

“Planetary Reconstruction”: Richard Neutra’s School Lessons from Puerto Rico

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Puerto Rico, while a U.S. territory, lacked the education, health, and sanitation infrastructure found in the continental United States. Neutra’s task was to design facilities to improve the infrastructure. While the aesthetic of the buildings is considered Modernist architecture, Neutra was very sensitive to the structures of local communities. His school designs were didactic in the way people engaged the architecture by learning about fluid mechanics and sanitation through passive designs and planning. Gardens and agricultural practices were introduced to improve food and nutrition. Education and food reforms required local knowledge even though there is a broader scientific knowledge that understands how these conditions can thrive in a particular locality. Architecturally, Neutra adjusted the Modernist style to perform in tropical Puerto Rico. Having contributed to the development of Puerto Rico and anticipating the economic boom in the U.S., Neutra’s proposal for the American community is one that was developed from the global south meant to conserve local values, and yet it was conceived as a model plan that was independent of a particular location.

INTRODUCTION

“Puerto Rico is a good testing ground for American intentions; I am sure her leaders realize quite clearly their role in the great drama which is unfolding. Not only is this Island by size and location the strategic center of the Caribbean area, it is also joined in culture with the other Americas to the South and to the North.”¹ – Rexford G. Tugwell, Governor of Puerto Rico (1941-46)

Rexford G. Tugwell (1891-1979) made the above statement in September 1941, about three months before the attack on Pearl Harbor and the U.S. entry into World War II. Up to the eve of the war, many Puerto Rican houses were shanties, and health and education facilities were noticeably absent in the remote areas [Fig. 1].²



Figure 1: Puerto Rico, from *Architectural Forum*, March 1945.

The war hampered Tugwell’s reform efforts, particularly in building schools and health care facilities, but he was undeterred in making every effort possible to help the Puerto Ricans. Tugwell established the Committee on Design and Public Works and that committee appointed Richard Neutra (1892-1970) as chief architect and consultant by late 1943. Neutra was an architect who made a reputation in outdoor classroom designs in Southern California as well as the community masterplan and design for Channel Heights in San Pedro (1942) and so he was deemed the an expert to design economical rural school, health care facilities, and community centers for the impoverished areas on the island.³

From late 1943 to early 1945, Neutra developed a series of standard elementary school and health facility plans utilizing building techniques specifically designed for the Puerto Rican climate. In *Architecture of Social Concern in Regions of Mild Climate* (1948), he included an essay titled “The Non-Metropolitan World Calls for the Architect” reminded architects that rural areas were in need of the architect’s services as much as the city: “We technical men, we architects, above all, have been too much crowded into metropolises, mentally and physically crowded, and packed into a few restricted spots on earth and into the particular formal problems of a metropolitan minority. We must learn to give our services to broader areas of the globe; the governments must decide to use us in developing

resources of the vast hinterlands.⁴ He recognized that limited building materials and infrastructure in rural areas required the architect's services in reconstruction, that is to say improving the existing built conditions for they are present in rural areas, through technical expertise with the assistance of local government.

This was sympathetic to Tugwell's technocratic attitude towards Puerto Rican governance and planning.⁵ Tugwell envisioned technical experts like architects working with local liberal-minded politicians would improve the dire social and economic hardships on the island. The affinity between Neutra and Tugwell allowed the architect to explore educational architecture and a social vision which would become part of Neutra's planetary reconstruction for the post-war building boom.⁶ Tugwell's observation on Puerto Rico's "strategic location" not only connected American with Latin American building reforms, but the manifestations of those reforms appeared in the U.S. through Richard Neutra's immediate post-war reconstruction proposals.

CONDITIONS IN PUERTO RICO

Puerto Rico became a U.S. territory following the Spanish-American War in 1898. An 1899 report on the island for President William McKinley claimed that the general population of Puerto Ricans had been ill-treated under the Spanish government and that now as an American territory they expected and American modeled school system, free trade with the U.S., and "a general adaptation to the island of those institutions which have contributed to the prosperity, progress, and happiness of the American people."⁷

Change was slow for the next thirty years. The reasons for the continually deplorable conditions in Puerto Rico was in part due to American agricultural commercialization. The United States developed plantations for tropical agriculture, particularly for the sugar industry. The sugar industry was devastated by the European economic depression following World War I, which led to the overproduction of sugar. From 1930 to 1933, the Puerto Rican income per capita decreased 30% and unemployment soared.⁸ Landless farmhands called *agregados* were most affected by the sugar industry practices as they worked for the industry but squatted on the plantations in shanties.

