list of signatories included Cabot, Ware's former employer and MIT affiliate, and Van Brunt, Ware's current business partner.³⁴⁷ These arguments were rooted in technicalities, not yet having qualitative differences to distinguish American architecture from its European precedents.

Lastly, Ware argued that European architecture had different construction methods than those in the United States, and he doubted that these methods would ever be used on American soil.³⁴⁸ This argument successfully justified the creation of his text-book, *Examples of Building*

³⁴³ Ware lamented in his letter to his future MIT colleague, John D. Runkle, "There are excellent treatises on most of these subjects [relating to architecture], but they are foreign and need to be pretty much re-written for our use. They encumber our shelves but are of comparatively little service. They are excellent models but the work needs to be done over again." William Robert Ware, Letter to John D. Runkle, 27 April 1865, Correspondence, William Ware, 1865-1866, Box: 2, Folder: 3, William R. Ware Papers, Massachusetts Institute of Technology, Libraries, Department of Distinctive Collections, Cambridge, Massachusetts.

³⁴⁴ Unfinished Biography, 47.

³⁴⁵ The book was the first in the series, Tilton's Hand-Books of Decorative Form. William Robert Ware, *Greek Ornament* (Boston: S. W. Tilton & Company, 1878).

³⁴⁶ Unfinished Biography, 47.

³⁴⁷ "The Metric System of Weights and Measures. Practical Introduction in the United States United Action on the Part of Members of the Scientific Professions to Secure Its General Adoption After July 4, 1876," *Independent Statesman* 4, no. 45 (August 5, 1875).

³⁴⁸ Unfinished Biography, 47.

Construction. In the text-book, a house was designed with a wooden frame as the building's skeleton. (Figure 24) This technique was based in the United States and known as "balloon-frame construction." By mid-century, balloon-frame houses were ubiquitous throughout the United States and became a ready-made consumer good.³⁴⁹ This style capitalized on the plentiful supply of American wood and circumvented the shortage of skilled workmen.³⁵⁰ Ware wrote about the prevalence of wooden buildings in the United States, and he argued, "in the country [as opposed to the city] almost everywhere wood is the universal material, and the houses and churches built of it are perfectly firm, tight and warm."³⁵¹ Converting one design into three, Ware's design included an elevation in wood, brick, and stone. (Figure 11) As James Elliot Cabot, a Brookline resident in Ware's circle, wrote of house design in the *Atlantic Monthly*, "To make a stone house as good as a wooden one we must build a wooden one inside of it."³⁵² These alternatives allowed the architect to utilize the same design for a house in the "country" – in wood – as well as a house in the "city" – in brick or stone.³⁵³ The materials also served two price points specific to American clients: Ware noted in his lectures that wooden houses in the country cost \$2.09 to 2.53 per square foot per floor, while wooden houses clad in brick or stone in the city cost \$3.10 to \$4.52 per square foot per floor.³⁵⁴ The material of the façade served as decoration rather than as structure and standardized the design for distinctly American consumption.

³⁴⁹ James M. McPherson, *Battle Cry of Freedom: The Civil War Era* (Oxford: Oxford University Press, 1988), 16-17.

³⁵⁰ Ibid.

³⁵¹ Ware, "On the Condition of Architecture and of Architectural Education in the United States," 84.

³⁵² James Elliot Cabot, "House-Building," *The Atlantic Monthly* 10 (October 1862): 429. Ware was familiar with Cabot's work, since Ware worked for Cabot's brother and since Cabot's works were included in Ware's photograph collection to the Royal Institute of British Architects in 1867.

³⁵³ Berry.

³⁵⁴ Ibid.

Architecture in the Art Education Market

Ware's first text-books were part of a larger text-book series on art education, framing architecture as advanced study and an extension of K-12 drawing training. Credited as both distinguished professor and normal art school instructor, Ware authored text-books for Massachusetts State Art Education Director Walter Smith's art education series, which included *Examples of Building Construction*.³⁵⁵ Prang advertised Smith's drawing manuals as "The American Text-Books of Art Education."³⁵⁶ MIT architecture students utilized the accompanying wooden models Prang sold as part of this drawing education series. (Figures 12 & 13) The first set of publications were drawing books for primary schools, intermediate schools, grammar schools, and high schools. Ware's book was classified as an advanced continuation of this series, labelled "Examples of Advanced Study for High Schools, Drawing Classes, and Art Schools."³⁵⁷ Other books in this distinguished category included *Parallel of Historical Ornament*, a collection of plates on architectural styles that was "supervised by Ware," and *Orders of Architecture*, a book meant to explain the artistic and practical uses of the classical orders to be written by Ware.³⁵⁸ In Smith's drawing curriculum, architectural drawing and training in building construction were listed in the high school curriculum, while copying historical ornaments was listed in the grammar school and high school curricula.³⁵⁹ This collection and presentation of

³⁵⁵ Ware's title was "Professor of Architecture at the Massachusetts Institute of Technology, and at the Massachusetts State Normal Art School." National and international archives currently misattribute authorship of this text-book to Ware's nephew, William Rotch Ware. William Robert Ware, *Examples of Building Construction, with Suggestions to Teachers and Pupils for Their Practical Use* (Boston: L. Prang and Company, 1876), title page.

³⁵⁶ "Messrs. L. Prang & Co.'s Art Education Publications," *The Publisher's Weekly*, no. 137 (July 29, 1876): 279.

³⁵⁷ Ibid.

³⁵⁸ Ibid.

³⁵⁹ "Prof. Walter Smith's System of Industrial and Artistic Drawing," *The Antefix Papers. Papers on Art Educational Subjects, Read at the Weekly Meeting of the Massachusetts Art Teachers' Association, by Members and Others Connected with the Massachusetts Normal Art School* (Boston: Printed for Private Circulation, 1875).

text-books packaged architecture as an extension of a broader curriculum in American art education.

Prang and Osgood were competitors in the art education market, and Ware's work prospered due to this rivalry. "The American Text-Books of Art Education" transferred copyright from Osgood to Prang in 1875, when the editor, John Spenser Clark, left Osgood for Prang's employ.³⁶⁰ While Osgood was less successful in securing Smith's business, Osgood published several architecture books and also published the country's first architectural journal, *The American Architect and Building News* (AABN).³⁶¹ Its average circulation was 3,660 subscribers, a far greater number than the students in university programs and the members of the AIA combined.³⁶² AABN was described as a "serialized architectural textbook" with heavy oversight by Ware and Van Brunt.³⁶³ This statement is particularly true of Ware's essay series, *Papers on Perspective*, first published in 1878. This collection would ultimately be compiled as a text-book, *Modern Perspective*, in 1882.

Architectural Education as Art Object

Examples of Building Construction and *Parallel of Historical Ornament* featured a portable plate collection of crisp, high-quality chromolithographs. (Figures 11 & 25) Both publications served simultaneously as text-book and art object. Ware's plates in *Examples of Building Construction* could be purchased as an entire book for \$15.00, an expensive purchase at the time, or as four discrete collections of plates for \$4.00 each.³⁶⁴ *Parallel of Historical*

³⁶⁰ Mary Ann Stankiewicz, "Drawing Book Wars," *Visual Arts Research* 12, no. 2 (Fall 1996): 60.

³⁶¹ While there were antecedents to *The American Architect and Building News*, they were short-lived and limited in circulation, which is why Woods classifies it as the first American architectural journal. Woods, "The American Architect and Building News."

³⁶² Woods, "The American Architect and Building News," 7.

³⁶³ Ibid, 262-263.

³⁶⁴ Ware, *Examples of Building Construction*, title page.

Ornament could be purchased as a folio for \$15.00 or as a folio mounted on paste-board for \$20.³⁶⁵ Likewise, plates could be purchased individually, mounted or unmounted.³⁶⁶ The paste-board added to the security of the paper print and framed the image. Customers also pinned mounted works to the wall as decoration.³⁶⁷

Parallel of Historic Ornament presented architectural education as exclusive knowledge that integrated European history and fine art. The collection of chromolithographs featured no directions for either teacher or pupil. How to view and trace these plates was tacit knowledge, and this omission validated the presence of an instructor. The only instruction was in the book's subtitle, which suggested that each plate be compared.³⁶⁸ To imbue authority into the work, author Karl F. Heinzen was credited for his affiliation with a Zurich polytechnical school, while Ware was credited for his teaching at both MNAS and MIT.³⁶⁹ Every plate combines architectural and artistic elements: architectural elements, such as capitals, are featured at the top of each print, while painted and stained glass ornaments are featured on the bottom half of the page. Within each plate, individual designs were labeled based on their historic location. Style names derived from place of origin or from a well-known European title: Greek, Egyptian, Gothic, and Renaissance, for example. Each style was featured in English, French, and German, while the individual design descriptions were only in English. The plates were arranged chronologically, from earliest – Egyptian – to most recent – Renaissance. Under Ware's superintendence, Heinzen followed the naming and ordering system ascribed in Owen Jones'

³⁶⁵ Karl F. Heinzen, *Parallel of Historical Ornament*, Supervised by William R. Ware (Boston: Prang & Company, 1879), title page. *The Year-Book of Education for 1879. Being the Second Annual Supplement to the Cyclopaedia of Education: A Dictionary of Information for the Use of Teachers, School Officers, Parents, and Others* (New York: E. Steiger, 1879), 369.

³⁶⁶ Heinzen, title page.

³⁶⁷ Clair Battison, "A Brief History of Mounts," *Conservation Journal*, no. 33 (October 1999).

³⁶⁸ Heinzen, title page.

³⁶⁹ *Ibid.*

The Grammar of Ornament with minor adjustments and omissions.³⁷⁰ The influence of other publications was not credited, unlike in Ware’s cheap hand-book, and each plate was an original design.

A House for the Massachusetts Elite

Ware’s *Examples of Building Construction* featured a chromolithograph collection of orthographic drawings of a wooden house. (Figures 17, 19, 22, & 24) Ware’s choice of the wooden-framed house was a practical selection for his MIT students, who were either currently working at or aspiring to work at local architecture offices in the Boston area. Many of the local construction bids were for single-family houses. Starting in 1868, Bostonians fled to neighboring municipalities, either to escape the city’s high property tax or to promote a segregated suburb of sparse lots free from immigrant, working-class residents.³⁷¹ Beyond the elite enclave of MIT’s Back Bay — some of which Ware & Van Brunt designed and many of which were owned by elite Bostonians despite the neighborhood’s adjacency to the tenement-filled South End — urban density was associated with the physical and metaphorical disease of the immigrant working class.³⁷² Ware’s brother, Unitarian minister John F. W. Ware, advocated in 1864 for the sparsely decorated “house” as an antidote to “plague and cholera.” In his manifesto *Home Life: What it Is and What it Needs*, the older Ware wrote, “Healthier would life be morally and physically could we break away from the absurdity of crowded villages [in New England], and spread out into the

³⁷⁰ Heinzen selected Egyptian (Jones chapter 2), Assyrian and Persian (Jones chapter 3), Greek (Jones chapter 4), Roman (Jones chapter 6), Byzantine and Romanesque (partly Jones chapter 7), Arabian and Moorish (Jones chapters 8 and 10), Gothic (under the category “Medieval” in Jones chapter 16), and Renaissance (Jones chapter 17). Owen Jones, *The Grammar of Ornament: A Visual Reference of Form and Colour in Architecture and the Decorative Arts* (Princeton and Oxford: Princeton University Press, 2016).

³⁷¹ This history was told in Ronald D. Karr, “The Evolution of an Elite Suburb: Community Structure and Control in Brookline, Massachusetts, 1770–1900,” PhD Dissertation, Boston University, 1981, 212, 215–216, 267.

³⁷² See appendix for a complete list of Ware & Van Brunt’s works in Kimberly Alexander-Shilland, “Ware and Van Brunt: Architectural Practice and Professionalization (1863-1881),” PhD Dissertation, Boston University, 1999.

country which God made, where sun and air, pure as He creates them, could reach us.”³⁷³ By 1875, 40 percent of Boston’s population were foreign-born, Irish immigrants. This constituency of 60,000 inhabitants were majority Catholic, as opposed to the predominantly Protestant high society.³⁷⁴ Ware’s example in this text-book fit this Protestant outcry and looked similar to the antebellum wooden country houses that Ware photographed and in which he grew up. (Figures 26 & 27) Unlike the competitions for large, public infrastructure for the advanced students at the École des Beaux-Arts, Ware selected a scale and typology typical for the suburban Massachusetts building landscape since, as he said later, “for the study of palaces does not qualify one to design a cottage.”³⁷⁵

Advocacy of this new suburban ideal – the sole wooden house amidst open land – was advantageous for Ware and for his aspiring students, as this promotion resulted in a construction boom under new annexations. This propagandistic effort was deliberate. The 22,500 new units in Roxbury, West Roxbury, and Dorchester between 1870 and 1900 were constructed by thousands of builders, architects, and contractors, none of whom were afforded a large number of contracts. 12,000 of these buildings were single-family homes.³⁷⁶ Ware & Van Brunt profited from the increase in house construction in other Boston suburbs. Between 1870 and 1872, Ware & Van Brunt completed “Model Houses” in East Dedham, a town on Boston’s border.³⁷⁷ In 1876 and 1877, Ware & Van Brunt also completed three houses for Boston suburbs.³⁷⁸ MIT students simultaneously worked on designs for this firm and other local firms while tracing this text-book.

³⁷³ John F. W. Ware, *Home Life: What It Is, and What it Needs* (Boston: W. V. Spencer, 1864), 171-172.

³⁷⁴ David A. Zonderman, *Uneasy Allies: Working for Labor Reform in Nineteenth-Century Boston* (Amherst ad Boston: University of Massachusetts Press, 2011), 169.

³⁷⁵ William Robert Ware to Wallace C. Sabine, December 28, 1909, Box: 1, Folder: 11, William R. Ware Papers, Massachusetts Institute of Technology, Libraries, Department of Distinctive Collections, Cambridge, Massachusetts.

³⁷⁶ Sam B. Warner Jr., *Streetcar Suburbs: The Process of Growth in Boston, 1870-1900* (Cambridge: Harvard University Press, 1962), 35-37, 125-131, 184.

³⁷⁷ Alexander-Shilland, 288.

