

## “What Porto Rico Can Do for the United States”: The Imperial Roots of the School Survey and Statistics Movement in the United States, 1898–1915

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### ABSTRACT

In the early twentieth century, as the American empire expanded overseas, the United States created school systems in the new territories of Puerto Rico and the Philippines. These sites became spaces for experimentation with progressive educational ideas. In Puerto Rico, the lack of funding to expand the quantity of schools led administrators to focus on improving the quality of schools through the use of statistics and school surveys. One administrator in particular, Leonard P. Ayres, helped trial the use of educational statistics on the island and then brought back his ideas to the mainland. The significance of Ayres's experience in the colony and his future career in education back in the US helped shape the direction of American education through the twentieth century to today.

### RÉSUMÉ

Au début du vingtième siècle, alors que l'empire américain s'étendait à l'étranger, les États-Unis ont créé des systèmes scolaires sur les nouveaux territoires de Porto Rico et des Philippines. Ces derniers sont devenus des espaces d'expérimentation pour les idées pédagogiques progressistes. À Porto Rico, le manque de financement pour augmenter le nombre d'écoles a mené les administrateurs à se concentrer sur l'amélioration de la qualité de ces dernières par l'usage de statistiques et d'enquêtes scolaires. Un administrateur en particulier, Leonard P. Ayres, a soutenu l'usage de statistiques liées à l'éducation sur le territoire de l'île pour ensuite ramener ses idées sur le continent. L'importance de l'expérience d'Ayres dans la colonie et sa future carrière dans l'éducation aux États-Unis ont contribué à façonner l'orientation de l'éducation américaine du XX<sup>e</sup> siècle à nos jours.

In 1902, Puerto Rico's commissioner of education, Samuel McCune Lindsay, wrote about the work he and his fellow American school officials were doing in their colonial setting. He explained, “We are working out, in Porto Rico, new educational

experiments.”<sup>1</sup> He did not elaborate on the nature of these experiments, but he asserted that the basis for elementary schooling on the islands was imported from the United States and founded on “the traditions of the best American schools.”<sup>2</sup> While officials clearly introduced aspects of American schooling from the mainland to the imperial setting of the island, Lindsay hinted that a reciprocal relationship was possible between colonial “experiments” and the metropole.

Again in 1906, at the Lake Mohonk Conference of Friends of the Indians and Other Dependent Peoples, Lindsay reversed the flow of influence in a speech to his fellow conference attendees. In this speech, the former commissioner asserted, “There are many things that we can readily learn, many things that the Porto Rican is able to contribute to our American civilization.” “I welcome the coming together of these two principles,” he continued, “because I believe [Puerto Ricans] will contribute something to the up building of our civilization here.”<sup>3</sup> Rather than educational practices, Lindsay’s address focused on ideas like learning the Spanish language, adopting Puerto Rican handicrafts, and improving American politicians’ rhetoric with “flowery political speeches.” However, Lindsay hinted at a crucial idea about the reciprocal effects of American imperialism that would become more evident over the next ten years.

The neglect of educational funding for the colony shaped the nature of schooling experiments on the small island. In particular, the quantification and efficiency movement—in its very early stages in the US—flourished in Puerto Rico. Through the networks of administrators and educators who passed through the colony and returned to the continent, ideas about promotion, school statistics, and surveys helped shape crucial aspects of the progressive education movement in the US. Historians have not fully explored the imperial roots of this form of progressive education.<sup>4</sup> Yet, in the first two decades of the twentieth century, educators touted the chains of connection between Puerto Rico and school movements on the mainland.<sup>5</sup>

In 1911, another former commissioner of education in Puerto Rico, Roland P. Falkner, described in an article how “through the return to the United States of Porto Rican officials” the New York and Puerto Rican statistics movement, “have been merged into one.”<sup>6</sup> In 1912, William H. Maxwell—the long-time superintendent of New York City Public Schools—supported Falkner’s claim. He explained that it was “thru the researches of Mr. Faulkner [*sic*] in the schools of Porto Rico, and thru mine in New York, the matter of over-age children in the grades was, for the first time, forcibly and generally brought to the attention of the public mind, and that then commenced the studies and investigations, and experiments regarding over-age children, which have already accomplished much for the ‘backward child.’”<sup>7</sup> The efficiency movement of American progressive education dovetailed with the financially neglected colonial school system and created the conditions by which surveys, statistics, and efficiency in education eventually tightened the imperial chains of American schooling throughout the world.

This article focuses only on the case of education in Puerto Rico, but the context of US colonial schooling in Puerto Rico, and the Philippines as well, is significant in answering questions connected to modern school systems around the world. The

first half of the twentieth century not only witnessed an expansion of imperial conquests overseas but also the introduction of mass education in the United States and schooling practices that are still embedded in much of our educational apparatus today. Examining how ideas developed and travelled from Puerto Rico back to the US demonstrates that American imperialism and progressive educational ideas were not simply coexisting in the early twentieth century but were significantly intertwined. Overseas territories like Puerto Rico and the Philippines provided American educators a testing space to work out school reform ideas in the early twentieth century. The educational project in both locations was critical to the rhetorical claims of "benevolent assimilation" used to justify the control of the land and people after the Spanish-American War.<sup>8</sup> Consequently, politicians like President William McKinley tasked school officials with developing a centralized system of education on what they deemed a blank slate in the former Spanish colonies. Due to the top-down nature of education in Puerto Rico and the Philippines, administrators could experiment with and enact school reform ideas on a larger scale than could educators on the mainland.

Though providing mass education in the colonies was a rhetorical justification for American imperialism, that did not translate into financial support from the metropole in either territory. For nearly a decade, school officials struggled with not having enough money to expand schooling to a majority of students on the islands. As a result, efficiency-oriented educational ideas and practices dominated in Puerto Rico and the Philippines. The overseas territories experienced this conflicting issue of rapidly rising enrolments and poor funding in the first decade of the twentieth century, before most school districts in the US would face a similar dilemma.<sup>9</sup> Therefore, colonies like Puerto Rico and the Philippines provided a space and population to trial these types of educational reforms that became central to mass education in the US and around the world.

The historiography of American imperial education in the early twentieth century has hinted at the possibilities of this relationship between colony and metropole, but has not yet fleshed out the details. Scholars recognize the flow of education ideas between places like Hawai'i and Samuel Chapman Armstrong's Hampton Institute in Virginia, yet historians have paid less attention to the American imperial expansion after the wars of 1898 and its influence on US mass schooling development in the early twentieth century. The confluence of these two events deserves more consideration in the historical literature.