The social tensions in Puerto Rico enabled Luis Muñoz Marín's Partido Popular Democrático (PPD) to gain control in the territorial legislature. Muñoz Marín gained his reputation for legislative plans which shifted the control of land from the sugar industry into the hands of the territorial government. The Plan Muñoz Marín called for the Puerto Rican government to buy land from the United Puerto Rican Sugar Company and redistribute the poorer quality of lands to landless peasants to grow crops other than sugar.⁹ Carlos Chardón, who assisted Muñoz Marín in the details of his plan, formulated his own reforms which extended beyond the sugar industry. The Plan Chardón established the Puerto Rican Reconstruction Administration [PRRA] which supported public building and housing, sponsored rural electrification, and enforced the 1900 Foraker Act regulation which imposed a 500 acre limit on sugar plantations.¹⁰ Later, Chardón pushed through Law 26 of April 12, 1941 which created the Land Authority. The most successful part of the law

was Title V which gave the landless laborers and squatters, the *agregados*, a parcel of land called *parcelas*, which was an area of land up to 3 acres. The *agregados*, who previously were at the mercy of plantation owners, could manage a plot of land and build a house on government owned property. While this did not elevate their financial standing, it provided a home without fear of eviction.¹¹ Furthermore, as will be discussed later, the Land Authority's distribution of land encouraged a community environment for rural town planning which Neutra further developed.

These activities and administrations were concurrent with Franklin Delano Roosevelt's New Deal projects and so Muñoz Marín's PPD government in the 1940s welcomed Rexford Tugwell's appointment.¹² Secretary of the Interior Harold Ickes likely considered Tugwell an excellent choice given Tugwell's high appraisal of Muñoz Marín's agricultural reforms following a visit to the island.¹³ Tugwell also shared a similar vision of agricultural reform and land distribution as he assisted in writing the Plan Chardón as well as chaired the Resettlement Administration in the U.S. Puerto Rico was in the midst of agricultural, educational, and redevelopment plans initiated by their own politicians before Tugwell and Neutra arrived on the island, but Tugwell's appointment assured that they could continue with assistance from the Americans.

RECONSTRUCTING PUERTO RICO

Chardón's PRRA tried to improve school, hospital, and public housing projects during the 1930s. The Insular Department of Education established first unit and second unit schools in rural areas around 1935. First unit schools covered the first four years of grade school and second unit schools were for pre-vocational training. Tugwell recognized the importance of the second unit schools:

The objective of the lower schools is to fit children into a niche in the social and economic scheme. For this reason Puerto Rican education has gone in intensely for vocational education without neglecting to adapt the curriculum to changing needs... [Budget bill appropriations] would increase the number of teachers of certain types, particularly of industrial arts, and would provide additional personnel for extending the scope of the work of the Second Unit Schools which have been admired by educators everywhere. They are Puerto Rico's best contribution, so far, to the art of education.¹⁴

Students in second unit schools covered the basic educational requirements such as math and language arts but the bulk of the curriculum was dedicated to vocational training: agriculture, mechanics, and industrial art for boys and seed-work, basketry, and domestic science for girls. A 1940 guidebook for island described the plot of the school complex:

Each second unit school has at least five acres of ground for practical work in agriculture [and pupils working on an agricultural project are given one-third of the net proceeds of the crop. The school farm or garden supplies the school lunchroom with vegetables and meats for the table. A

subsidiary purpose of the domestic science program is to persuade rural families to adopt a well-balanced diet, based largely on native products.¹⁵

The agricultural aspect was the basic structure for the curriculum and physical school arrangement. During the day, children worked on the agricultural fields with their own plot of land to cultivate crops. In the evenings, adults taking vocational training did the same. Yet when it was time for harvests, everyone worked together. Each farmer kept a portion of the bounty while a larger portion went back to the school to provide meals for malnourished children.¹⁶ Teaching hygiene, agriculture, and general knowledge took place inside a familiar building approach following the traditions of European architecture. The appearances of these projects varied in styles, some had an Art Deco look, others were Spanish Colonial with stucco surfaces and red tile roofs, and the rural schools were a combination of vernacular housing forms with stucco surfaces. Puerto Rican schools were experimental in their pedagogy but not as innovative in their school buildings.