³⁷⁸ *Ibid.*

The promotion of suburbia simultaneously encouraged neighborhood homogeneity. By 1873, Boston expanded in size by filling in the Back Bay and the South End as well as annexing several municipalities, including Roxbury, West Roxbury, Dorchester, Brighton, and Charlestown, about which one letter to the editor of a newspaper warned two decades earlier:

If this pressure continues without an outlet for a few years longer, Boston must inevitably become a city of warehouses, and a place for the residence of the laboring population, while our wealthy class and capitalists will be driven out into the suburbs, and with them will disappear those masses of taxable personal property which now contribute chiefly to the payment of the current expenses of our city.³⁷⁹

These fears were warranted in the case of some municipalities such as Brookline, which vetoed annexation, stacked its local council with elite citizens rather than Boston's city government of working and middle-class men, and kept property taxes low.³⁸⁰ Boston and its surrounding towns became more and more segregated by race, ethnicity, and income over the course of Ware's tenure at MIT.³⁸¹ Due to the streetcar network, wealthier Bostonians worked in the city center while living far away from neighboring sweatshops and tenements.³⁸²

In fact, the house in Ware's text-book, with its ample land, curvilinear road, and recessed entrance was ideal for a wealthy, Brookline client. A small plan of the house and its "grounds" portrayed a stable and a kitchen garden. (Figure 28) The house featured a private driveway, and its façade and this driveway recessed from the main roadway. The "exclusive character" of residential lots in Brookline, due to restrictive covenants, included curvilinear roads and "generous setbacks" of the façades.³⁸³ (Figure 29) Indeed, Ware's first building was in

³⁷⁹ T. and for the Atlas, "Annexation of Charlestown to Boston," *Boston Daily Atlas* 23, no. 62 (September 12, 1854).

³⁸⁰ Noam Maggor, *Brahmin Capitalism: Frontiers of Wealth and Populism in America's First Gilded Age* (Cambridge: Harvard University Press, 2017), 73-74.

³⁸¹ Warner, Jr.

³⁸² Ibid.

³⁸³ Maggor, 74.

Brookline, the only building credited to his partnership with civil engineer Edward S. Philbrick.³⁸⁴

The Architect's Choice: Revealing and Concealing the American House Design

Knowledge of style and ornamentation in house design was widely available to the American consumer of the time. The subject of Ware's *Examples of Building Construction* evoked the popularly published format of the time: the house pattern book.³⁸⁵ (Figure 30) House pattern books were not found in the early MIT architectural library nor were they similar to the European tomes the library possessed. These books were published by builders, carpenters, and landscape designers rather than by Ware's circle of architects. Economical and accessible, house pattern books were, in fact, considered counterproductive to the mission of projecting architecture as an elite discipline.³⁸⁶ While these books often featured design advice, they also featured house plans, and a consumer could then purchase the working drawings of a selected design, circumventing the hiring of an architect.³⁸⁷ These books often featured dozens of house designs, from which the client selected their favorite. The sites in house pattern books, like Ware's house, were unspecified, as plans could be purchased for any part of the country.³⁸⁸ An architect or builder could then be hired to handle the specific requirements of a given property.

Ware's text-book suggested an alternative consideration, in which the architect was the arbiter of taste. In an economy with an increasing number of choices, each laid out by house

³⁸⁴ Alexander-Shilland, 34, 288. Philbrick was a Brookline resident, became a council member of Brookline, and was heavily involved in the region's sewage and construction efforts.

³⁸⁵ Although house pattern books were also published in England, historian Daniel J. Boorstin described them as a "characteristically American kind of book." Daniel J. Boorstin, *The Americans: The Democratic Experience* (New York, Vintage Books, 1974), 128.

³⁸⁶ Woods, "The American Architect and Building News," 23.

³⁸⁷ Pai, 15.

³⁸⁸ James L. Garvin, "Mail-Order House Plans and American Victorian Architecture," *Winterthur Portfolio* 16, no. 4 (Winter 1981): 309.

pattern books, clients could hire the architect as the deciding authority. Ware's text-book provided only one house design as the only option. Rather than expanding on this simple design, an MIT student faithfully traced Ware's plates, only embellishing the natural landscape. (Figure 16) In the culture of domesticity, if women were in charge of the home and purchasers of popular literature on taste, the male professional could then be hired as the expert.

Ware capitalized on this public interest in house design, visible in the proliferation of house pattern books, while simplifying the format to benefit the architect. House pattern books often recommended specific revivalist styles and corresponding ornaments.³⁸⁹ Ware introduced and labeled specific ornaments, but he did not name any styles, securing that in the mind of the architect. Although Ware included Victorian Gothic-inspired ornaments such as French windows, Gothic spikes, rosettes on the banisters, and classically inspired cornices, the house was too simple in ornamentation to fit into a particular category of house style from this era.³⁹⁰ A wooden lattice at the corner of the porch's roof was one detail evocative of the concurrent Shingle Style. The simplicity of the house suggested Carpenter Gothic, a style popularized by builders rather than architects, but this house did not feature that style's characteristic lace-like wooden trim at the edge of its roof. As the text-book's title suggested, these illustrations revealed construction rather than architecture. Although Ware argued that construction in itself was beautiful as was the pure materiality of building components, this text-book likely served as a starting point for the student to generate design ideas.³⁹¹ Advanced detail in ornamentation was found only in the mind of the architect.

³⁸⁹ For example, A. J. Downing's renowned house pattern book promoted Italianate design into American house construction: Andrew Jackson Downing, *Cottage Residences: Or, A Series of Designs for Rural Cottages and Cottage Villas, and Their Gardens and Grounds, Adapted to North America* (New York: Wiley & Halsted, 1856).

³⁹⁰ For a survey of self-proscribed architectural styles of the 19th century in the United States, see: Gerald Foster, *American Houses: A Field Guide to the Architecture of the Home* (Boston: Houghton Mifflin, 2004).

³⁹¹ Berry.

While architectural training was not standardized at the time of this text-book's publication, some of the necessary knowledge needed to use *Examples of Building Construction* was tacit. (Figure 17) Prang characterized the text-book's plates as "working drawings,"³⁹² of which the reader is provided with no rubric on how to read other than the scale. Each drawing features a scale, and each plate is labeled as a plan, elevation, section, or detail. Technical terms such as Dormer windows, battens, and scuttles are used and are undefined.³⁹³ While the plates include a collection of the required drawing types needed in a portfolio of working drawings for a wooden house like the example chosen, with the exception of full-sized details of exterior finishes, the drawings omit further notations that specifications would typically include for workmen.³⁹⁴ For instance, the plates omit information on insulation, fasteners, and plumbing that was often written on working drawings at this time.³⁹⁵ Actual working drawings would likely include more textual information. As Ware himself advised his students, "Write on drawings as much as possible."³⁹⁶ Furthermore, no instructions grace the pages of the actual book. Instead, an accompanying pamphlet tells the reader how to copy the drawings.³⁹⁷ The selective omission of requisite information, nevertheless, legitimized the role of architectural educator and the enrollment in programs such as MIT's architecture department, where its professors served to fill these lacunae.

Ware validated the American architectural portfolio of the time by featuring an entire set of working drawings. The text-book was a rare example of public access to working drawings, since many American architects were reluctant to publish them for feature of plagiarism and lack

³⁹² "Messrs. L. Prang & Co.'s Art Education Publications."

³⁹³ Ware, *Examples of Building Construction*, plate nos. 9, 10, and 11.

³⁹⁴ "Examples of Building Construction," *The American Architect and Building News* 2 (May 26, 1877): 162–63.

³⁹⁵ Ibid.

³⁹⁶ Berry.

³⁹⁷ "Examples of Building Construction." Unfortunately, this pamphlet has not been found in any surviving copy in archives.

of compensation.³⁹⁸ Ware circumvented the use of the more popularly readable perspective drawing by incorporating high-quality elevations and isometric drawings with even and precise coloring, amplifying the basic requirements for mechanical drawing into an artwork. He likely took inspiration from the inclusion of working drawings in British surveyor Henry Laxton's multi-volume tome of the same name. All four volumes of Laxton's work were in MIT's architecture library by 1875, and they were cited by Ware's supervisor at MNAS, Walter Smith, as a good example of architectural drawing for art students.³⁹⁹ As discussed above, however, Laxton's volumes would be an expensive purchase for an individual American consumer. Furthermore, Laxton's pages were double the size of Ware's portable collection. What was particularly unusual, however, was that Ware's text-book is a near-complete portfolio of working drawings for one house. A builder could have, ostensibly, built a house from Ware's text-book. Laxton's book, in contrast, features working drawings of details or plans of a collection of public and private buildings in various styles. (Figure 31) A competing text-book by Cornell architecture professor and department founder Charles Babcock also included some working drawings of a wooden house but fills the book with the design of a church and details from various historical styles.⁴⁰⁰ Ware's publication championed the architect as the deciding figure and maker of a large portfolio of artistic drawings.

³⁹⁸ Woods, "The American Architect and Building News," 23.

³⁹⁹ The acquisition of Laxton's volumes is noted in: Massachusetts Institute of Technology. *President's Report for the Year Ending Sept. 30, 1875* (Boston: A. A. Kingman, 1876), 177. Smith cites Ware's work in Walter Smith, *Art Education, Scholastic and Industrial* (Boston: J. R. Osgood & Company, 1872), 328.

⁴⁰⁰ Charles Babcock, *Elementary Architecture* (New York: D. Appleton, 1876).

The Architect's Vision: Training in Perspective

Ware's text-book on perspective connected American architectural education to European tradition. Ware's publication, which began as a set of essays and accompanying plates in *The American Architect and Building News* and later became its own text-book, was formatted in the same style as the European books in MIT's architectural library: the instruction was primarily text, accompanied by small figures and an appendix of plates. While the images were original, none of the book's information was new. Hundreds of French, German, and English perspective manuals emerged out of the eighteenth and nineteenth century to convert both the artisan and the worker into a masterful drafter of building, weapon, and machine.⁴⁰¹ Perspective drawing was also taught as a key component in fine arts training, both for leisure and for mastery.⁴⁰²

Ware taught perspectival drawing to a diverse group of students in the same classroom. He taught perspective to the public in the 1875-1876 free lectures at the Lowell Institute. At MIT, Ware taught perspective to architecture students, engineers, artists, and amateurs. Notably, his MFAS students attended these MIT lectures in large numbers.⁴⁰³ Perspectival drawing was popular not only for Ware's students but also for the American public consumer. For example, American drawing instructor, carpenter, and ship joiner William Minifie had published the commercially successful *Text-book of Geometrical Drawing, Perspective and Shadows* in 1849. In 1878, the year of Ware's "Papers on Perspective," Minifie's text-book sold 15,000 copies.⁴⁰⁴

⁴⁰¹ This rich history is summarized in: Martin Kemp, "Seeing, knowing, and creating," *The Science of Art: Optical Themes in Western Art from Brunelleschi to Seurat* (New Haven: Yale University Press, 2011), 221-258.

⁴⁰² See Ann Bermingham, *Learning to Draw: Studies in the Cultural History of a Polite and Useful Art* (New Haven: Yale University Press, 2000).

⁴⁰³ This attendance also was an early instance of female access to architectural education in the United States. See H. Winthrop Peirce, *The History of the School of the Museum of Fine Arts, Boston 1877-1927* (Boston: Museum of Fine Arts, 1930).

⁴⁰⁴ "Minifie, William," in *Biographical Cyclopedia of Representative Men of Maryland and the District of Columbia* (Baltimore: National Biographical Publishing Co., 1879), 510-511.

Perspectival drawing was not a required component of the architect's portfolio, as only orthographic drawings were used in building construction. Nevertheless, perspectival drawing was applicable in translating a design to the client, who may not have been able to read the other drawings. Orthographic drawings featured lines parallel to the three dimensions of a plane rather than oblique. Ware wrote that he gave "much greater prominence...to the phenomena of parallel planes," but his first couple essays incorporated vanishing-point perspective, which was rooted in the use of tangents.⁴⁰⁵ While perspective drawings were not found in the studio setting, they populated the pages of *The American Architect and Building News* as well as publications for the American public such as house pattern books. Despite the concurrent effort to promote mechanical drawing instruction, the proliferation of perspectival drawings suggests that mechanical drawings were nevertheless untranslatable to many clients.

Since perspectival drawing was utilized in painting, training in perspective linked architectural education to the fine arts. By midcentury, the English drawing system, spearheaded by South Kensington, abolished the teaching of perspective drawing in lieu of practical, industrial training. The English educators dismissed perspectival drawing as "academic high-art punctiliousness."⁴⁰⁶ Ware's course was attended by architecture students as well as painting students from the MFAS.⁴⁰⁷ To satisfy this demographic, Ware wrote, a "qualitative discussion" of perspective was undertaken, "addressed especially to artists and amateurs to assist them in sketching," while a "quantitative" discussion would follow for the architects and engineers, who required technical knowledge.⁴⁰⁸

⁴⁰⁵ William Robert Ware, "Elements of Perspective, Prof. Ware's Report," in *President's Report for the Year Ending Sept. 30, 1876* (Boston: A. A. Kingman, 1877), 67.

⁴⁰⁶ Arindam Dutta, *The Bureaucracy of Beauty: Design in the Age of its Global Reproducibility* (New York and London: Routledge, 2007), 92-93.

⁴⁰⁷ Peirce, 57.

⁴⁰⁸ Ware, "Elements of Perspective, Prof. Ware's Report," 67.