Much of the scholarship about US imperial schooling focuses on American structural, curricular, or cultural imposition on the colonies. Historians have linked US schooling practices with attempts at Americanization and pacification.<sup>10</sup> Another perspective on the relationship between the US and Puerto Rico and the Philippines is to analyze the curricular emphases, particularly those connected to vocational education in the Philippines. Scholars trace how industrial schooling practices for American Indians and African Americans were transported to overseas colonies and tied to imperial economic policies and exploitation.<sup>11</sup> A number of studies push against a monolithic story of imposition and investigate the contingencies and fractures

of colonial schooling. These scholars focus on the agency of colonial subjects like Filipinx students and Puerto Rican teachers and examine how they negotiated, resisted, or transformed the goals of the imperial projects.<sup>12</sup>

Historians have rightly engaged with these important questions of power, agency, and structure, yet most studies of the impact of imperial schooling largely remain within the borders of the colonial territories or focus on the identities of colonial subjects. A few scholars investigate how empire and education can be considered a two-way street with reverberations back to the metropole. In *Colonial Crucible: Empire in the Making of the Modern American State*, editors Alfred W. McCoy and Francisco A. Scarano question how colonial experimentation impacted the US. In the introduction to the section about education in the colonies, Adam Nelson describes how a few scholars explore the way “education, broadly construed, became a two-way process of both teaching and learning in the American imperial state.”<sup>13</sup> Courtney Johnson’s article, “Understanding the American Empire: Colonialism, Latin Americanism, and Professional Social Science, 1898–1920,” examines direct links between colony and metropole.<sup>14</sup> By tracing the networks from Puerto Rico to the US, he explains how the discipline of social science benefited from US imperialism in the early twentieth century. In short, social science and empire were mutually constitutive, reinforcing each other and furthering the expansion of both. Johnson’s work is one example of the multi-directionality of empire. He calls for more studies to follow these transnational imperial networks flowing back and forth.<sup>15</sup> This article follows Johnson’s suggestion and traces the direct connections between colonial schooling in Puerto Rico and reform movements in the continental US.

The colonial context shaped the American educators’ emphases in Puerto Rico that came back to influence American education. While the earliest civil commissioners of education, such as Lindsay, worked to expand mass schooling and called for greater appropriations from the federal government to support the expansion, the third commissioner, Roland P. Falkner, switched directions for the schooling project. With the help of Leonard P. Ayres, Falkner emphasized “quality” over quantity. Falkner seemingly abandoned hope of more funding to increase the number of schools in Puerto Rico and instead sought ways to improve the efficacy and efficiency of the existing schools. This new focus led to concerns about student promotion and finding ways to maximize education for pupils in the short number of years that they received schooling on the island. Falkner and Ayres initiated an extensive census of enrolment, attendance, and student data that they used to analyze their school system. Both educators left shortly after this census and returned to the United States with the methods and ideas they had trialed in Puerto Rico where they initiated school survey and statistics reform that quickly gathered momentum in the second decade of the twentieth century. Ayres’s role in the establishment of the school survey and statistics movement in the US is well-established.<sup>16</sup> Yet the beginning of his career in Puerto Rico and how his experience there shaped his later ideas have not been studied in depth. These imperial roots of the quantification movement demonstrate how US empire and education were significantly intertwined in the early twentieth century.

## The Drive for Efficiency in Puerto Rico

The centralized control of schooling in the colonies enabled officials to use territories like Puerto Rico as testing grounds for new ideas. Educators in Puerto Rico focused on system-building, supervision, and bureaucracy from the earliest days of American schooling on the island. In a report in 1901, Martin G. Brumbaugh, the first civilian commissioner of education, highlighted the need for improved bureaucratic structures for centralized control and supervision of teachers. He regarded the new school laws passed in Puerto Rico as a “compromise between... two extremes” of school governance: full centralization and localized control.<sup>17</sup> The law “aims to place the largest measure of control with the local authorities consistent with the efficient administration of schools.” However, the commissioner still had “sufficient authority to continue the schools in spite of local indifference, should such indifference arise.”<sup>18</sup> The commissioner gained more power in 1902, when Commissioner Lindsay proposed new school laws to further centralize the system.<sup>19</sup> This reorganization aided “economy and efficiency as well as uniformity of standards in the administration of school affairs.” According to Lindsay, Puerto Rican elected officials were “in favor of more centralization rather than less.”<sup>20</sup>

The role of American supervisors also increased during Brumbaugh and Lindsay’s administrations. Superintendents had more power over teacher selection than local Puerto Rican governments, with the goal of preventing “partisan politics from entering into the selection of teachers.”<sup>21</sup> Due to these increased responsibilities, Brumbaugh reversed a decision to decrease the number of American supervisors to six and instead hired ten more, raising it to the maximum number allowed. These educators would be the leaders of American schooling on the island, and Brumbaugh sought to “place them with increased powers and dignity at the front of education in their respective districts.”<sup>22</sup> Leonard P. Ayres was a young and ambitious teacher who aspired to become one of these supervisors.

Ayres came to the island in 1902 as a teacher after receiving his bachelor’s degree from Boston University. He had lofty goals early in his career and rose through the ranks quickly. He wrote to his sister Ida that “I am industriously making friends where I think they will be the most use.”<sup>23</sup> Through these strategic connections, he aimed to get the “supervision of all the schools of an entire district of 100 to 200,000 population” for the next year.<sup>24</sup> Ayres received the chance to put his “scheming” into action in April 1903, when Assistant Commissioner of Education E. W. Lord planned to come near Ayres’s village for a visit. “Yesterday was a big day for I brought off the grand stroke I have been planning for so long and everything worked all right,” he wrote to Ida. Ayres rented a horse and rode to the town in the “pitch dark and driving rain” to meet with the administrator. He toured schools with Lord, who introduced Ayres as “my college chum.”<sup>25</sup> In June, his plans and work paid off when Ayres received word that, due to his high score on the superintendents’ exam, he was in line for a promotion in 1903 despite not teaching for the required two years.<sup>26</sup> Ayres began to fine-tune his ideas about education in his role as the superintendent of schools in San Juan and rose to even more importance on the island

in the next few years. He brought a structural vision to the role, envisioning his job as superintendent as the “organization, administration, direction and supervision of schools in large related systems.”<sup>27</sup>

As Ayres rose through the ranks, financial issues constrained the expansion of the school system and influenced the nature of educational reforms on the island. Commissioner Lindsay repeatedly pleaded for the federal government to provide an infusion of money to help expand the number of schools and students across the island. At the Lake Mohonk conference in 1905, he insisted that for the inconsequential sum of \$700,000 from Congress to match the small island’s school budget, the “needs of the school population of a million people can be met in a way that will not bring the blush of shame to any American who twenty-five or fifty years hence reviews the days of small beginnings in our Porto Rican policy.”<sup>28</sup> While Lindsay had been urging for additional monetary support from the federal government for years, it never materialized, and the school system stagnated in the early years of US control.