During the 1930s, when Puerto Rico developed the second unit schools, Neutra designed a number of California schools featuring open-air classrooms with kitchen gardens [Fig.2]. The kitchen gardens in California schools were part of progressive education theory at the time that encouraged learning through action. For example, children learned about plants by growing them rather than reading about them in a science textbook. Given that Neutra's schools were in the suburbs of Los Angeles, not in the agricultural valleys of California, those students were not likely going to be farmers. Puerto Rican children in rural areas on the other hand, as the Puerto Rican educators emphasized, needed active learning to be successful farmers. It was the fact that Neutra understood the value of active learning which contributed to the merging of his designs with the educational curriculum of Puerto Rico. Neutra's school design innovations in Southern California were thus appropriate for Puerto Rican school pedagogy.

Governor Tugwell realized the infrastructure and material limitations on the island but felt they had a positive contribution to develop industry and agriculture: "Of the elements most important [on the island] is soil; but there ought not to be neglected a sun which shines nearly every day in the year, rain which falls upon our mountains freely, a wind which blows with regularity – a whole climate, indeed, which ranges only good to better. We have no coal or oil; but sun, wind, and water will be the important sources of power in the future."¹⁷ There was clearly an affinity between Tugwell and Neutra in considering physical nature as the foundation for technological development and design. The conditions in Puerto Rico forced architects like Neutra to recognize the greatest building obstacles were lack of building materials and technology but despite those obstacles there were resources on the island which could be appropriated to improve islanders' lives.

Electricity, for example, was rare in rural areas, so technology had to be limited in use and in building specifications. Neutra immediately recognized the benefit of open-air classrooms for Puerto Rico to capture the tropical breeze as well as control the light from the tropical

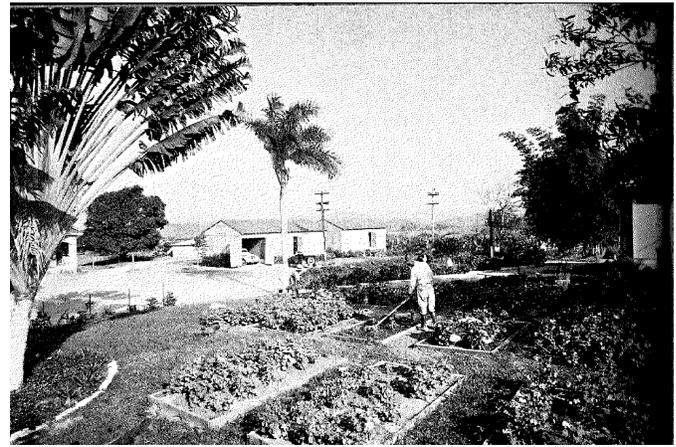


Figure 2: Vocational School Garden. Photo by the Puerto Rican Reconstruction Administration as published in *Puerto Rico: A Guide to the Island of Boriquén* (1940).

sun. He designed a special pivoting door that could be fabricated out of either aluminum or wood that pivoted at a point a little more than half-way up the wall. The door below the pivot point was hollow and above was a screen. When closed, the screen aligned with a screened clerestory so air would still flow across the classroom. When the door was open, the solid portion projected well beyond roof plane to provide additional shade. The light-colored exterior surface, now facing the sky, reflected light through the clerestory so that indirect sunlight illuminated the classroom. Not only could the classroom increase in size, but the indirect light reduced glare, the overhang offer shade from the topical sun, and the open wall maximized the exposure to breezes.

Other devices also had to be limited in use and utilize as much from nature as possible. The roof of the school sloped towards a cistern to collect water for drinking and washing lunch dishes. The natural breezes were the primary means of ventilation, so the only fans Neutra specified were located near the doors of the kitchen and dining area which operated only during mealtimes to produce an air curtain to keep disease-carrying flies out of the eating hall. While natural ventilation and protection from the sun and insects were always problems for Puerto Rican architects, Neutra solved the problem not by following conventional building forms from Europe, but by designing according to the natural phenomenon similar to Southern California [Figs. 3].