Although the majority of Ware's explanations in this publication were taken from the works of French mathematician Joseph-Alphonse Adhémar, who wrote prolifically on applied geometry for architecture and civil engineering, Ware's translation was not mathematically complex: a student need only to know the definition of terms such as "coordinates" and "tangents."⁴⁰⁹ Ware's requirement that his architecture students take perspective united the department with the rest of the Institute and trained them for a practicality of their trade. Engineering students took descriptive geometry and perspective, and architecture students would supplement Ware's lectures with this additional training.⁴¹⁰

Ware's material was succinctly captured in the essays' accompanying plates, which were drawn by MIT architecture students. (Figures 32 & 33) Descriptive geometry, such as the drawing of circles with their tangents, and picturesque renderings of American houses presented architectural drawing as a unification of the Institute's technical training and Ware's fine arts aspirations. Again, Ware selected the American timber-framed house as his example. In contrast to the manicured greenery around Ware's house design in *Examples of Building Construction*, however, these plates featured a rugged terrain which would suggest the settling of seemingly vacant American lands. Most strikingly in both plates was the unusual use of the perspectival plan, which manipulated the orthographic plan into our visual perception. This usage validated the teaching of perspective to Ware's architecture student. Indeed, Ware incorrectly predicted

⁴⁰⁹ Most strikingly, Adhémar's drawing system perfects the portrayal of the spiral staircase: Joseph-Alphonse Adhémar, *Cours de mathématiques à l'usage des architectes, ingénieurs civils etc* (Paris: Armand Colin, 1870).

⁴¹⁰ Massachusetts Institute of Technology, *Reports of the President, Secretary, and Departments. 1871-72* (Boston: A. A. Kingman, 1872), 40-41. It was likely that architecture students took mechanical drawing with the mechanical engineering student, whose course was at the same time.

that the perspectival plan would eventually be used in American architecture instead of the orthographic plan.⁴¹¹

Perspectival drawing also added prominence to the architect's vision, since these drawings were angled in accordance with the viewer's perception. Indeed, Ware inserted the viewer in a drawing to explain perspective. (Figure 34) This figure evoked the first figure of William Bartholomew's *Linear Perspective Explained*, the primary text-book used in Boston public schools. (Figure 35) The primary difference was the age of the person depicted. Ware's figure was a neatly dressed gentleman with a walking stick who converts the "picture-plane" (labeled "P-P") from its perceived perspective into its rectilinear reality.⁴¹² In contrast, Bartholomew's image featured a school-aged child in nondescript attire.⁴¹³ The figure was used to introduce a perpendicular plane rather than introduce three-dimensional space. Ware's image suggested that a refined adult could train one's perception to undergo a mechanical process of conversion analogous to a camera obscura. This representation validates the role of the architect and their training in converting mechanical drawing into design.

Conclusion: A Massachusetts Education

Ware leveraged the existing market for printed material in drawing education and characterized architectural education as advanced training, a categorization which validated his architecture department at MIT. Architectural education in these early American text-books was characterized as the synthesis of fine art, mechanical trade, and intellectual knowledge. This

⁴¹¹ This argument can be found in the later revision of Ware's essays into book format: William Robert Ware, *Modern Perspective: A Treatise Upon the Principles and Practice of Plane and Cylindrical Perspective* (Boston: James R. Osgood and Company, 1882), 216.

⁴¹² Ware, "Papers on Perspective II. Phenomena Relating to the Picture," 19.

⁴¹³ William N. Bartholomew, *Linear Perspective Explained* (Boston: Shepard, Clark and Brown, 1859), 11.

branding further supported the ambitions of Ware and his elite network, since the selection of limited examples and absence of instructions validated the architectural educator as the controller of knowledge. European precedents were transformed into Boston-based content, fitting for the burgeoning American discipline.

Conclusion

Art for Art's Sake: The Fate of Massachusetts Drawing Education

In the late 1870s, class divisions further solidified as elite manufacturers and skilled laborers asserted themselves during economic crises, transforming the urban geography. The Boston Common and its nearby neighborhoods were transformed for the middle and upper classes, having transitioned the Common into a quiet space for genteel acts of leisure.⁴¹⁴ An 1877 proposal by mechanics for a large exhibition of industrial art in the park was rejected by elites, who viewed the request as “crass” in part because of its display of free labor ideologies and in part because of the growing political power of Boston’s skilled laborers.⁴¹⁵ By 1880, Boston’s Suffolk County, Middlesex, and Essex employed the most workers in manufacturing in the United States and invested the most total capital in production.⁴¹⁶ Large manufacturers weathered major economic crises, such as the Panic of 1873 and the nationwide railroad strikes of 1877. At the same time, from 1865 to 1879, the number of labor unions for skilled workers nearly tripled in the nation.⁴¹⁷ A few blocks from MIT, the South End was packed with immigrant-filled tenements.⁴¹⁸

Simultaneously, the state’s industrial drawing curriculum faced criticism for its utilitarianism, the same arguments which led to its promotion at the beginning of the decade. An elite network of rival Bostonians – including Boston Brahmin, Ruskin acolyte, and Harvard fine

⁴¹⁴ For more on the Common’s changing rules, including a ban on cattle grazing, see Noam Maggor, *Brahmin Capitalism: Frontiers of Wealth and Populism in America’s First Gilded Age* (Cambridge: Harvard University Press, 2017), 146-147.

⁴¹⁵ Ibid, 127-128.

⁴¹⁶ Ibid, 250.

⁴¹⁷ David Montgomery, *Beyond Equality: Labor and the Radical Republicans, 1862-1872* (Urbana: University of Illinois Press, 1981), 135-229.

⁴¹⁸ The 1880s was a period of new social organizations that were based in the South End, including Settlement Houses and Mechanics’ Institutes, some of which had mechanical drawing classes.

arts professor Charles Eliot Norton – criticized the pragmatism of Boston’s art education and advocated for the divorcing of art and industry.⁴¹⁹ An article in *The Nation* argued,

“Instruction in *art* cannot be carried out in public schools, because it can be imparted only to pupils of advanced development and with special gifts. And instruction in *drawing*, which perhaps is what is now often meant by ‘art-instruction’ is equally removed from the category of common-school students by the fact that under present conditions a sufficient number of competent instructors do not exist, either here or in Europe and cannot be quickly called into being.”⁴²⁰

Art education was reimagined as exclusive and distinct from general education. While specialized drawing instructors trained at MNAS, their graduates had difficulty finding employment both due to a lack of compliance with the Massachusetts Drawing Act and due to the theory that general education teachers were sufficient in teaching drawing.⁴²¹ The state legislature rejected bequeathing additional funds to the school as a result of its unemployment record, and the school began charging tuition to recover from debt.⁴²² A former student complained of the school’s soul-crushing environment, and an anonymous circular by “Artists of Boston and Students of the Normal Art School” voiced concerns that MNAS faculty called an “underhand and cowardly attack.”⁴²³ By 1881, Walter Smith lost reelection in his state and city supervisory roles in art education, returning to England the following year. Charles Callahan Perkins advocated for Smith but ultimately lost his seat on the school committee in 1884.⁴²⁴

⁴¹⁹ Mary Ann Stankiewicz credited Norton and his circle to the series of articles in *The Nation* that called for the revoking of drawing in Boston public schools. Mary Ann Stankiewicz, *Developing Visual Arts Education in the United States: Massachusetts Normal Art School and the Normalization of Creativity* (New York: Palgrave Macmillan, 2016), 126.

⁴²⁰ “General Art Instruction,” *The Nation* 22, no. 567 (May 11, 1876), 306.

⁴²¹ Art-Student, “Massachusetts Art-Instruction,” *The Nation* 22, no. 569 (May 25, 1876), 333.

⁴²² Ibid. The tuition claim is disputed by Walter Smith in Walter Smith, “Massachusetts Art-Instruction,” *The Nation* 22, no. 571 (June 29, 1876), 411-412.

⁴²³ Ibid.

⁴²⁴ Hina Hirayama, *With Éclat: The Boston Athenaeum and the Origin of the Museum of Fine Arts, Boston* (Boston: The Boston Athenaeum and the University Press of New England, 2013), 88.

Likewise, in May 1881, Ware dissolved his architecture partnership, resigned from his teaching positions, and moved to New York to found Columbia's architecture department.⁴²⁵

Boston's public drawing education was also temporarily sacrificed due to backlash over public spending. Simultaneously, criticisms about public schools' ineffectiveness and factory-like organization were undergirded by panic over their expense. One journalist opined in 1880 that despite expensive superintendence, public school students graduated illiterate and untrained. She implied that the increasing expense increased the wealth of educators to the detriment of students.⁴²⁶ Indeed, the city's expense per pupil rose significantly, from \$12.04 in 1856 to \$36.54 in 1876, considered lavish by critics.⁴²⁷ Philbrick was publicly fired from his position in 1878, the circumstances of which were described in the *New England Journal of Education* as a "slaughter" and "decapitation."⁴²⁸ After over two decades as supervisor and despite his commitment to retire at the end of the coming school year, Philbrick lost reelection due to "an educational war between Mr. Philbrick and a portion of the school committee and supervisors."⁴²⁹ Philbrick was replaced by Harvard graduate, Boston Brahmin, and MFA trustee Samuel Eliot, who was Charles Eliot Norton's cousin.⁴³⁰

Industrial drawing disappeared from school curricula, only to immediately reemerge with a different slant. By 1881, the adult drawing classes outside of MIT's degree programs ended. By the 1881-1882 school year, Smith reported that all evening school drawing classes in Boston

⁴²⁵ Ware & Van Brunt's commissions waned after 1877, although Van Brunt stayed in Boston for a few more years and formed Van Brunt & Howe. Kimberly Alexander-Shilland, "Ware and Van Brunt: Architectural Practice and Professionalization (1863-1881)," PhD Dissertation, Boston University, 1999, 255.

⁴²⁶ Gail Hamilton, *Our Common-School System* (Boston: Estes and Lauriat, 1880), 204-5.

⁴²⁷ Michael B. Katz, "The Emergence of Bureaucracy in Urban Education: The Boston Case, 1850-1884: Part I," *History of Education Quarterly* 8, no. 2 (Summer 1968): 171.

⁴²⁸ "The Week," *New England Journal of Education* 7, no. 5 (January 31, 1878), 73.

⁴²⁹ *Ibid.*

⁴³⁰ Eliot promoted "harmony" among the school committee, according to "The School Superintendency," *Boston Daily Advertiser* 131, no. 20 (January 23, 1878).

were “abolished” and the state drawing exhibitions abandoned.⁴³¹ He blamed the classes’ downfall on lack of attendance, yet truancy was an issue in every educational program, from the public school system to the MFAS classes.⁴³² MNAS alumnus Charles M. Carter swiftly replaced Smith for a quarter of his salary.⁴³³ Carter proposed a new industrial drawing curriculum for the 1882-1883 school year in Massachusetts. After a one-year absence, his report was a “plan for a first year’s work in the public schools of a town where drawing has not been taught,” as if such a curriculum had not already existed for over a decade.⁴³⁴ Carter featured a curriculum similar to Smith’s program, including copying exercises with an elevation, plan, and perspectival drawing of a wooden house.⁴³⁵ (Figure 36) All of the images were noticeably similar to the figures in Smith’s *The American Text-Books of Art Education* series, but Smith was not credited. A plan for industrial drawing instruction in evening schools returned as a priority the following year.⁴³⁶ By the 1884-5 school year, the state drawing exhibition reemerged in Quincy.⁴³⁷ Carter, however, distinguished the exhibition from its predecessors. Students drew more still-life drawings from objects rather than copies of two-dimensional sources. While still having an industrial advantage – drawing’s connection to sewing was particularly noted – Carter wrote, “All such [drawing] exercises tend to cultivate discrimination in matters of taste,

⁴³¹ Walter Smith, “Annual Report on Industrial Art Education,” in *Forty-Fifth Annual Report of the Board of Education: Together with the Forty-Fifth Annual Report of the Secretary of the Board. 1880-81* (Boston: Rand, Avery, & Co, 1882), 245.

⁴³² Smith and his colleagues at the Board of Education wanted regular attendance for 8 months of the year and potentially for two full years. *Ibid.*, 248.

⁴³³ Stankiewicz, 135.

⁴³⁴ Charles M. Carter, “Plan for Industrial Drawing,” in *Forty-Seventh Annual Report of the Board of Education: Together with the Forty-Seventh Annual Report of the Secretary of the Board. 1882-1883* (Boston: Wright & Potter, 1884), 201.

⁴³⁵ *Ibid.*, 201-210.

⁴³⁶ John W. Dickinson, “Plan for Drawing in Evening Schools,” in *Forty-Eighth Annual Report of the Board of Education: Together with the Forty-Eighth Annual Report of the Secretary of the Board. 1883-1884* (Boston: Wright & Potter, 1885), 113-117.

⁴³⁷ Charles M. Carter, “Report of Chas. M. Carter, Agent for the Promotion of Industrial Drawing,” in *Forty-Ninth Annual Report of the Board of Education: Together with the Forty-Ninth Annual Report of the Secretary of the Board. 1884-1885* (Boston: Wright & Potter, 1886), 212.

increased interest in one's surroundings, and to develop lasting ideas of the good, true and beautiful."⁴³⁸ Drawing persisted in school curricula in day and evening schools in Boston, albeit without the extensive promotion of the elite network who propelled it into law. (Figures 37 & 38)

The institutions that emerged out of the increased activity in drawing education nevertheless survived, albeit altered. Pragmatic arguments for industrial drawing were supplanted by visions of taste and refinement. Drawing classes at MIT, MFAS, and MNAS had barriers to entry in their application processes and prohibitive costs. Ware validated architecture as a university discipline, a training that synthesized art, skill, and intellect. After he left, the department gradually shifted towards championing architecture as a fine art, following the model of the *École des Beaux-Arts*.⁴³⁹ Design entered the workforce as an artistic skill, rather than as a manual labor. This elevation benefitted the newly minted architect, eager to acclimate among his elite clientele.

The Persistence of the Architectural Expert

In 1887, Ware was hired by a design committee to evaluate whether Adler & Sullivan's proposal for the Auditorium Building should be selected. According to Louis Sullivan's retelling of the events, Ware was called in to evaluate the artistic merit of the proposal.⁴⁴⁰ He wrote an official report in support of his former student, and Ware received \$1,000 for his advice, almost

⁴³⁸ Ibid.

⁴³⁹ This history is further explored in Caroline Shillaber, *Massachusetts Institute of Technology School of Architecture and Planning, 1861-1961: A Hundred Year Chronicle* (Cambridge: Massachusetts Institute of Technology, 1963).