As a result of these funding issues, when economist and statistician Roland P. Falkner replaced Lindsay as commissioner of education in 1904, the new administrator heightened the focus on efficiency in the system.<sup>29</sup> Relying on his background, Falkner increased the use of statistics in the department. Because financial constraints had stymied expansion of the schools, the commissioner sought to secure “better results from each school than had been obtained in the preceding year” and paid more attention to enrolment and attendance numbers to achieve that result.<sup>30</sup> Falkner, like other efficiency progressives in the United States, described the situation in terms of a factory.<sup>31</sup> “To borrow a simile from modern industrialism, it may be said of the educational problem in Porto Rico, ‘It is not so much to extend the plant as to increase the output,’” he wrote. Falkner wanted this lens of value and efficiency to be the measure for success in Puerto Rico rather than expansion of the system.<sup>32</sup> Acknowledging his divergence from Brumbaugh and Lindsay, he asserted, “We have laid emphasis upon the quality of our work and have given little attention to the quantity of it.”<sup>33</sup>

Falkner also expanded the duties and strengthened the impact of superintendents’ work in their districts. He praised the administrators’ efforts in 1905: “The progress thus far recorded has been made possible by the excellent organization of supervision established in the department and by the zeal and intelligence of the supervisory force.”<sup>34</sup> Ayres was one of these superintendents, who, at the age of twenty-six, was the head of district one, the urban system of San Juan.<sup>35</sup> The new focus on efficiency kept superintendents like Ayres very busy: “I have so much office work to do now that I have had a stamp made with which to sign circular letters, reports, visit blanks etc.”<sup>36</sup> Ayres’s professional proclivities seemingly dovetailed with Falkner’s. In his report about the schools of San Juan in 1905, Ayres described his job as one “largely devoted to the work of organizing and systematizing.” Ayres became increasingly interested in record-keeping and standardization.<sup>37</sup>

Early in 1906, Ayres learned that Falkner had promoted him to Chief of Division of Supervision and Statistics due to his detailed record-keeping in San Juan, and the pair maintained the focus on the efficiency of the system in their reports.<sup>38</sup> Funding for school expansion remained stagnant, so the administrators reorganized clerical

work to create “greater efficiency” in the central office.<sup>39</sup> Ayres’s division churned out more tables and statistics than ever before. Falkner explained in his annual report, “Inasmuch as the key to progress is an accurate knowledge of conditions, I have endeavored to present a detailed study of the conditions in our schools.” He continued, “To this end the statistical service has been completely overhauled. The tables presented are not mere formal appendixes, but an integral part and portion of the report.”<sup>40</sup> Supervision and the increased use of statistics went hand-in-hand. It created what Falkner referred to as “intimate” relations between the department of education and the field staff despite fewer visits to schools by the general superintendent.<sup>41</sup> This reliance on data rather than in-person experience to inform administrators about the conditions of the school translated to 166 pages of statistical tables, up from only nineteen pages in the report from 1901.<sup>42</sup>

An expansive school survey was the source of many of these statistical tables that documented the efficiency of the system through student promotion data. Falkner and Ayres oversaw an island-wide census on March 2 that focused on the “length of time the children had been in school” rather than overall enrolment numbers—a change from previous reports.<sup>43</sup> Falkner saw this emphasis on the census and statistics, not as abstract or dehumanizing, but as a way to focus more directly on the “most important element in our consideration of the common schools—the pupils.”<sup>44</sup> By collecting information on the age, grade, sex, and length of time in school of each student in Puerto Rico, school officials could know their population better and identify ways to improve the quality of education. The supervisors believed the information gathered from this survey could create a “transformation” of the entire system.<sup>45</sup>

This effort put Falkner and Ayres at the forefront of the school survey and statistics movement in the United States. In the report, Falkner repeatedly criticized the lack of comparative evidence from other school districts in the US to use as a measuring stick to evaluate education in the colony. Concerning an analysis of the gender balance in schooling, for example, Falkner wrote, “No general report has been made upon this subject for the cities of the United States and the individual reports of the different cities generally lack data upon this point.”<sup>46</sup> Yet Falkner and Ayres still attempted to analyze their census data to understand their own system and the quality of schooling in Puerto Rico. Their report focused on “over-aged” students and promotional issues (what would be termed “retardation” in Ayres’s later work). The officials tried to understand the connection between the advanced age of students in lower grades and the efficiency of schools.<sup>47</sup> This focus on efficiency was heightened in Puerto Rico due to limited funding and the rhetorical centrality of mass education to the imperial project. Since the goal of schooling was to provide lessons in civilization and citizenship to every colonial subject on the islands, students who were not being promoted each year were wasting resources and limited space in classrooms.<sup>48</sup> These “laggards” (as Ayres would later refer to them) were markers of inefficiency within a school system. In his future writings, Ayres would later expand on this idea of determining the efficiency of a school system through promotion.

The next year both Falkner and Ayres returned to the US after a major shakeup in the Bureau of Education. Commissioner Falkner announced his plan to resign in



June, and Ayres actively sought the position of assistant commissioner if his “college chum” Lord became commissioner.<sup>49</sup> When he received word that the new commissioner was Edwin Grant Dexter of the University of Illinois, his advancement hopes died. Ayres wrote to his father exclaiming, “This reminds me of Dr. Falkner’s invariable quotation when one of his plans fails, not an uncommon thing, by the way; ‘Another pipe-dream gone to Hell.’”<sup>50</sup>

Dexter’s selection not only blocked Ayres’s promotion goals but also led to the end of the emphasis on statistics in Puerto Rico. Dexter held a different philosophy of education, at one point referring to it as a “spiritual process.”<sup>51</sup> Ayres was unhappy that “yesterday he told me to abandon all the work of my division as he considered it practically worthless. No more professional records of teachers are to be kept and no figures or facts gathered about the school system.” The superintendent derided Dexter’s non-data-driven mindset. “The whole thing,” Ayres complained, “is to be run on the plan of the old-fashioned Sunday School. We are to have a great many children and they are to be taught by numerous teachers in various towns. More accurate measures are un-necessary.”<sup>52</sup> Such profound pedagogical differences created a rough start to Dexter and Ayres’s relationship, which grew tense in the next few months. Ayres took a leave of absence, returned to the mainland, and searched for a position elsewhere.<sup>53</sup> He soon became recognized as an educational statistics expert who shaped new ideas in the efficiency school reform movement.

Ayres started his career in Puerto Rico as an ambitious educator who wanted to move up the ranks quickly. The imperial context of Puerto Rico provided the conditions that guided his focus towards issues of efficiency. As Ayres’s career brought him into the central office, he learned from the statistician, Falkner, and the pair helped pioneer the use of school surveys and statistics on the island. They used the key question about student retardation and promotions from the school survey to judge the efficiency of the school system. The heart of Falkner and Ayres’s extensive 1906 report asked how schools can do more with less money—a question critical in the imperial schooling project in Puerto Rico. Though other educators focused on similar issues around the same time, the centralized control of schooling in the territory allowed Falkner and Ayres to more fully explore the issue and hone their school statistics skills. This brought the two men and their work to the forefront of the quantification movement in the US. Ayres’s career would bring together his work in Puerto Rico with already established reformers like E. L. Thorndike and Joseph Mayer Rice. Yet, due to his experience in Puerto Rico, the young educator would move these efficiency efforts to a central place in school reform by the 1920s.