Tugwell also wanted to improve and increase the health centers in rural areas in part to treat diseases and to help educate *agregados* about sanitation and hygiene. Schools supported part of this initiative. Students learned about nutrition through agricultural practices by working on their own plots of land to grow crops and a portion of their harvest went to the school cafeteria. When students finished eating, they took their trays to a wash basin and cleaned their plates before placing them on the cart to be taken back to the kitchen; this taught them about cleanliness the importance of properly disposing waste.¹⁸

For adults, Neutra designed a number of health facilities as well but his approach again differed from those built by the PRRA. The PRRA health centers, like the schools, replicated colonial architectural forms and as isolated buildings. Instead, Neutra's health centers featured an open porch facing the town plaza to encourage social gatherings. One description of his health center claimed: "the poor mountain peasants may play dominos in the evening, strum a guitar or dance on the spacious porch. Neutra has provided a bench around the wide opening

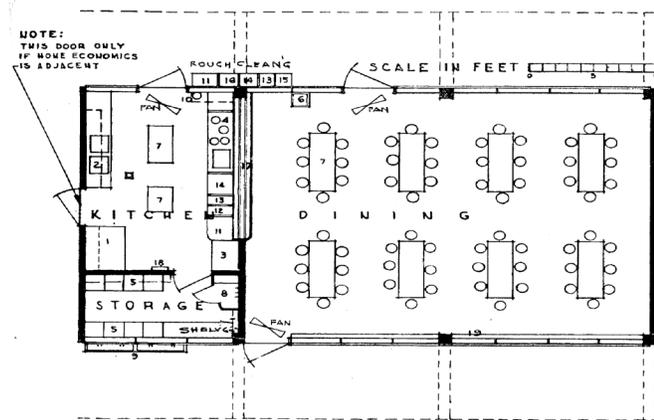


Figure 3: Richard Neutra. Kitchen for Urban School, from *Architecture of Social Concern in Regions of Mild Climate* (1948).

of the milk dispensary, making it into a stage for teachers or entertainers addressing the assembled community.¹⁹ The health center was more than a medical clinic; it also served as a social event space. Like the school, its openness, both spatially and socially, encouraged activity as much as a place for convalescence.

Neutra thus applied the open design of his schools and formed a new spatial relation between the school, health center, and the town. Instead of each building being isolated, he proposed designing each one around a central plaza which included a community center. Neutra himself recognized that the ensemble was an education center [Fig. 4].²⁰ The result was part Spanish culture – the plaza as the organizer of social space – and part Neutra in that the facilities shared an interior spatial relation through their openings. Traditionally, Spanish architecture engaged the plaza in their facades, but Neutra shifted the architectural idea from façade to space so that the plaza could engage each building. Each building could be cordoned off for a special use such as a classroom or opened to be part of a community festival, such as the frequent dances held at the community center. The second unit schools were also the community centers, featuring public lectures, government meetings, and their facilities were used in the evenings for adult vocational classes.

Neutra's contribution was not in developing a new curriculum through his architecture but rather responding to the existing social situations and climatic conditions. He did not invent cross-ventilation in architecture for tropical climates, but he improved the air flow

by designing walls that open and shade rather than openings with louvered shutters for solid structural walls. He did not propose an agricultural program to provide nutritious meals for students, but he helped protect the food in his planning. He did not create the plaza as a public space for Puerto Rico but he enhanced the engagement of the architecture as a representation of how people engage in a social space.

The seed for this design attitude in Puerto Rico was planted by the Land Authority's Title V from 1941, which provided individual plots of land for poor farmers distributed by the government. Likewise, the community centers had individual buildings – a school, health center, and community center – for either particular functions or shared by the town. The openness of the plan not only responded to the mild climate but choreographed a plot for the town's social concerns as anticipated by the PRRA a decade earlier.

Neutra was concerned about health before going to Puerto Rico as his Lovell Health House (1929) and Emerson Junior High School (1938) attest, but he encountered the need for healthy buildings in Puerto Rico.²¹ An *Architectural Forum* article from 1945 featuring Neutra's projects from Puerto Rico described the conditions of the island: "Puerto Rico has been given world-wide publicity for its miseria y hambre – misery and hunger. Certainly there is unrelieved overpopulation, poverty in living and housing, undernourishment, and disease, illiteracy, maldistribution [sic] of lands and tools to produce wealth and food."²² Neutra's direct contact with widespread tuberculosis, undernourished children, and towns with limited electricity or clean water forced him to design buildings as devices to improve education and sanitation.