⁴⁴⁰ Letters by Louis Sullivan were printed in Willard Connely, "New Sullivan Letters," *Journal of the American Institute of Architects* 20, no. 1 (July 1953): 9-13.

his 1870 salary at MIT.⁴⁴¹ Sullivan wrote of the event, “The atmosphere is considerably cleared, and I am considered an artist, it seems. Poor fools!”⁴⁴² Ware left behind his Boston network in 1881, but his cultivation of architectural connoisseurship persisted, despite Sullivan’s ironic disdain. Indeed, as the École des Beaux-Arts training and as neoclassicism became increasingly popular, Ware was often an adjudicator in architectural competitions throughout the United States.⁴⁴³ Despite institutional changes and societal shifts, he survived forty years in architectural education as a pedagogical expert.

Ware copied some of his Boston strategies in New York, although not everything was translatable. With a only couple years of working and training in New York and connections to the American Institute of Architects, he did not have a comparable network of clientele nor building contacts on which to rely. Nevertheless, Ware joined the Metropolitan Museum of Art’s Board of Trustees in 1885, serving with his former teacher Richard Morris Hunt and industrialist Cornelius Vanderbilt.⁴⁴⁴ Ware joined a few committees, including the Committee on Art-Schools in 1892, which he chaired the following year.⁴⁴⁵ Like at the Massachusetts’ exhibitions, Ware presented student awards.⁴⁴⁶ Under Ware, the Art-School had forty students in its architectural drawing class.⁴⁴⁷ The course was connected to Columbia’s architecture department and considered a feeder program.⁴⁴⁸ Unfortunately, the Art-School was closed in 1895 due to lack of

⁴⁴¹ Ibid. In 1870, Ware’s salary was estimated at \$1,200, with a consideration of a \$800 increase to \$2,000, the salary of then President John D. Runkle. Present Salaries, MC1, Series: 1, Box: 5, Folder: 65, William Barton Rogers Papers, Massachusetts Institute of Technology, Libraries, Department of Distinctive Collections, Cambridge, Massachusetts.

⁴⁴² Quoted in Connelly, 13.

⁴⁴³ His recollections on one competition can be found in: William Robert Ware, *Kansas City Exchange Building Competition. Reports* (New York: American Institute of Architects, 1886).

⁴⁴⁴ “Board of Trustees,” *Annual Report of the Trustees of the Metropolitan Museum of Art*, no. 16 (1885): 311.

⁴⁴⁵ “Board of Trustees,” *Annual Report of the Trustees of the Metropolitan Museum of Art*, no. 23 (1892): 528.

⁴⁴⁶ “Awards to Art Students,” *The New York Times (1857-1922)*, May 28, 1893, 10.

⁴⁴⁷ Ibid, 576.

⁴⁴⁸ Darius O. Mills, “Report of the Committee on Schools, January 30th, 1893,” *Annual Report of the Trustees of the Metropolitan Museum of Art*, no. 23 (1892), 548.

funding as well as scandal. Ware was forced to resign from the board after voting against the reelection of a powerful trustee, who argued Ware had not paid the proper fee to remain on the board.⁴⁴⁹ He ultimately rejoined the board, although he failed to return to any sub-committees. Although his term ended in 1906, he left after his forced resignation from Columbia in 1903. Charles F. McKim replaced him at both institutions.⁴⁵⁰

At Columbia, Ware's focus was almost entirely on architectural education, as he designed only one building after he left Boston.⁴⁵¹ Some of MIT's department practices resurfaced in Columbia's new program. He initially allowed special students into Columbia's architecture department, but he later advocated against them, since they were predominantly students without bachelor's degrees and students of lower classes.⁴⁵² Ironically, despite this suggestion, he still increased the accessibility of architectural education. Ware became a prolific author of text-books, his written audience increasing when he partnered with an international text-book company. In his later publications, perspectival and isometric portrayals of wooden houses were replaced with ornamental drawings of Classical components, however, in line with the later preference for Beaux-Arts training and the neoclassical facades of New York City.⁴⁵³ By the time of his retirement, Ware advised many architecture programs in the United States through his chairmanship of the Committee on Education in the AIA, founded two architecture programs in

⁴⁴⁹ "Gen. Di Cesnola Wrong: His Action Regarding Prof. Ware Arouses Much Comment," *The New York Times* (1857-1922), March 7, 1895, 5.

⁴⁵⁰ "Board of Trustees," *Annual Report of the Trustees of the Metropolitan Museum of Art*, no. 33 (1903): 5-7; "Board of Trustees," *Annual Report of the Trustees of the Metropolitan Museum of Art*, no. 35 (1905): 5-7; "Prof. Ware's Resignation: His Wish That It Take Effect in One Year Ignored by Columbia Trustees, It Is Said," *The New York Times* (1857-1922), June 17, 1903, 2.

⁴⁵¹ Ware procured this commission, which was in Athens, because of Charles Eliot Norton. Alexander-Shilland, 271.

⁴⁵² William Robert Ware, "Professional Draughtsmen as Special Students in the School of Architecture," *The School of Mines Quarterly* 18 (1897): 422-429.

⁴⁵³ Most notable was William Robert Ware, *American Vignola*, 1st edition (Boston: The American Architect and Building News company, 1902).

universities, and taught the professors at architecture departments throughout the country.⁴⁵⁴

American architecture persisted as a university discipline.

⁴⁵⁴ Dinner to Mr. Ware at the Tavern Club, Boston, November Twenty-eighth 1903, Box: 1, Folder: 33, William R. Ware Collection, Avery Architectural & Fine Art Library, Columbia University, New York, New York.

Figures

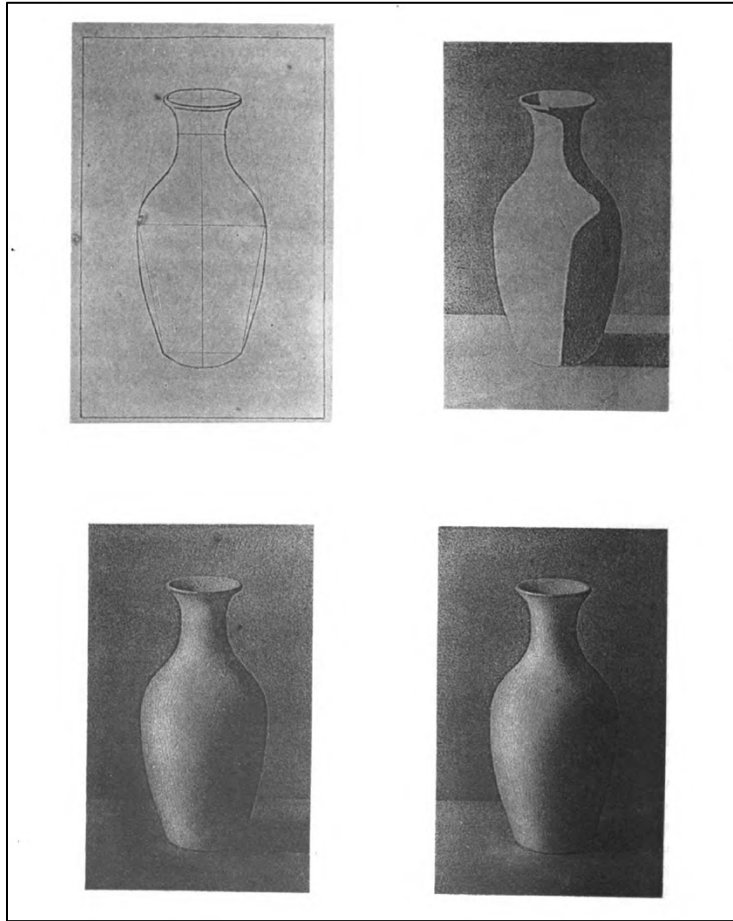


Figure 1: Drawings by MIT Architecture Students. From: William Robert Ware. "Charcoal Drawing." In *The Antefix Papers* (Boston: Printed for Private Circulation, 1875).



Figure 2: Professor William Robert Ware. Full portrait, in a Greek himation. Photograph mounted on cardboard. Ca. 1885. Box: 4, Folder: 2. William R. Ware Collection. Avery Architectural & Fine Art Library. Columbia University. New York, New York.

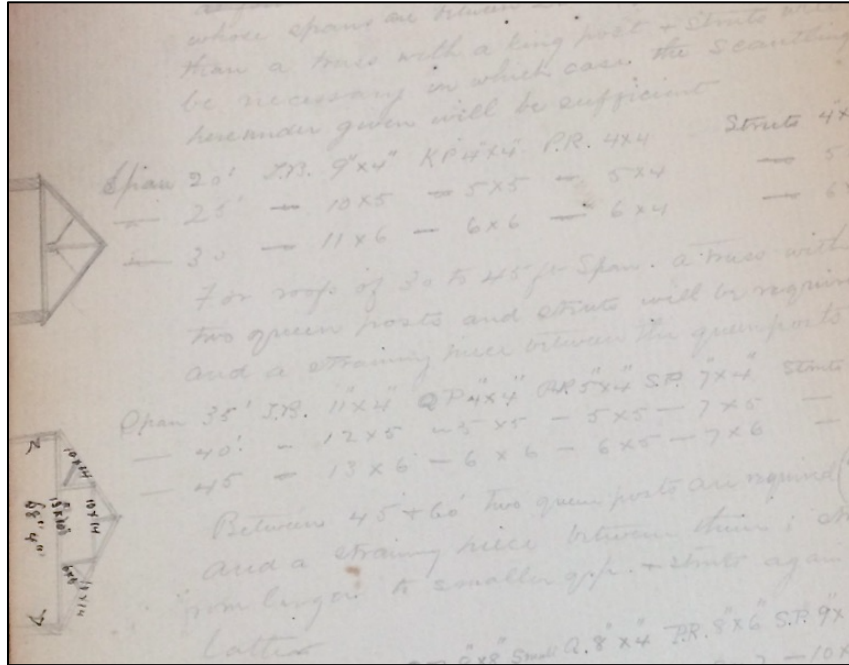


Figure 3: Abraham Hun Berry. Copies in the Margins. Pencil on Paper. 1870. From: "Student Notes from Architectural Courses Taught by William R. Ware at MIT and the Massachusetts Normal Art School." 1872. MC 172, Massachusetts Institute of Technology Department of Distinctive Collections. Massachusetts Institute of Technology Archives, Cambridge, Massachusetts.

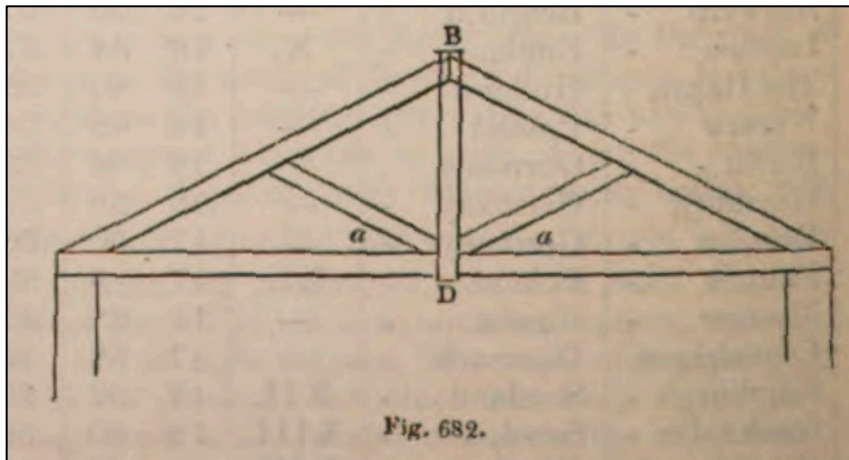


Figure 4: Figure 682. From: Joseph Gwilt. *An Encyclopedia of Architecture: Historical, Theoretical, and Practical*. London: Longman, Brown, Green, and Longmans, 1842, 546.

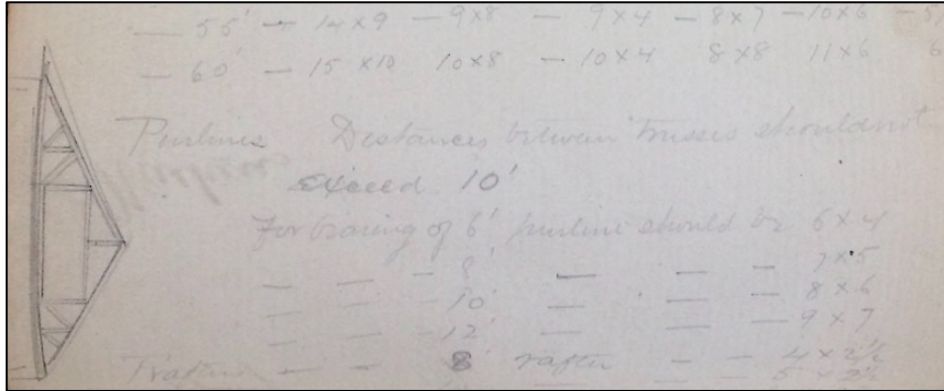


Figure 5: Abraham Hun Berry. Copy in the Margins. Pencil on Paper. 1870. From: "Student Notes from Architectural Courses Taught by William R. Ware at MIT and the Massachusetts Normal Art School." 1872. MC 172, Massachusetts Institute of Technology Department of Distinctive Collections. Massachusetts Institute of Technology Archives, Cambridge, Massachusetts.

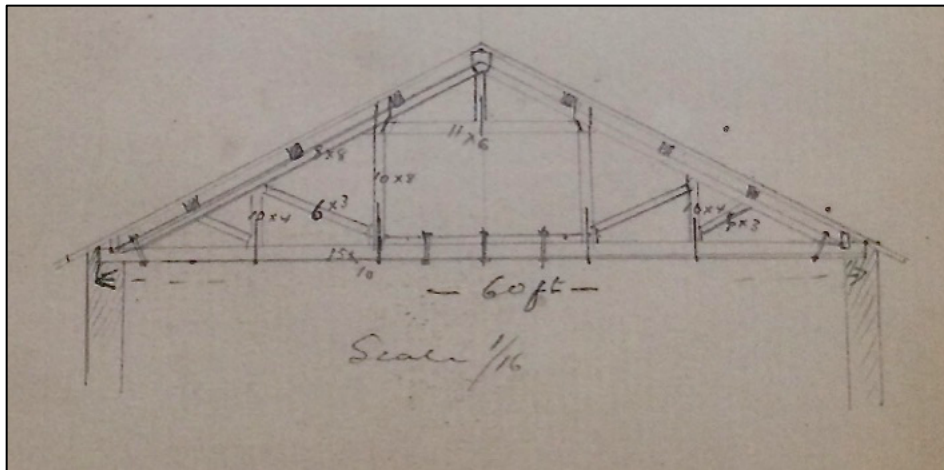


Figure 6: Abraham Hun Berry. Measured Copy of Gwilt. Pencil on Paper. 1870. From: "Student Notes from Architectural Courses Taught by William R. Ware at MIT and the Massachusetts Normal Art School." 1872. MC 172, Massachusetts Institute of Technology Department of Distinctive Collections. Massachusetts Institute of Technology Archives, Cambridge, Massachusetts.