### **Return to the United States**

Upon his return to the mainland, the Lake Mohonk Conference provided Ayres with his first professional experience outside of Puerto Rico and helped set the direction of his career after his time on the island. The opportunity came up for Ayres to give an unprepared speech about Puerto Rico. He believed he “made quite a fair bluff” and was pleased that the conference planned to publish his words.<sup>54</sup> Ayres’s short



speech provided basic facts about the system and focused on the lack of funding to fully expand the number of schools, yet it launched the next phase of his career in education.<sup>55</sup> Ayres described his opportunities after the conference as “dazzling.” “I have been meeting a continuous stream of the most influential literary, educational, and financial people and have been asked whether I would give a course of lectures at New York University, write a series of articles and considering writing a book on common school statistics,” he boasted. In addition, he had landed a job with the Russell Sage Foundation and started post-graduate courses at Columbia University under Edward Thorndike, a well-known psychologist at Teachers College.<sup>56</sup> Very quickly after returning from Puerto Rico, Ayres’s career had taken off.

Ayres entered a burgeoning educational quantification movement that gained momentum in the first decade of the twentieth century. The pediatrician-turned-educational researcher Joseph Mayer Rice had upset school professionals with his findings in the 1890s that schools were not effectively educating students because of their traditional pedagogical methods and practices. He based his claim on a large-scale study that administered tests to children across the US. Although his findings did not receive a warm welcome among the members of the National Education Association, it raised questions about school efficiency among many in the general public.<sup>57</sup> Thorndike also investigated the issue of school efficiency in the early 1900s. The United States Bureau of Education published his 1907 report, *The Elimination of Pupils from School*, which examined questions similar to those that Falkner and Ayres had studied in Puerto Rico in 1905 and 1906. Thorndike’s work coincided with Ayres’s classes at Columbia and became the impetus for further research into measuring school efficiency through promotions.<sup>58</sup>

For the next few years, Ayres brought his experience in Puerto Rico into his academic and professional career in New York. His lectures at NYU between December 1907 and May 1908 focused on statistical work in education.<sup>59</sup> In his lecture “Attendance,” Ayres connected the use of statistics in education to efficiency with machines. “The actual efficiency of a machine never equals its theoretical capacity. But the skill of the engineer consists in reducing the difference to the lowest practicable point,” Ayres asserted. He linked these ideas to education: “The same spirit should exist in the administration of our schools. Study and research will show whether or not we are losing more force and energy than should be the case.”<sup>60</sup> Ayres closed the lecture with a call for students to carefully consider the quality of statistical information being gathered. “What we want is not more school statistics, nor less school statistics,” he argued, “but different school statistics with nothing trivial, with nothing not clearly understood, no red tape.”<sup>61</sup> A pair of lectures titled “Backward Children” and “Causes of Retardation and Proposed Remedies” drew upon his work in Puerto Rico and became the basis for his first major publication in the US.<sup>62</sup>

Ayres also began his research with the Russell Sage Foundation at the same time he lectured at NYU. The educator worked with a medical doctor, Luther Gulick, to investigate “retardation” or students who were overage in New York City’s schools. Superintendent Maxwell of New York City schools had been sounding the alarm about issues of promotion in his schools since 1904. In his annual report in 1909,

Dr. Maxwell applauded the work that Ayres and Gulick had accomplished in the last year by calling the survey the “first really scientific inquiry into the causes of retardation.” The pair had surveyed the records of fewer than 20,000 children out of 600,000 in the school system and drew “tentative” conclusions about New York City schools. Late entrance to schools and slow progress were the main two causal factors indicated in their report. Maxwell believed that, “The conclusion that will cause the most surprise is that physical defects play a much less important part in retarding children’s progress in school than has been supposed.” These findings laid the responsibility squarely on the schools, teachers, and the system as a whole for the problems of promotion. As a next step, Maxwell called for further study and the hiring of an assistant within the city superintendent’s office to conduct more statistical investigations. Maxwell concluded his report with high praise for Ayres and Gulick and noted their pioneering efforts: “It is not too much to say that their report constitutes a new departure in the scientific investigation of popular education.”<sup>63</sup>

In 1909, riding on the success of his work in New York’s schools, Ayres published *Laggards in Our Schools*, which studied the issue of promotion and overage children on a national level. In the introduction to the book, Gulick extolled the work of both Ayres and Falkner. He believed that the foundation was “exceedingly fortunate in securing Mr. Leonard P. Ayres, formerly General Superintendent of Schools for Porto Rico, and Chief of the Division of Statistics of the Insular Department of Education,” because their investigation needed someone with “technical knowledge of how to handle statistical material” and who had “extensive experience in school administration and the widest possible knowledge of the literature bearing on these subjects.”<sup>64</sup> Clearly, Gulick believed Ayres’s four years as a bureaucrat in Puerto Rico gave him the necessary credentials to accomplish this work. The doctor also expressed his “grateful recognition” to Dr. Roland P. Falkner for his assistance in the study.<sup>65</sup>

Ayres’s ideas in *Laggards* demonstrate a number of ways that his time in Puerto Rico shaped his ideas back in the US. Ayres focused on the economic waste connected with the promotion issue he outlined in his report. He estimated that 33 per cent of all pupils fell into the category of “retarded,” relating to their slow progress through school. The problem was massive, “affecting most intimately perhaps 6,000,000 children in the United States.”<sup>66</sup> With the funding issues from Puerto Rico fresh in his mind, Ayres argued, “This means that in the country as a whole about one-sixth of all the children are repeating, and we are annually spending about \$27,000,000 in this wasteful process of repetition in our cities alone.”<sup>67</sup> Increasing funding, but even more importantly, using money efficiently, remained Ayres’s focus. He argued, “Over-crowding means that we are not spending enough money on our schools. Retardation means, not that we are spending too much—but that we are spending it wastefully.”<sup>68</sup> As with the recommendations in Puerto Rico, Ayres concentrated on administrative and organizational changes to improve the efficiency of schooling. He called for “better medical inspection, courses of study which will more nearly fit the abilities of the average pupil, more flexible grading, and, most important of all, a better knowledge of the facts.”<sup>69</sup>

Ayres reiterated the importance of school surveys and statistics throughout *Laggards*. He compared education to a factory that is "most efficient when it is being worked to its full capacity," and decried how educators, unlike businessmen, lacked the needed information to evaluate the efficiency of their systems.<sup>70</sup> Stronger compulsory education laws could also improve students' attendance, but Ayres added that "if we are to enforce the attendance laws we must know where the children of school age are. Therefore, we must have better laws for taking the school census and better methods for utilizing the returns."<sup>71</sup> Ayres regarded this lack of data as shameful. He chided educators, "But we have not known, or if we have known, we have failed to realize it, that large numbers of the children who enter the public schools never complete the work of the common schools." "Perhaps this does not mean that our public school system is any worse than it used to be," he lectured, "but on the face of it certainly does mean that the system is not nearly as good as it should be."<sup>72</sup> Ayres concluded his work by stating, "One main object of the present volume will have been attained if it has been convincingly demonstrated that we need more and better facts on which to base our judgments as to action in educational matters."<sup>73</sup> *Laggards* was a call-to-arms for others to join the school survey and statistics movement.