PLANETARY RECONSTRUCTION

In 1944 Neutra returned to California and published "Comments on Planetary Reconstruction," which outlined how architects should be involved in rebuilding the nations destroyed by the war. Neutra wryly explained how the war's destruction cleared out the outdated nineteenth century buildings and provided a tabula rasa to build new institutions suited to modern life.²³ The article images were projects by Neutra for Puerto Rico and he selected two particular types of projects: a hospital and rural schools. The variety of rural school designs for planetary reconstruction suggests that Neutra could have conceived his work in Puerto Rico as an experiment in rebuilding society. Aware of the devastation in Europe, Neutra expected France, Belgium, and Central Europe were now ready for technologically advanced architecture such as that developed in portions of the United States. There were areas in the U.S., specifically the plains states that were equally devoid of infrastructure and architecture as badly as Puerto Rico.²⁴ Having established a vision and practical experience in executing these ideas in Puerto Rico, Neutra was ready for the war to finish and begin building for a postwar America not necessarily destroyed by war, but in the need to distribute progress.

The same year Neutra anticipated planetary reconstruction, he developed an ideal plan for a school, called "The School in the

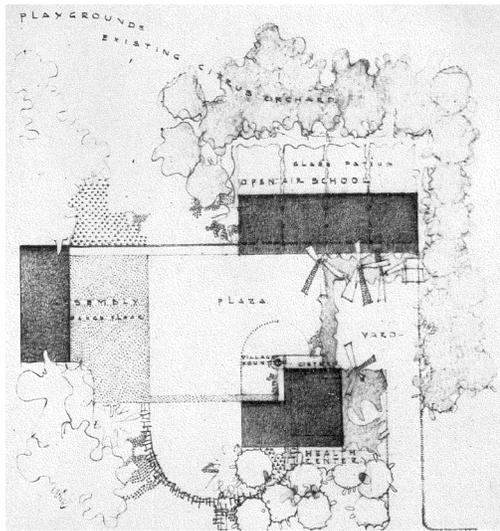


Figure 4: Richard Neutra. Village Community Center, from *Architecture of Social Concern in Regions of Mild Climate* (1948).