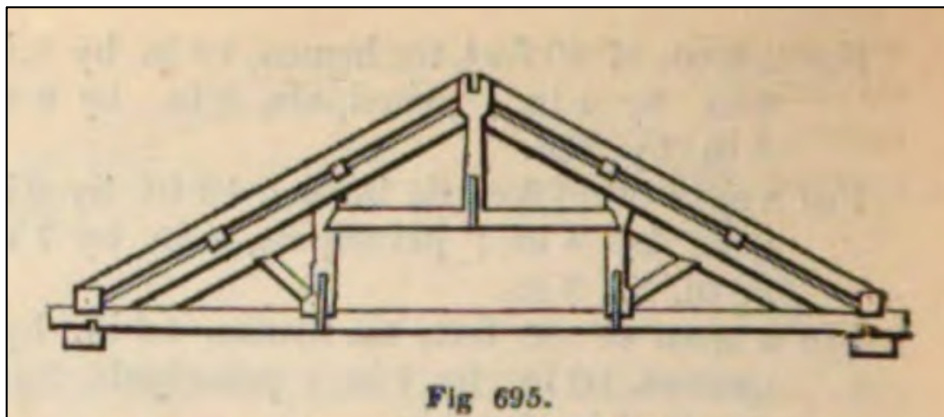


Figure 7: Figure 695. From: Joseph Gwilt. *An Encyclopedia of Architecture: Historical, Theoretical, and Practical*. London: Longman, Brown, Green, and Longmans, 1842, 550.

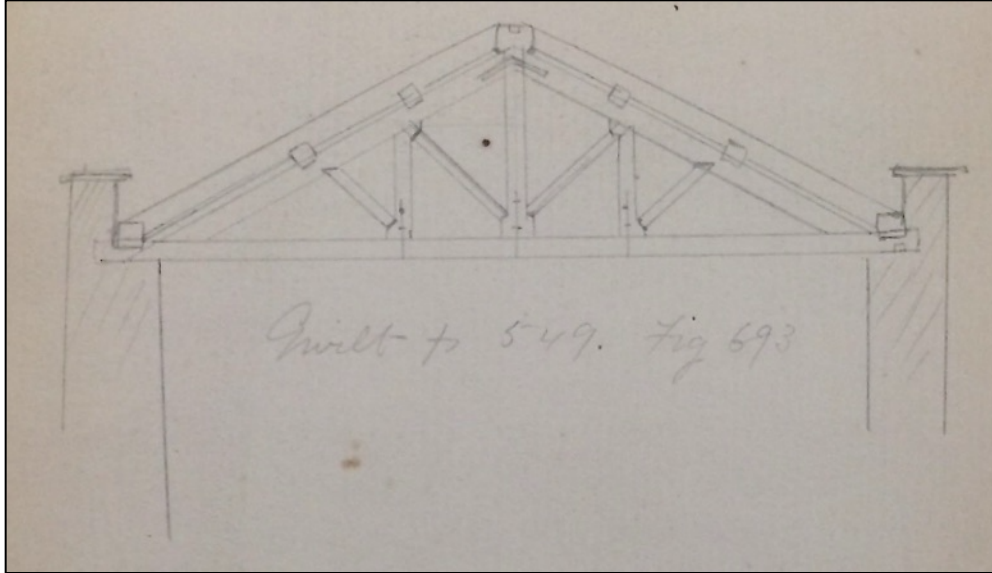


Figure 8: Abraham Hun Berry. Measured Copy of Gwilt. Pencil on Paper. 1870. From: "Student Notes from Architectural Courses Taught by William R. Ware at MIT and the Massachusetts Normal Art School." 1872. MC 172, Massachusetts Institute of Technology Department of Distinctive Collections. Massachusetts Institute of Technology Archives, Cambridge, Massachusetts.

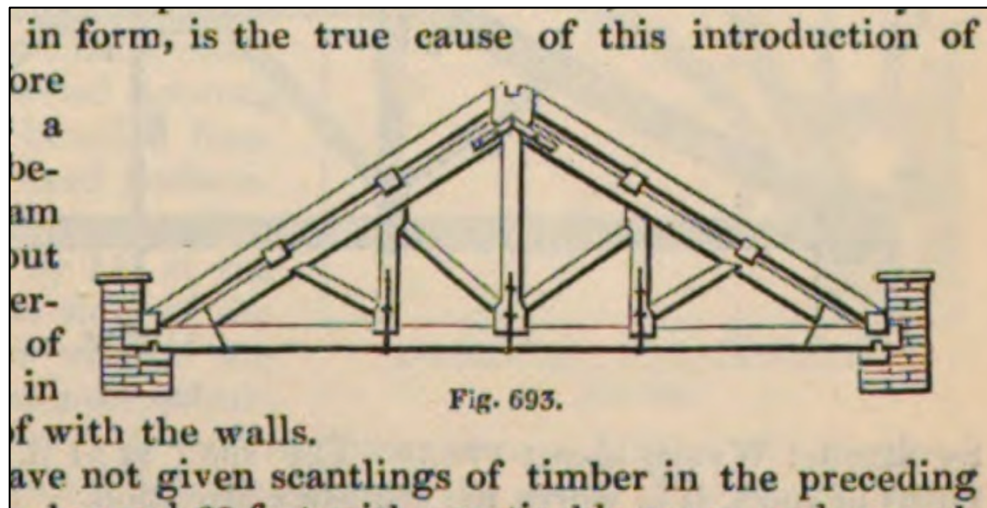


Figure 9: Figure 693. From: Joseph Gwilt. *An Encyclopedia of Architecture: Historical, Theoretical, and Practical*. London: Longman, Brown, Green, and Longmans, 1842, 549.

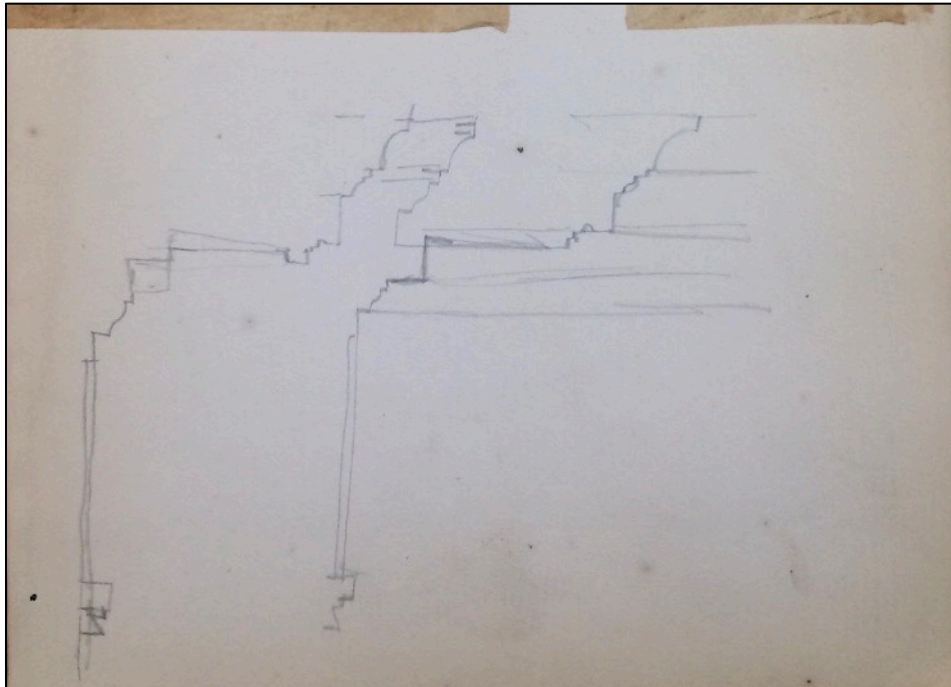
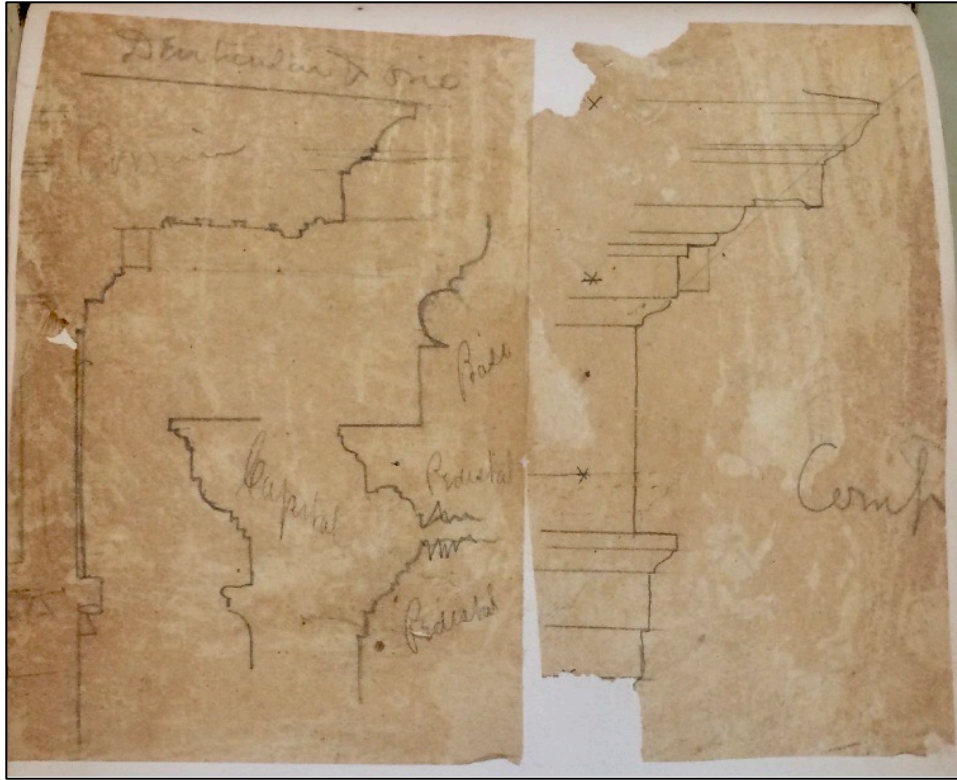


Figure 10: Abraham Hun Berry. Tracing and Copying. Pencil on White Paper and Trace Paper. 1871. From: "Student Notes from Architectural Courses Taught by William R. Ware at MIT and the Massachusetts Normal Art School." 1872. MC 172, Massachusetts Institute of Technology Department of Distinctive Collections. Massachusetts Institute of Technology Archives, Cambridge, Massachusetts.

EXAMPLES OF BUILDING CONSTRUCTION.

Part IV. Alternative Designs for a Small House. Elevations and Details for Wood, Brick and Stone. 12 Plates.



PLATE № 43.

PART IV. PLATE 7.

Figure 11: William Robert Ware, Plate 43. Chromolithograph. From: William Robert Ware. *Examples of Building Construction*. Boston: Prang and Company, 1876.



Figure 12: Architectural drawing class at MIT. Eugène Létang is the mustached figure in the dark blazer in the back. Photograph. Ca. 1870s or 1880s. From: MIT Museum Archive.

NAMES OF GEOMETRIC SOLIDS.

The names of the geometric solids comprised in the American Drawing-Models, and which are most commonly used in teaching Model Drawing, are here given, together with illustrations of the forms themselves:—

Planes.—No. 1, Circular; 2, Triangular; 3, Square; 4, Hexagonal Planes.

Piliths.—No. 5, Circular Disk; 6, Triangular Pilith; 7, Square Pilith; 8, Hexagonal Pilith.

Prisms.—No. 9, Cylinder; 10, Triangular Prism; 11, Rectangular Prism, or Oblong Block (Parallelepiped); 12, Hexagonal Prism.

Pyramids.—No. 13, Cone; 14, Triangular Pyramid; 15, Rectangular or Right Pyramid; 16, Hexagonal Pyramid.

Other Solids.—No. 17, Sphere; 18, Frustum of a Cone; 19, Cube; 20, Flight of four Steps.

Frames.—No. 21, Circular Frame; 22, Triangular Frame; 23, Square Frame; 24, Hexagonal Frame.

Various Solids.—No. 25, Cross; 26, Double Cross; 27, Skeleton Cube; 28, Skeleton Rectangular Block.

DEFINITIONS.

Planes.—A plane has length and breadth, but no thickness. The first word describes the character of the plane; thus, a circular plane, or a hexagonal plane. Unless otherwise stated, the names hexagonal, triangular, &c., refer to regular forms; i. e. to hexagons, triangles, &c., having equal sides and angles.

Piliths.—A pilith is a cross-section of a prism. If the length of the axis of a prism be shorter than its diameter, it is commonly, by draughtsmen, described as a pilith. It is simply a slice cut from the end of a prism.

Prisms.—A prism is a geometrical solid having two faces (ends) or bases which are equal and parallel, and whose sides are parallelograms. It is a right prism when the bases and sides are perpendicular to each other, and an oblique prism when the planes of the base and sides are not right angles. A line from centre to centre of each base is called the axis of the prism.

Pyramids.—A pyramid is a geometrical solid having a regular polygon, square, or triangle as its base, and its sides composed of triangles having a common vertex. A right pyramid has its axis and base perpendicular to each other.

A Sphere.—A sphere is a solid bounded by a curved surface, every point in which is equally distant from a point within it, called the centre. It is described by the revolution of a semicircle on the diameter.

A Frustum of a Cone. is that part of the solid which is cut off by a plane parallel to the base.

A Cube. is a rectangular parallelepiped, whose six faces are all square planes.