Although other researchers such as Rice and Thorndike had been foundational in studying school practices, promotion, and efficiency, *Laggards* thrust Ayres to the centre of the movement. He agreed with the premise in *The Elimination of Pupils from School*, but Ayres criticized Thorndike's statistical methods and presented his own ideas for how to better gather and analyze promotional statistics.<sup>74</sup> Praise for the book was effusive. The Russell Sage Foundation printed endorsements from various educational leaders throughout the country. "I shall use it in my course in child psychology in the University of Pennsylvania next winter and expect to make it the basis of the statistical side of the work for some years to come," wrote Lightner Witmer, professor of psychology, University of Pennsylvania. Paul H. Hanus, director of the Division of Education at Harvard commended, "I have read the book with increasing satisfaction, and shall have still more satisfaction in using it in my classes during the coming year as an illustration of what an investigation in school administration really means." Editors at the *Journal of Education* insisted, "It is the most important specific study of school conditions that has been made by any one."<sup>75</sup>

This recognition opened doors for Ayres within educational circles in the US. The statistician spoke at the National Education Association in 1910 with a speech entitled: "What Constitutes Retardation? How Significant Are Retardation Statistics? When Is Retardation Justifiable? How May it Be Corrected?" He highlighted Falkner's statistical work from an article in the *Educational Review* in 1909 and proposed more detailed record-keeping for individual students.<sup>76</sup> Ayres also recalled the beginning of the school statistics movement in an article published in the *Journal of Education* in 1911. In "The Relative Responsibility of School and Society for the Over-Age Child," Ayres explained that, "About five years ago, American Educators awoke to a startled realization that a large proportion of all the children in the public schools were above the normal ages for their grades." William T. Harris, superintendent of the St. Louis Public Schools (1868–1880), had already called attention to this issue

decades earlier. According to Ayres, the “educational world was not then ready to begin a serious study of educational economics.” Ayres highlighted Maxwell’s and his own role in bringing about more awareness of the issue over the last few years.<sup>77</sup>

Ayres’s other work with the Russell Sage Foundation consistently explored efficiency, promotion, and the use of statistics to improve school conditions in the US. He reached a wide audience with publications like “The Money Cost of Repetition versus the Money Saving Through Acceleration,” “A Comparative Study of Public School Systems in the Forty-Eight States,” and “The Measurement of Educational Processes and Products.”<sup>78</sup> That last publication was initially an address given to the Harvard Teachers’ Association in 1912. In it, Ayres expounded on the significance of the quantification and statistical movement in education that he had helped further. He described how educators had shifted over the last decade from devaluing the use of data to centring measurements of educational efficiency. Ayres enthused, “This change represents no passing fad or temporary whim. It is permanent, significant, and fundamental.” He continued, “It means that a transformation has taken place in what we think as well as in what we do in education. It means that education is emerging from among the vocations and taking its place among the professions.”<sup>79</sup> According to Ayres, quantification would have a long-lasting influence upon American education.

In 1912, after receiving his PhD, the now-Dr. Ayres spread his expertise in educational statistics with new courses at NYU. Ayres worked with Earl Clark, also a former administrator in Puerto Rico, who had recently joined the Russell Sage Foundation as a statistician. In “Theory and Practice in Management of Educational Processes and Products,” the pair lectured about the “processes and applications of the newer scientific quantitative methods in education” and provided a laboratory section that offered “training in gathering, compiling, tabulating, and interpreting educational statistics.” The themes for the courses were central features of Ayres’s career by this point: “The lectures are devoted to statistics of the school census, attendance, promotions, retardation, school mortality, and test of efficiency in school administration. Special attention is given to most effective methods in the tabulation and presentation of data for superintendents’ and principals’ annual reports.”<sup>80</sup> Ayres was now teaching about system bureaucracy rather than participating in the office work directly, as he had done in Puerto Rico.

Ayres’s position as an educational quantification expert opened up more avenues for him in the growing school survey movement. In 1912, the city of Greenwich, Connecticut, asked Ayres to conduct a “school investigation and educational exhibit.” In a speech given at the close of the exhibit, Ayres expounded on the city schools’ deficiencies. Greenwich, Ayres said, lacked an actual system of education; it had a “school conglomeration.” “It has a confused mixture of big schools and little schools, and old schools and new schools; excellent schools and shocking schools, built around one central plan, and supposed to be good for the children on the general proposition that all schools are good for children,” he explained. Despite the fact that Greenwich was the “second richest town in America” according to Ayres, the inadequate school system boiled down to the familiar issues of monetary support.

He argued that “the plain, hard fact is that the reason why Greenwich has no better schools to-day is that Greenwich, up to date, had been opposed to better schools.” Ayres detailed the consequences of the lack of school funding: not enough new buildings for expansion despite overcrowding, bad ventilation, and poor hygiene in many existing schools. All of these factors led to the worst effect of all—an inefficient organization. “A majority of the boys and girls who in a few short years will be voters of Greenwich are not getting even a complete common school education,” Ayres charged the community. His solutions included a bond issue to raise more money and to focus on vocational education to retain students beyond the common school course. These proposals had been central in the American public school system in Puerto Rico a decade prior.<sup>81</sup>

The Greenwich investigation opened the door for Ayres to a much larger school survey of the Cleveland, Ohio, school district in 1914 and 1915. Two prominent citizens, George T. Dissette and banker F. H. Goff, corresponded with him about the need to change the “sentiment toward education” in their city. Much like the issues Ayres found in Connecticut, the main problem was not enough money to properly support schools, leading to tensions between the school board, teachers, and the public.<sup>82</sup> Ayres was hired to oversee the survey to bring to light the conditions of the schools and advocate for more support.<sup>83</sup> During the survey, Ayres worked with other educational professionals including many who had ties to American imperial schooling in Puerto Rico and the Philippines, including R. R. Lutz and John Franklin Bobbitt.<sup>84</sup> Between 1915 and 1917, Ayres oversaw the publication of twenty-five reports about public education in Cleveland, which was part of an even larger survey of various social and economic issues in the city.

After the Cleveland survey, Ayres continued to be recognized as one of the foremost experts in the field of educational statistics. At the Second Annual Conference on Education Measurements held at Indiana University in 1915, Ayres gave three speeches titled “Making Education Definite,” “The Measurement of Educational Processes and Products,” and the timely “A Survey of School Surveys.”<sup>85</sup> In these speeches, Ayres recounted the progress over the last decade that the US had made towards the quantification of educational data and the improvements in attitudes towards school efficiency. “Five years ago twenty-nine cities in America had systems of individual record cards for keeping the school histories of the children,” Ayres cited as an example, and “today over three hundred cities have adopted a unified system for this purpose.” The statistician touted the intentional efforts of educationalists like himself: “These nation-wide changes are not products of mere chance. They have come because the public and the educators have begun to demand real information about their public schools.” Referencing his own work in and after Puerto Rico, he recounted that “About seven years ago it occurred to a few people in America seriously to ask the question, ‘What proportion of the children who enter our common schools remain to complete the course?’”<sup>86</sup>

Ayres’s lecture on school surveys credited other experts in establishing and furthering the survey movement, yet he also reflected back to his time investigating “backward children” in the New York City schools in 1908. Regarding retardation

and school efficiency, Ayres explained, “About seven years ago this became one of the most widely studied problems of educational administration, and in the past four it has been one of the prominent parts of the school surveys.” Due to this expanded recognition of the problem that came from his work, the graduation rates had significantly increased in American elementary schools. “It is probably that no other one thing so fundamentally important to the future of America as this accomplishment of our public schools has taken place in recent years. There is every evidence that this is the direct result of applying measurements to education,” Ayres bragged. Optimistically he asserted, “If the school survey movement now under way can produce other results at all comparable with this one, we need have no fear for the outcome.”<sup>87</sup>