A Flight of Steps. (not a geometric solid) is composed of two planes, vertical and horizontal; the first being called the riser, and the second the tread.

Frames.—A Frame, unless otherwise specified, is a regular geometric shape composed of prisms, squares in the section perpendicular to their axes.

The Circular Frame is an exception to this, though a section made by a radius of its base will be square also.

Various Solids.

A Cross is the intersection of two or more similar prisms.

A Double Cross is the junction of two crosses having a common vertical stem.

A Skeleton Cube is composed of right prisms, square in section, and made into the form of a cube.

A Skeleton Rectangular Block is composed of right prisms, square in section, made into the form of a parallelepiped.

THE
AMERICAN DRAWING-MODELS
FOR THE USE OF
Common Schools, Drawing Classes, and Schools of
Art and Science.

Manufactured at the Washburn Machine-Shop, connected with the Free
Institute of Industrial Science, Worcester, Mass.

FROM DESIGNS BY
PROF. WALTER SMITH,
STATE DIRECTOR OF ART EDUCATION FOR MASSACHUSETTS.

THE increasing demand for ART EDUCATION, and its general adoption as a branch of common-school instruction by the Legislature of Massachusetts, has rendered it necessary that a supply of proper models with which to convey this instruction should be produced. The managers of the Worcester Technical School, having all the facilities for producing such works, and anxious to aid the cause of Artistic and Scientific Education, have obtained designs for a complete set of models, from PROF. WALTER SMITH, Director of Art Education for the State of Massachusetts, whose position will be a sufficient guaranty of their quality and arrangement.

The models are made from the best materials, in a perfect and workmanlike manner; and by reason of extensive machinery specially fitted up for this work, the models are produced with accuracy, at a much less price than would be possible otherwise. Each model being made to dimensions, these sets are equally suited to all kinds of Free-Hand, Instrumental, and Perspective Drawing.

Set No. 1
Consists of thirty pieces, selected from the most useful and beautiful geometrical figures and curved forms, and includes the NEW ADJUSTABLE MODEL-STAND. Price, with box \$ 20

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Consists of ten wooden vases, duplicated from the Greek originals. Price, with box \$ 10

Set No. 3
Consists of four large models for lectures and instructions to classes:—
1. CUBE, fifteen inches side.
2. CONE, with base twelve inches, altitude eighteen inches.
3. CYLINDER, base twelve inches, altitude eighteen inches.
4. HEXAGONAL PRISM, base twelve inches, length twenty-four inches. Price, with box \$ 15

Set No. 4
Is intended for Primary Schools, and consists of twelve pieces, which comprise the common geometrical figures. Price, with box \$ 10

The above prices are all net prices.

Messrs. L. Prang and Company, the Publishers of these Books, are the Sole Agents for these Models.

GEOMETRIC SOLIDS.

Figure 13: Last page with an advertisement from “The American Drawing-Models” as part of Walter Smith’s art education text-book series. From: Walter Smith. *American Text-Books of Art Education: Freehand Drawing. Number One.* Boston: L. Prang and Company, 1875.



THIRD FLOOR
LECTURE ROOM IN 1876
LIBRARY IN 1929



FIFTH FLOOR
DRAFTING ROOM IN 1876
DRAFTING ROOM IN 1929

Figure 14: Students reading and designing in the MIT Architecture Department rooms in the Rogers Building. Photographs, 1876. From: MIT Museum Archives.

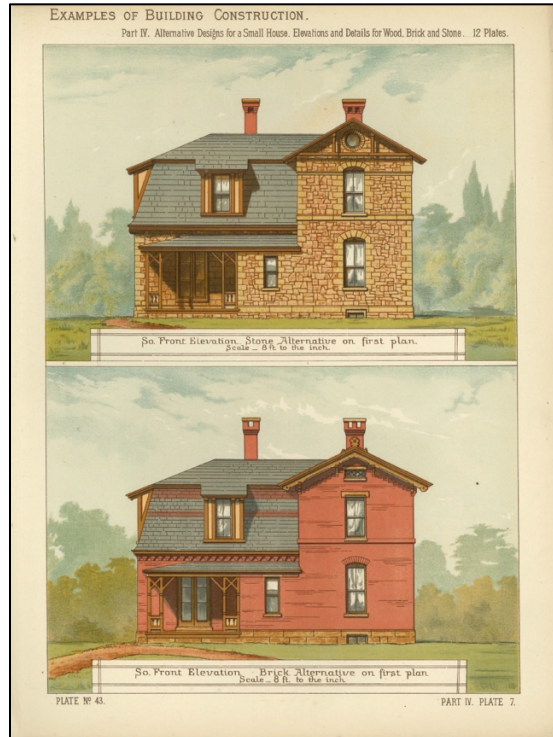


Figure 15: William Robert Ware, Plate 43. Chromolithograph. From: William Robert Ware. *Examples of Building Construction*. Boston: Prang and Company, 1876.



Figure 16: Edwin James Lewis, Jr. Plate Number 43. Pencil and Watercolor on Trace Paper. From: Edwin James Lewis, Jr. "Architectural Drawings in Manuscript." UF//L58. Boston Athenaeum.

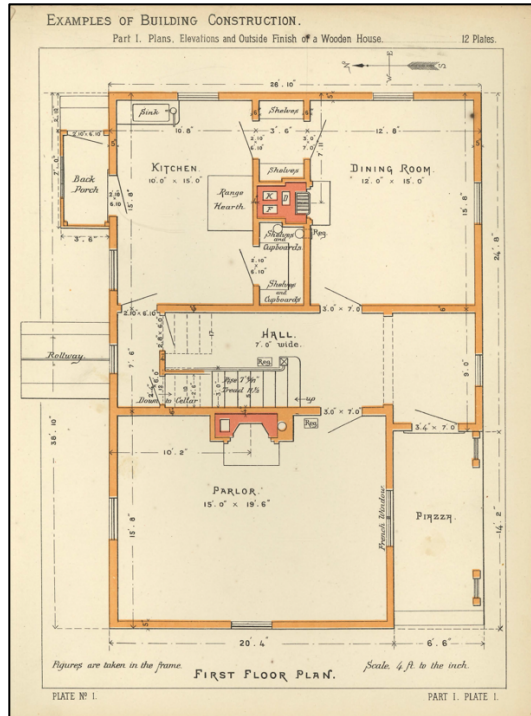


Figure 17: William Robert Ware, Plate 1. Chromolithograph. From: William Robert Ware. *Examples of Building Construction*. Boston: Prang and Company, 1876.

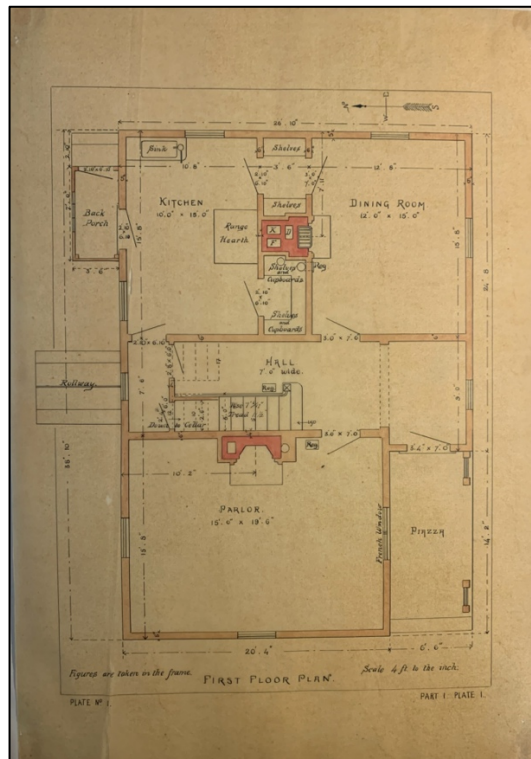


Figure 18: Edwin James Lewis, Jr. Plate Number 1. Trace Paper. From: Edwin James Lewis, Jr. "Architectural Drawings in Manuscript." UF//L58. Boston Athenaeum.

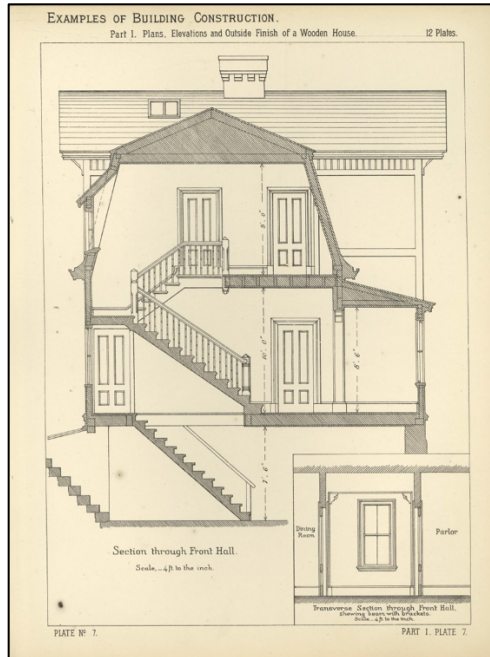


Figure 19: William Robert Ware, Plate 7. Chromolithograph. From: William Robert Ware. *Examples of Building Construction*. Boston: Prang and Company, 1876.

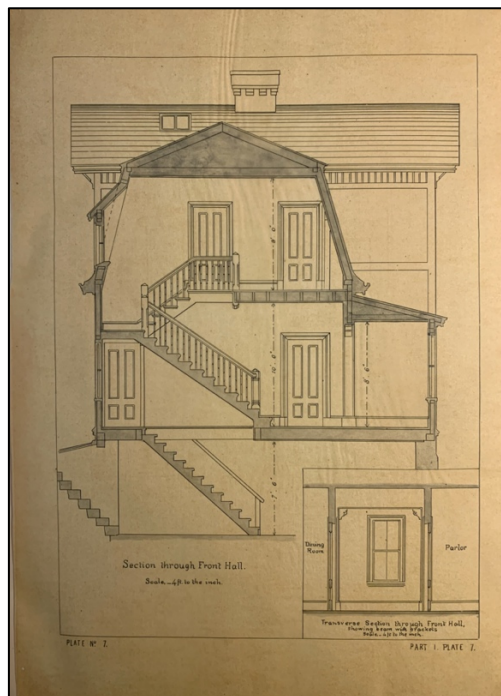


Figure 20: Edwin James Lewis, Jr. Plate Number 7. Trace Paper. From: Edwin James Lewis, Jr. "Architectural Drawings in Manuscript." UF//L58. Boston Athenaeum.

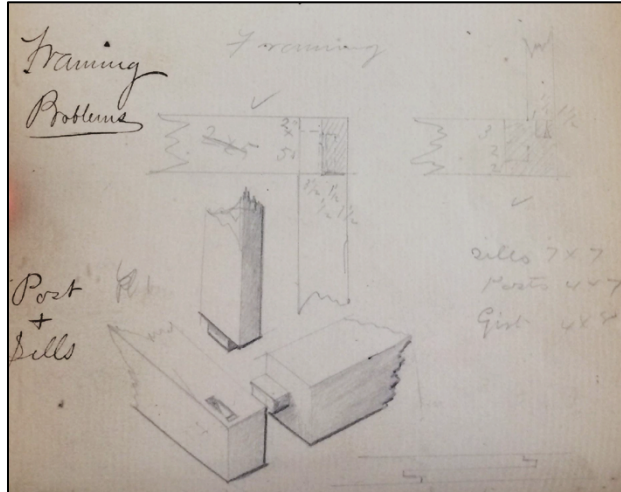


Figure 21: Abraham Hun Berry. "Framing Problems: Posts + Sills." Pencil on Paper. 1872. From: "Student Notes from Architectural Courses Taught by William R. Ware at MIT and the Massachusetts Normal Art School." 1872. MC 172, Massachusetts Institute of Technology Department of Distinctive Collections. Massachusetts Institute of Technology Archives, Cambridge, Massachusetts.

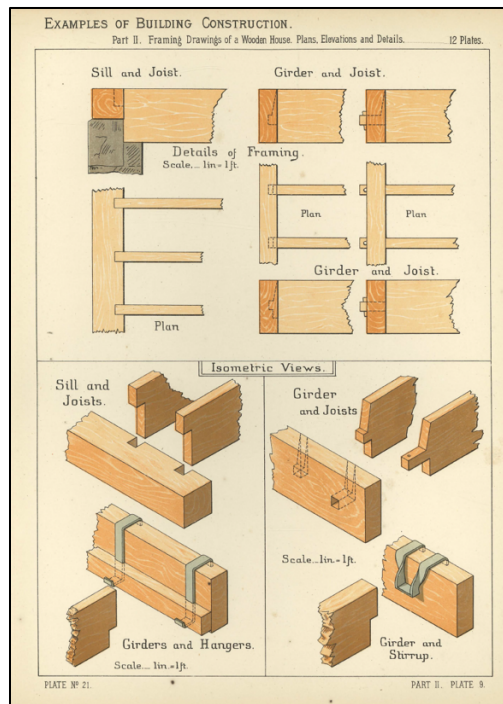


Figure 22: William Robert Ware, Plate 21. Chromolithograph. From: William Robert Ware. *Examples of Building Construction*. Boston: Prang and Company, 1876.

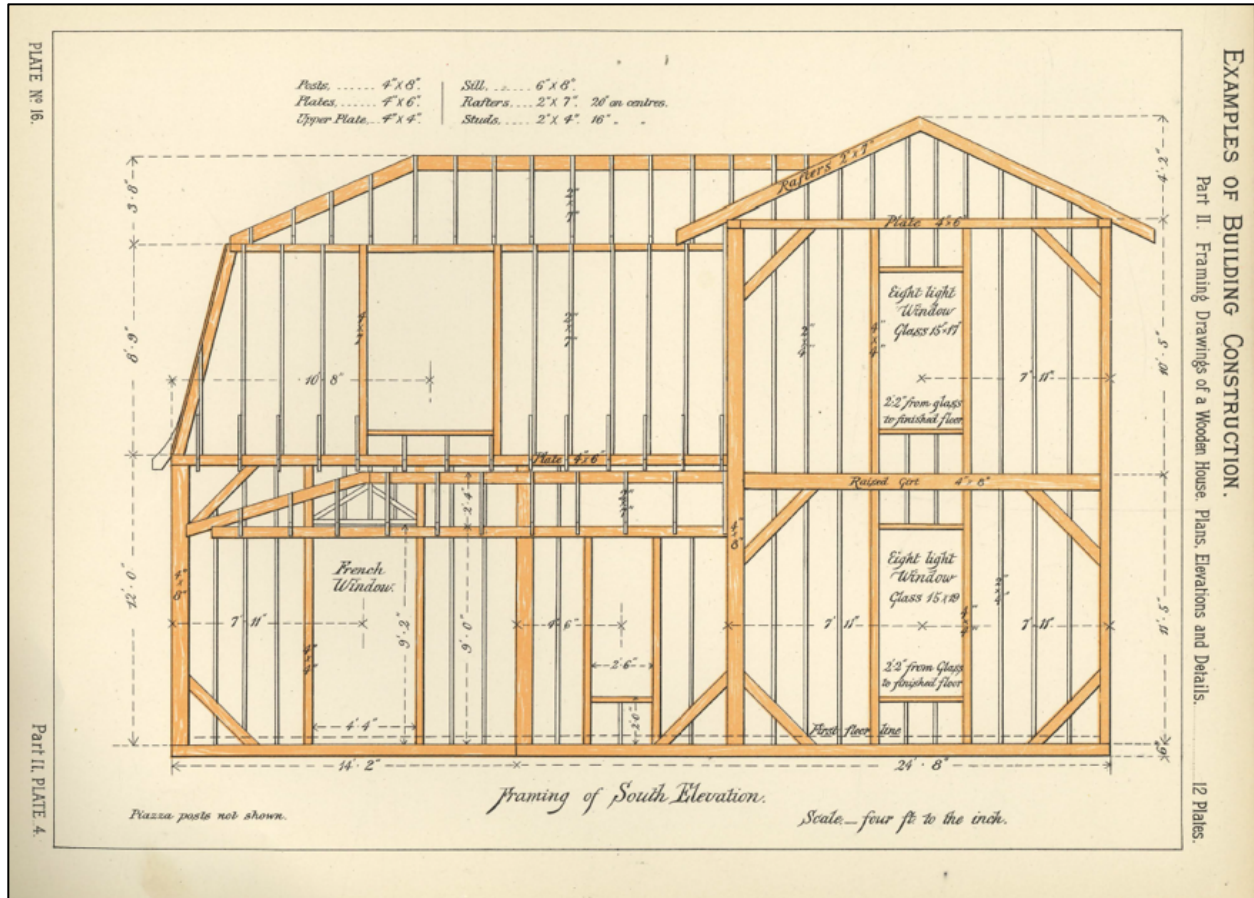


Figure 24: William Robert Ware. Plate Number 16. Chromolithograph. 1876. From: William Robert Ware. *Examples of Building Construction*. Boston: Prang and Company, 1876.



Figure 25: Karl F. Heinzen. "Parallel of Historical Ornament. Greek." Chromolithograph. 1879. From: Karl F. Heinzen. *Parallel of Historical Ornament*. Supervised by William Robert Ware. Boston: Prang & Company, 1879.



Figure 26: The Royal Institute of British Architects Library lists this photograph as authored by William Robert Ware. Since the photograph was taken before the formation of Ware's firm, Ware & Van Brunt, it is more likely that this photograph was taken by William Robert Ware and from his hometown, Milton, Massachusetts. William Robert Ware. Country-House in the United States. Photograph. 1860. From: The Royal Institute of British Architects Library.



Figure 27: "The Cottage in Milton on Adams St. Built by John M. Forbes for Mrs. Henry Ware, Jr. in 1843." Ink-wash drawing. Undated. From: Correspondence, photographs, MC14, Box: 2, Folder: 19. William R. Ware Papers. Massachusetts Institute of Technology Department of Distinctive Collections. Massachusetts Institute of Technology Archives. Cambridge, Massachusetts.

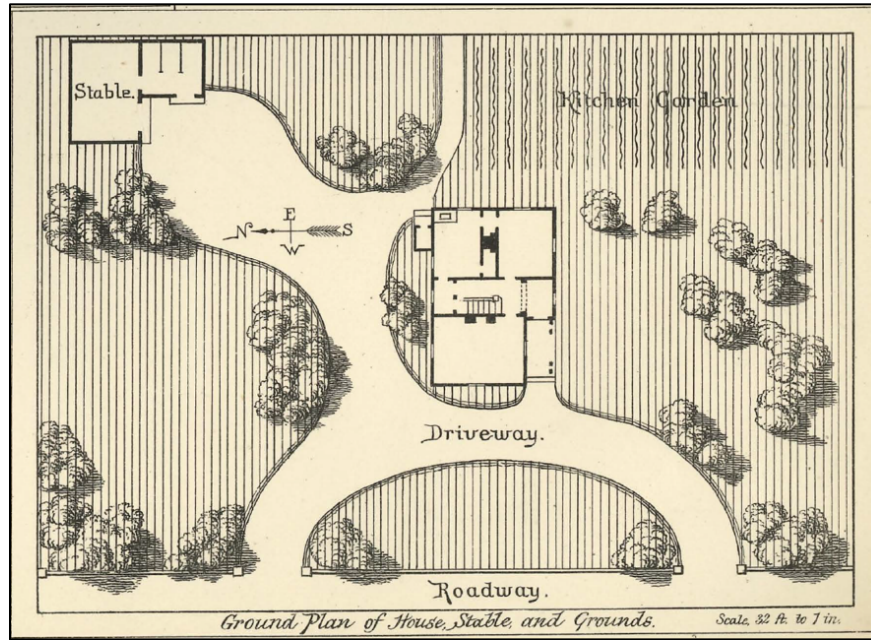


Figure 28: William Robert Ware. Close-Up of Quarter of Plate 37. Chromolithograph. 1876. From: William R. Ware, *Examples of Building Construction* (Boston: Prang and Company, 1876). Jay T. Last Collection of Printing and Publishing: Louis Prang Archive. Huntington Library, Art Collections, and Botanical Gardens.

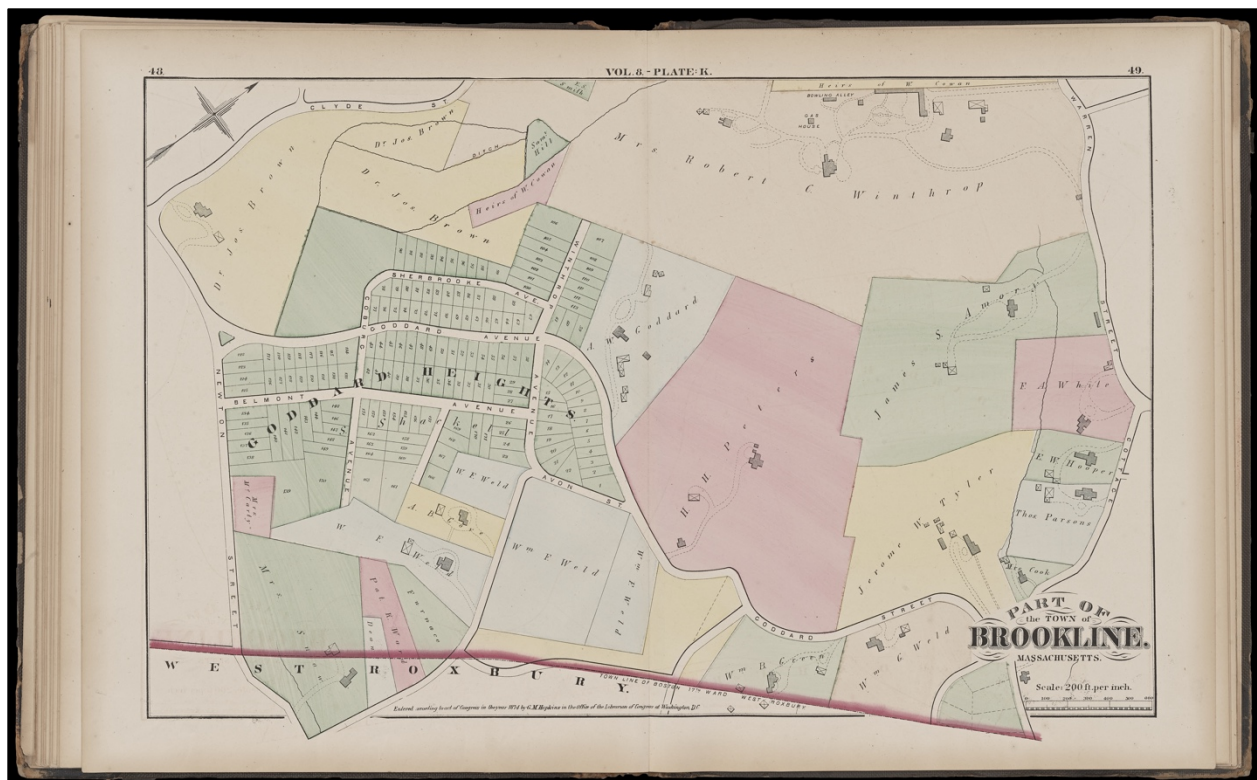


Figure 29: Map of Brookline with houses on curvilinear roads away from the main roads and situated on large plots of land. Volume 8, Plate K. From: *Atlas of the Town of Brookline Massachusetts*. Philadelphia: G. M. Hopkins & Co., 1874, 49.

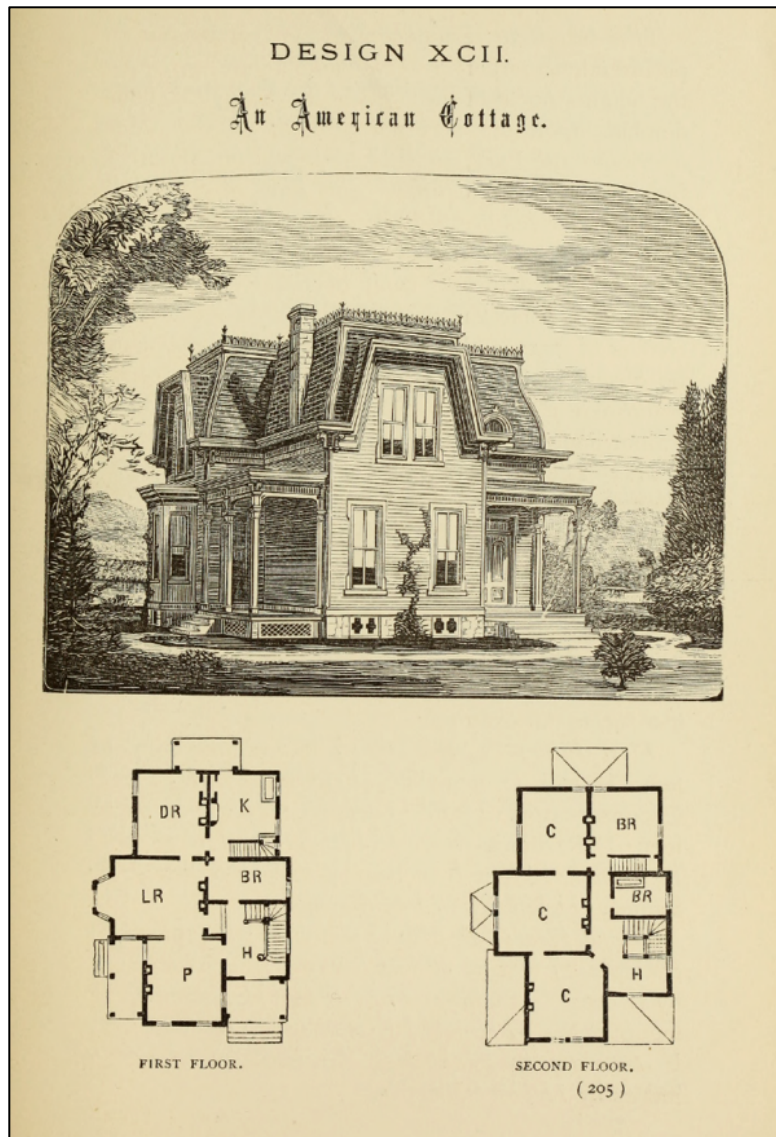


Figure 30: Hobbs' House designs were a popular purchase and published the same year as Ware's construction textbook. From: Isaac H. Hobbs and Son. *Hobbs's Architecture: Containing Designs and Ground Plans for Villas, Cottages and Other Edifices, Both Suburban and Rural, Adapted to the United States*. Philadelphia: J. B. Lippincott & Co., 1876.