Shortly after the conclusion of the Cleveland survey in 1917, Ayres moved his statistical prowess to a new field. When the US entered the First World War, Ayres volunteered his services and the resources of the Statistical and Educational Divisions of the Russell Sage Foundation to the armed forces. He became director of the Division of Statistics of the Council of National Defense and eventually served as the director of the Division of the Statistics of the War Industries Board. After his discharge from the army in 1920, Ayres became vice-president of the Cleveland Trust Company.<sup>88</sup> Though he had transitioned to the world of business, Ayres would always be connected to educational reform movements. The *Journal of Education* celebrated Ayres and called him “one of the most indispensable educators of the day.” The writer lamented, “For him personally we are exuberantly happy, while for the profession we are almost literally in the depths of despair. There is no man or woman in sight who has developed to any appreciable degree his scientific mastery of educational statistics. If any one is indispensable to educational progress today it is he.”<sup>89</sup>

## Conclusion

His foray into school statistics in Puerto Rico changed Ayres’s life trajectory. He had followed the American imperial education chains to the new island colony right after graduation in 1902 as an ambitious teacher. He returned with a new outlook and expertise on school statistics and efficiency that informed his perspective and career for many more decades. Ayres also significantly shaped the efficiency side of the progressive education movement in and beyond the United States. Into the early 1920s, the school survey and statistics movement expanded to encompass the entire US, many of its imperial territories, and school systems around the globe.

One of Ayres’s final publications with the Russell Sage Foundation in 1920, “An Index Number for State School Systems,” rated the efficiency of education in numerous locations. The *American School Board Journal* reported, “Among the surprising results of the study is the fact that the school systems of our territorial possessions, such as Hawaii, the Canal Zone, and Porto Rico, have higher rating than those of many of the 48 states.” Puerto Rico was not highly ranked at forty-second place, but that still placed it above ten southern states.<sup>90</sup> This index brought together many of the threads from Ayres’s two decades of education work—statistics, surveys, promotion

rates, and efficiency throughout the American imperial web. Interestingly, the index left out the Philippines, demonstrating that archipelago's different status than Puerto Rico (and Hawai'i) in the US empire by 1920.

Ayres's educational career, which began in Puerto Rico and which significantly contributed to the school survey and statistics movement in the US, provides one example of the imperial roots of the efficiency side of progressive school reform in the early twentieth century. Ayres's experience with a highly centralized, underfunded school system in Puerto Rico shaped his ideas about efficiency and promotion, that became a key component of educational reform in the US by the 1910s and 1920s. Overseas colonies such as Puerto Rico were early experimental spaces where schooling for more students with fewer resources needed to be accomplished to meet US imperial cultural and citizenship goals. Therefore, reducing economic waste and moving students through the system efficiently became an important practice that created a model for school systems back on the mainland. As the school population soared by the 1920s and 1930s, and the Great Depression limited resources, these previous imperial experiences became even more important.<sup>91</sup>

Today, quantification in the form of testing and statistics still has a powerful influence in education. Understanding the role of American imperialism in developing and furthering such fundamental practices is important to uncovering the "colonial hauntings" still present in our unequal system of education.<sup>92</sup> Examining why these ideas flourished, what they were meant to do for educators and students, and how they affected various populations throughout the American empire is important in evaluating the legacy of the early twentieth-century reform movements and envisioning a decolonized education system in the future.

## Notes

- 1 *Report of the Commissioner of Education for Porto Rico* (Washington: Government Printing Office, 1902), 41.
- 2 *Report of the Commissioner of Education for Porto Rico*, 41.
- 3 Samuel McCune Lindsay, "What Porto Rico Can Do for the United States," *Proceedings of the Twenty-Fourth Annual Meeting of the Lake Mohonk Conference of Friends of the Indian and Other Dependent Peoples, 1906* (Mohonk Lake, NY: Lake Mohonk Conference, 1906), 133.
- 4 For example, Chapman wrote: "Three years later the Russell Sage Foundation commissioned Leonard P. Ayres, former superintendent of schools for Puerto Rico, to conduct a systematic, nationwide investigation of the problem and its causes." Paul Davis Chapman, *Schools as Sorters: Lewis M. Terman, Applied Psychology, and the Intelligence Testing Movement, 1890–1930* (New York: NYU Press, 1988), 44; and Ellen Condliffe Lagemann, *An Elusive Science: The Troubling History of Education Research* (Chicago: University of Chicago Press, 2000), 82. Lagemann notes how his time in Puerto Rico influenced Ayres's ideas but does not delve into what that experience was.
- 5 References to chains throughout the article are similar to Julian Go's definition of "multifaceted links and connections that colonial rule necessarily entailed." Go discusses the "translocal, crosscolonial chain that linked colonized populations, colonial administrators, branches of the imperial state, and various social groups on the home



- front.” My use of chains has similar meanings but expands to include the meaning of chains as a form of constriction, particularly in the realm of school funding, and connection as educational ideas and practices flowed back to the mainland from the overseas territories. Julian Go, “The Chains of Empire: State Building and ‘Political Education’ in Puerto Rico and the Philippines,” in *The American Colonial State in the Philippines: Global Perspectives*, ed. Julian Go, Anne L. Foster, Gilbert M. Joseph, and Emily Rosenberg (Durham, NC: Duke University Press, 2003), 186–88.
- 6 Roland P. Falkner, “Some Recent Developments of School Statistics,” *Publications of the American Statistical Association* 12, no. 94 (1911): 57.
  - 7 William H. Maxwell, “Discussion Statistics as to Over-Age Pupils,” *Educational Review* 44 (December 1912): 521–22.
  - 8 General James Rusling, “Interview with President William McKinley,” *The Christian Advocate*, January 22, 1903.
  - 9 For example, school enrolment, particularly secondary enrolment, skyrocketed in the late 1920s and 1930s. Angus and Mirel argue that amidst financial retrenchment and drastic increases in school populations, educators turned to secure more federal aid for education and embraced a custodial function of schooling that used an extreme form of differentiation to “meet the needs of youth” and keep students from all backgrounds in school longer. This shift in the 1930s mirrored questions and issues relevant to the territories decades earlier. David L. Angus and Jeffrey E. Mirel, *The Failed Promise of the American High School, 1890–1995* (New York: Teachers College Press, 1999), 57–58.
  - 10 Aida De Montilla, *Americanization in Puerto Rico and the Public School System, 1900–1930* (Barcelona: Editorial Universitaria, Universidad de Puerto Rico, 1975); A. J. Angulo, *Empire and Education: A History of Greed and Goodwill from the War of 1898 to the War on Terror* (New York: Palgrave Macmillan, 2012), 33–49; Anne Paulet, “To Change the World: The Use of American Indian Education in the Philippines,” *History of Education Quarterly* 47, no. 2 (May 2007); Roland Coloma, “Empire and Education: Filipino Schooling Under United States Rule, 1900–1910” (PhD diss., Ohio State University, 2004), ii–iii.
  - 11 Coloma, “Empire and Education,” ii–iii; Glenn May, “The Business of Education in the Colonial Philippines, 1909–1930,” in *Colonial Crucible: Empire in the Making of the Modern American State*, ed. Alfred W. McCoy and Francisco A. Scarano (Madison, WI: University of Wisconsin Press, 2009), 151–52; Angulo, *Empire and Education*, 31; Clif Stratton, *Education for Empire: American Schools, Race, and the Paths of Good Citizenship* (Berkeley, CA: University of California Press, 2016), 1.
  - 12 Kimberly Alidio, “Between Civilizing Mission and Ethnic Assimilation: Racial Discourse, US Colonial Education and Filipino Ethnicity, 1901–1946” (PhD diss., University of Michigan, 2001); Coloma, “Empire and Education”; Solsiree del Moral, *Negotiating Empire: The Cultural Politics of Schools in Puerto Rico, 1898–1952* (Madison, WI: University of Wisconsin Press, 2013).
  - 13 Adam Nelson, “Introduction,” in McCoy and Scarano, *Colonial Crucible*, 131.
  - 14 Courtney Johnson, “Understanding the American Empire: Colonialism, Latin Americanism, and Professional Social Science, 1898–1920,” in McCoy and Scarano, *Colonial Crucible*, 181. See also Meg Wesling, *Empire’s Proxy: American Literature and US Imperialism in the Philippines* (New York: NYU Press, 2011).
  - 15 Johnson, “Understanding the American Empire,” 189.
  - 16 See, for example, Lagemann, *An Elusive Science*, and David P. Gamson, *The Importance of Being Urban: Designing the Progressive School District, 1890–1940* (Chicago: University of Chicago Press, 2019), 40–43.
  - 17 *Report of the Commissioner of Education for Porto Rico, 1901*, 10.
  - 18 *Report of the Commissioner of Education for Porto Rico, 1901*, 10.
  - 19 del Moral, *Negotiating Empire*, 54.

- 20 *Report of the Commissioner of Education for Porto Rico, 1903* (Washington: Government Printing Office, 1903), 15.
- 21 *Report of the Commissioner of Education for Porto Rico, 1901*, 11.
- 22 *Report of the Commissioner of Education for Porto Rico, 1901*, 39.
- 23 Ayres, letter to Ida, January 17, 1903, Box 2, Folder 1: Family Correspondence, Leonard Porter Ayres Papers, Library of Congress.
- 24 Ayres, undated letter to Ida, Box 2, Folder 1: Family Correspondence, Leonard Porter Ayres Papers, Library of Congress.
- 25 Ayres, letter to Ida, April 15, 1903, Box 2, Folder 2: General Correspondence, Leonard Porter Ayres Papers, Library of Congress.
- 26 E. W. Lord, letter to Ayres, July 15, 1903, Box 2, Folder 2: General Correspondence, Leonard Porter Ayres Papers, Library of Congress.
- 27 Leonard P. Ayres, "The Work of Five Years: A Superintendent's View," Box 189, Folder: General File: Puerto Rico 1901–1912 – Printed, Samuel McCune Lindsay Papers, Columbia University Archives.
- 28 Lindsay, "The Necessary Place of Education in our Porto Rican Policy," *Proceedings of the Twenty-Third Annual Meeting of the Lake Mohonk Conference of Friends of the Indian and Other Dependent Peoples, 1905* (Mohonk Lake, NY: Lake Mohonk Conference, 1905), 157.
- 29 *Report of the Commissioner of Education for Porto Rico to the Secretary of the Interior, 1904* (Washington: Government Printing Office, 1904), 9.
- 30 *Report of the Commissioner of Education for Porto Rico, 1905* (Washington: Government Printing Office, 1906), 11.
- 31 For more information about the various branches of the educational reform movements in the early twentieth century, see Herbert M. Kliebard, *The Struggle for the American Curriculum, 1893–1958* (New York: Routledge, 1995), and David Tyack, *The One Best System: A History of Urban Education* (Cambridge, MA: Harvard University Press, 1974). The historiography typically separates efficiency, scientific, or administrative progressives from pedagogical progressives. This article focuses on the roots of one strain of the efficiency-oriented reforms—school surveys and statistics. However, Gamson persuasively argues that school officials implementing policy on the ground rarely adhered to clear categories and used various types of reform ideas when building urban school districts. Gamson, *Importance of Being Urban*, 3.
- 32 *Report of the Commissioner of Education for Porto Rico, 1905* (Washington: Government Printing Office, 1906), 9.
- 33 *Report of the Commissioner of Education for Porto Rico, 1905*, 23.
- 34 *Report of the Commissioner of Education for Porto Rico, 1905*, 15.
- 35 *Report of the Commissioner of Education for Porto Rico, 1905*, 15.
- 36 Ayres, letter to his father, September 1905, Box 2, Folder 1: Family Correspondence, Leonard Porter Ayres Papers, Library of Congress.
- 37 *Report of the Commissioner of Education for Porto Rico, 1905*, 107–08.
- 38 Falkner, letter to Ayres, January 24, 1906 and handwritten memo from Falkner, July 1, 1907, Box 2, Folder 2: General Correspondence, Leonard Porter Ayres Papers, Library of Congress.
- 39 *Report of the Commissioner of Education for Porto Rico, 1906* (Washington: Government Printing Office, 1907), 9.
- 40 *Report of the Commissioner of Education for Porto Rico, 1906*, 9.
- 41 *Report of the Commissioner of Education for Porto Rico, 1906*, 20–21.
- 42 *Report of the Commissioner of Education for Porto Rico, 1901*, and *Report of the Commissioner of Education for Porto Rico, 1906*.
- 43 *Report of the Commissioner of Education for Porto Rico, 1906*, 22.
- 44 *Report of the Commissioner of Education for Porto Rico, 1906*, 75.