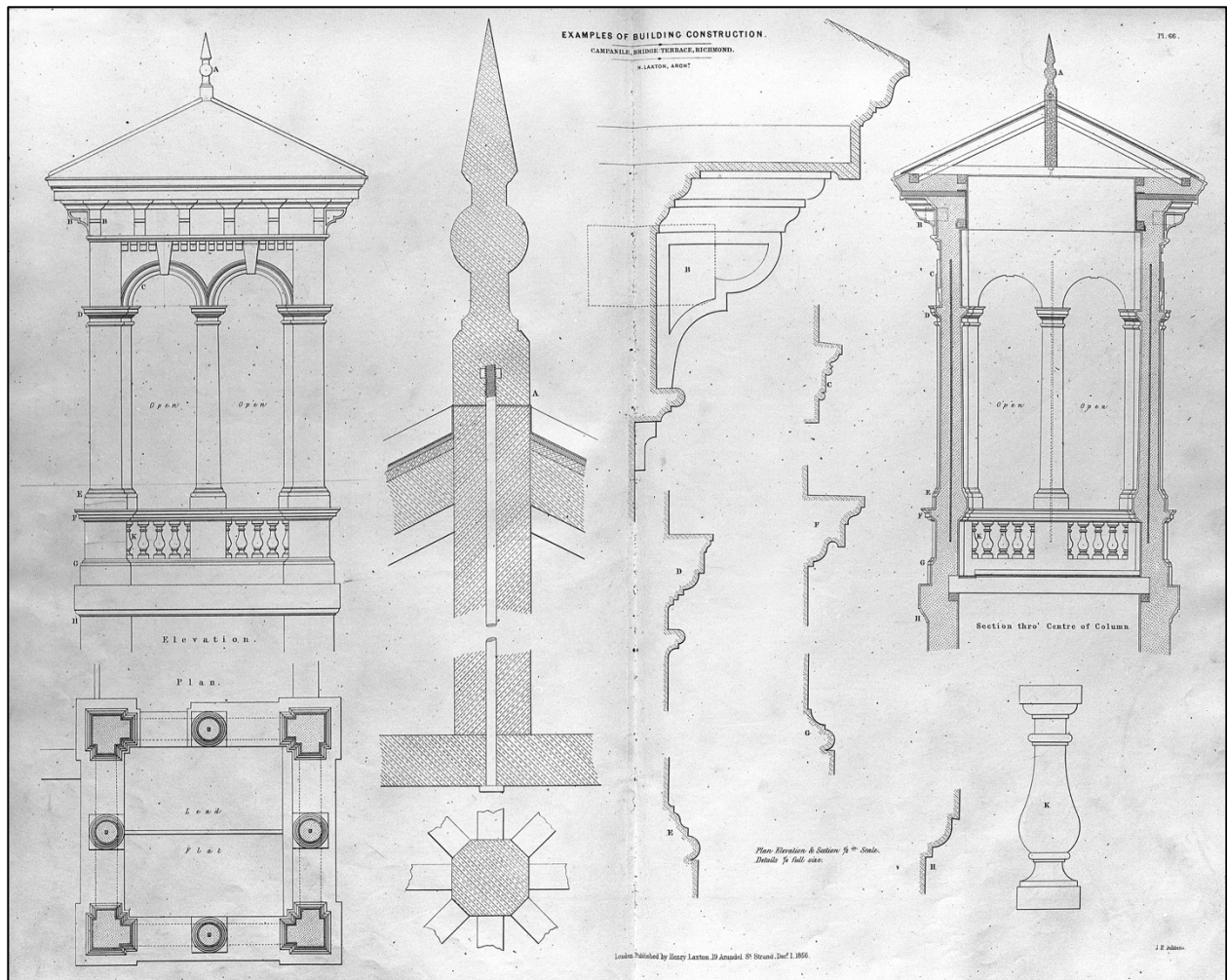


Figure 31: Page from Henry Laxton, *Examples of Building Construction Intended as an Aide-Memoire for the Profession Man and the Operative. In A Series of Working Drawings to a Large Scale, Exemplifying the Arrangement and Details Adopted in Carrying Out the Several Branches of Trade Requisite for Public and Private Edifies*. London: Office of the Civil Engineer and Architect's Journal, 1853. From: The Royal Institute of British Architects Library.

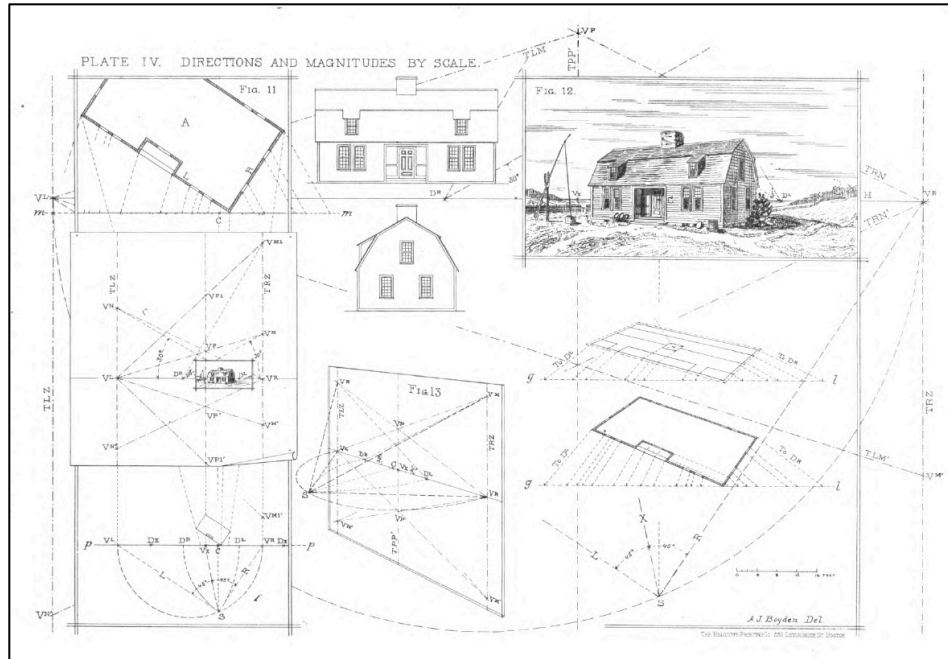


Figure 32: Heliotype printing showing precise linework. A. J. Boyden Del. Plate IV. Print. From: William Robert Ware. "Papers on Perspective IV. The Division of Lines by the Method of Triangles." *The American Architect and Building News* 3, no. 113 (1878).

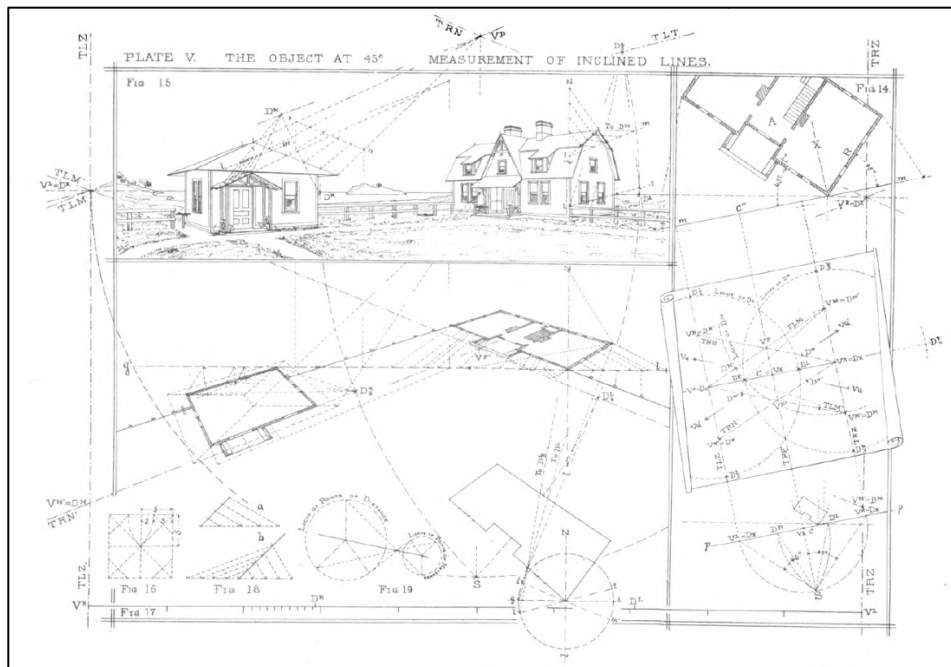


Figure 33: Heliotype printing showing precise linework. Plate V. Print. From: William Robert Ware. "Papers on Perspective VI. The Position of the Picture. The Object at 45 Degrees. The Measurement of Inclined Lines." *The American Architect and Building News* 3, no. 117 (1878).

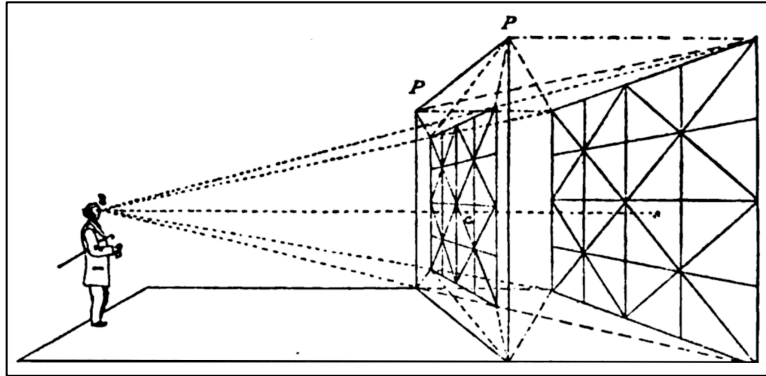


Figure 34: "Figure 1." Print. 1878. From: William Robert Ware, "Papers on Perspective II. Phenomena Relating to the Picture," *The American Architect and Building News* 3, no. 108 (January 19, 1878), 19.

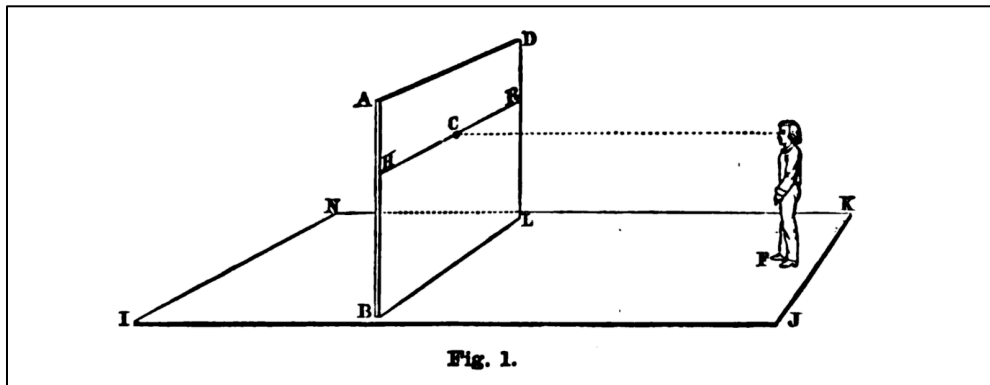


Figure 35: "Figure 1." Print. 1859. From: William N. Bartholomew. *Linear Perspective Explained*. Boston: Shepard, Clark and Brown, 1859.

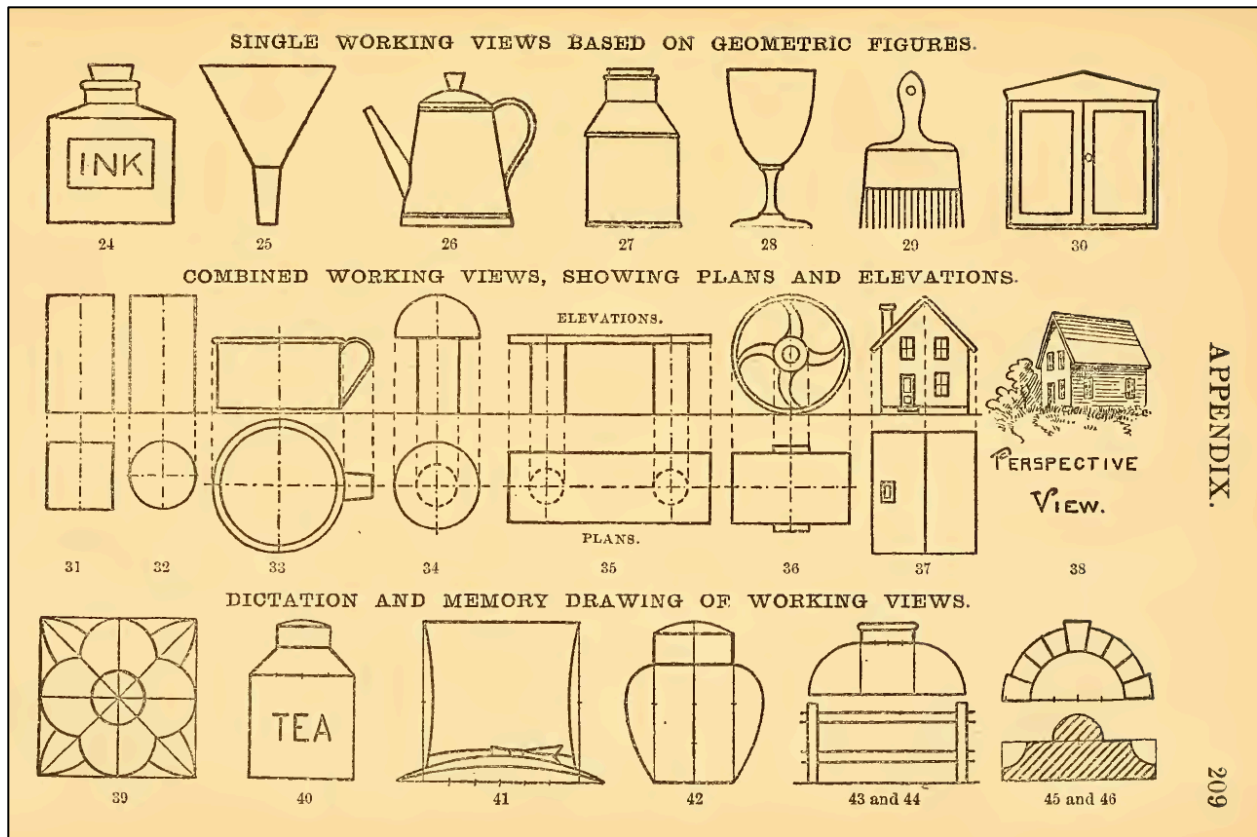


Figure 36: Examples of Drawing Exercises with Elevation, Plan, and Perspective of Wooden House. From: Charles M. Carter, "Plan for Industrial Drawing," in *Forty-Seventh Annual Report of the Board of Education: Together with the Forty-Seventh Annual Report of the Secretary of the Board. 1882-1883* (Boston: Wright & Potter, 1884), 209.



Figure 37: George Putnam School, Boston. Grade 7 – Class 3. Observing, Drawing, and Describing Minerals. Photograph. June, 1892. From: Boston Public Library.



Figure 38: A. H. Folsom. Evening Drawing School. Boston Public School. Warren Avenue. 3rd Year Pupils Drawing from Life Models. Ca. 1890. From: Boston Public Library.

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Library of Congress

AIA/AAF Collection

Massachusetts Institute of Technology Department of Distinctive Collections

Abraham Hun Berry Student Notes

Collection on Eugene Létang

John D. Runkle Papers

Massachusetts Institute of Technology, Department of Architecture Curricula

Massachusetts Institute of Technology, Department of Architecture Records

William Barton Rogers Papers

William R. Ware Papers

MIT Museum

Northeastern University Archives

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RIBA British Architectural Library

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