- 45 *Report of the Commissioner of Education for Porto Rico, 1906*, 11.
- 46 *Report of the Commissioner of Education for Porto Rico, 1906*, 76.
- 47 *Report of the Commissioner of Education for Porto Rico, 1906*, 79–81.
- 48 In regards to the “civilizing mission for the non-elite” in both colonies, see Julian Go, *Chains of Empire*, 192–93.
- 49 Ayres, letter to his father, June 9, 1907, Box 2, Folder 1: Family Correspondence, Leonard Porter Ayres Papers, Library of Congress.
- 50 Ayres, letter to his father, July 2, 1907, Box 2, Folder 1: Family Correspondence, Leonard Porter Ayres Papers, Library of Congress.
- 51 *Annual Report of the Governor of Porto Rico for the Fiscal Year ended June 30, 1908* (Washington: Government Printing Office, 1909), 209.
- 52 Ayres, letter to his father, Sept. 4, 1907, Box 2, Folder 1: Family Correspondence, Leonard Porter Ayres Papers, Library of Congress.
- 53 Ayres, letter to his father, September 9, 1907, Box 2, Folder 1: Family Correspondence, Leonard Porter Ayres Papers, Library of Congress.
- 54 Ayres, letter to his father, New York, October 31, 1907, Box 2, Folder 1: Family Correspondence, Leonard Porter Ayres Papers, Library of Congress.
- 55 Leonard P. Ayres, “The School System in Porto Rico,” *Proceedings of the Twenty-Fifth Annual Meeting of the Lake Mohonk Conference of Friends of the Indian and Other Dependent Peoples* (Mohonk Lake, NY: Lake Mohonk Conference, 1907), 172–73.
- 56 Ayres, letter to his father, New York, October 31, 1907, Box 2, Folder 1: Family Correspondence, Leonard Porter Ayres Papers, Library of Congress.
- 57 Geraldine Jonçich, *Edward L. Thorndike: The Sane Positivist* (Middleton, CT: Wesleyan University Press, 1968), 294; Lagemann, *The Elusive Science*, 79; and Gamson, *The Importance of Being Urban*, 39.
- 58 Gamson, *The Importance of Being Urban*, 40, and Jonçich, *Edward L. Thorndike*, 301–03.
- 59 Box 19: Speeches and Writings, Folder: NYU School of Pedagogy Dec. 1907–May 1908, Leonard Porter Ayres Papers, Library of Congress.
- 60 “Attendance,” Lecture V, April 7, 1908, Box 19: Speeches and Writings, Folder: NYU School of Pedagogy Dec. 1907–May 1908, Leonard Porter Ayres Papers, Library of Congress.
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- 62 “Causes of Retardation and Proposed Remedies,” Lecture VIII, May 5, 1908, Box 19: Speeches and Writings, Folder: NYU School of Pedagogy Dec. 1907–May 1908, Leonard Porter Ayres Papers, Library of Congress.
- 63 “Retardation: Some Account of a Study Conducted in the New York Public Schools by the Backward Children Investigation of the Russell Sage Foundation,” reprinted from the *Tenth Annual Report of Dr. William H. Maxwell, Superintendent of Schools of New York City 1909*, Box 20: Printed Matter, Folder: Retardation 1908–1909, Leonard Porter Ayres Paper, Library of Congress.
- 64 Luther H. Gulick, introduction to *Laggards in Our Schools: A Study of Retardation and Elimination in City School Systems*, by Leonard P. Ayres (New York: Charities Publication Committee, 1909), xiv.
- 65 Gulick, xiv.
- 66 Leonard P. Ayres, *Laggards in Our Schools: A Study of Retardation and Elimination in City School Systems* (New York: Charities Publication Committee, 1909), 3.
- 67 Ayres, *Laggards in Our Schools*, 5.
- 68 Ayres, *Laggards in Our Schools*, 90.
- 69 Ayres, *Laggards in Our Schools*, 7.

- 70 Ayres, *Laggards in Our Schools*, 49.
- 71 Ayres, *Laggards in Our Schools*, 7.
- 72 Ayres, *Laggards in Our Schools*, 9.
- 73 Ayres, *Laggards in Our Schools*, 216–17.
- 74 Ayres, *Laggards in Our Schools*, 66–70. According to historian Geraldine Jonçich Clifford, soon after *Laggards*, Thorndike abandoned efforts at system-wide statistical gathering because he had "imitators to succeed him." Thorndike resumed his focus on the individual psychological and behavioural quantification efforts that became his educational legacy. Jonçich, *Edward L. Thorndike*, 301–3.
- 75 Ayres, *Laggards in Our Schools*, Box 20: Printed Matter, Folder: Monographs for the Russell Sage Foundation, Child Hygiene 1909–1911 Nos. 54, 57, 61, 96, 99, Leonard Porter Ayres Papers, Library of Congress.
- 76 Leonard P. Ayres, "What Constitutes Retardation? How Significant Are Retardation Statistics? When is Retardation Justifiable? How May it Be Corrected?", National Education Association of the United States, *Journal of Proceedings and Addresses of the Forty-Eighth Annual Meeting Held at Boston, Massachusetts, July 2–8, 1910* (Chicago: University of Chicago Press, 1910), 149–54.
- 77 Leonard P. Ayres, "The Relative Responsibility of School and Society for the Over-Age Child," reprinted from the *Journal of Education*, December 21, 1911, Box 20: Printed Matter, Folder: Monographs for the Russell Sage Foundation 1911–1913, Leonard Porter Ayres Papers, Library of Congress.
- 78 Leonard P. Ayres, "The Money Cost of Repetition versus the Money Saving Through Acceleration," reprinted from the American School Board Journal, January 1912, by the Division of Education, Russell Sage Foundation; Division of Education, Russell Sage Foundation, "A Comparative Study of Public School Systems in the Forty-Eight States Published in December 1912"; Ayres, "The Measurement of Educational Processes and Products," text of an address given by Ayres to the Harvard Teachers' Association on March 9, 1912; Box 20: Printed Matter, Folder: Monographs for the Russell Sage Foundation 1911–1913, Leonard Porter Ayres Papers, Library of Congress.
- 79 Ayres, "The Measurement of Educational Processes and Products."
- 80 Ayres, "Two New Courses, New York University, Summer School, 1912," Box 19: Speeches and Writings, Folder: Lectures and Handouts NYU Summer School July 1–August 9, 1912, Leonard Porter Ayres Papers, Library of Congress.
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- 84 John Franklin Bobbitt, "What the Schools Teach and Might Teach," and R. R. Lutz, "Wage Earning and Education," Box 23: Folder: Reports of the Cleveland Education Survey 1915, Leonard Porter Ayres Papers, Library of Congress.
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- 86 Ayres, "Making Education Definite" in "Second Annual Conference on Educational Measurements," *Indiana University Bulletin* 13, no. 11 (October 1915), Box 20: Printed Matter, Folder: Educational Measurements; Standards for Graphic Presentation 1915, Leonard Porter Ayres Papers, Library of Congress.

- 87 Ayres, "Survey of School Surveys," in "Second Annual Conference on Educational Measurements, *Indiana University Bulletin*, Vol. XIII, No. 11, October 1915, Box 20: Printed Matter, Folder: Educational Measurements; Standards for Graphic Presentation 1915, Leonard Porter Ayres Papers, Library of Congress.
- 88 "For Release—Monday, November 22, 1920," Box 22: Folder: Biographical Information, 1919–42. Leonard Porter Ayres Papers, Library of Congress.
- 89 "Educators Today," *Journal of Education*, Nov. 25, 1920, Box 22: Folder: Biographical Information, 1919–42, Leonard Porter Ayres Papers, Library of Congress.
- 90 "State School Systems Studied: Russell Sage Foundation Rates School Systems by Statistical Methods," *The American School Board Journal: A Periodical of School Administration* LX, no. 6, (June 1920): 96.
- 91 For data about the increase in school enrollment during the 1920s and 30s see Claudia Goldin, "America's Graduation from High School: The Evolution and Spread of Secondary Schooling in the Twentieth Century," *The Journal of Economic History* 58, no. 2 (June 1998).
- 92 Homi Bhabha, *The Location of Culture* (Routledge, 1994), 18.