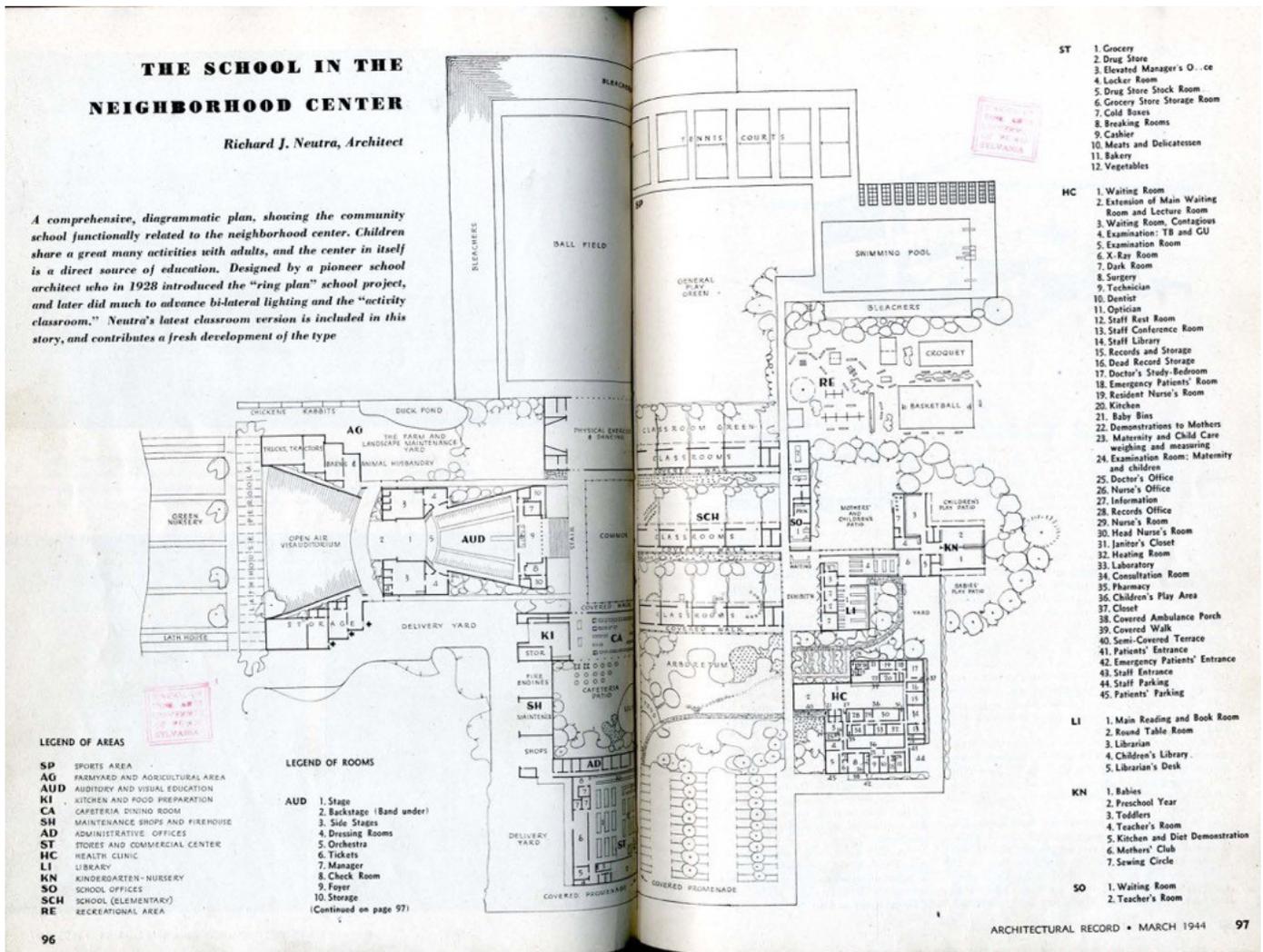


Figure 5: Richard Neutra. "The School in the Neighborhood Center," from *Architectural Record*, March 1944.

Neighborhood Center” that wove aspects of life, education and health into an architectural ensemble [Fig. 5].²⁵ The classrooms occupied the physical core of the plan and the majority of their area was allocated to outdoor learning spaces. There was a large agricultural area for crops and farm animals near the communal kitchen, a place likely to serve produce from the garden and meat from the yard. The relations between the kitchen to the farm and health clinic to the recreational area and garden respond to our health. These relations also served as adult training for various trades, such as farm practices or basic medicine and the two are related in practice and in the architectural plan. Cultivating health then became one of the core values of education for the community as he developed in the rural community centers in Puerto Rico.

Neutra combined his technical experience with architectural devices with traditional building practices and technology. He did not establish an agrarian society on Puerto Rico, but the agrarian structure already present made him reconsider its value for the continental U.S. The agrarian model for a community where health comes from the land, individual cultivation, and communal assistance was the cornerstone of Neutra’s projects immediately after World War II as evident in his “School for the Neighborhood Center.” Neutra was not alone in developing a new sense of community architecture following WWII but his experiences in Puerto Rico due to the island’s remoteness forced him to design with limited technology through advanced technical knowledge. In this way he learned from Puerto Rican society while introducing advanced building knowledge.

ENDNOTES

1. Rexford G. Tugwell, “Inaugural Address,” *Puerto Rico Public Papers of R. G. Tugwell, Governor*. (San Juan: Service Office of the Government of Puerto Rico, 1945). 5.
2. 30-40% of Puerto Rican children did not attend school during this period. Rexford Guy Tugwell, *The Stricken Land: The Story of Puerto Rico*. (Garden City, NY: Doubleday & Co., 1947). 566.
3. Thomas S. Hines, *Richard Neutra and the Search for Modern Architecture*. (Rizzoli: New York, 2005). 212-214; See also Barbara Mac Lamprecht, *Neutra: Complete Works*. (Taschen: Köln, 2010). 84, 177. The latter mentions Neutra’s penchant to design for natural ventilation.
4. Richard Neutra, *Architecture of Social Concern in Regions of Mild Climate*. (São Paulo, Brasil: Gerth Todtmann, 1948). 37-38.
5. Tugwell. “Inaugural Address,” 8. “I can see that a homogenous [people], two million in number, on 3350 square miles of land, much of which is mountainous, needs, in agriculture and industry, the best of leaders, of managers, and of technicians. They cannot afford speculators or profiteers.”
6. According to a 1945 article in *Architectural Forum*, Neutra supervised over the design of 150 schools, 128 health centers, 5 hospitals, and a girls’ home; one school was built by March 1945 “Puerto Rico,” *Architectural Forum* 82, no. 3 (March 1945): 119-130. 121. See also Barbara Mac Lamprecht, 84-86.
7. Carroll, Henry K., *Report on the Island of Porto Rico; Its Population, Civil Government, Commerce, Industries, Productions, Roads, Tariff, and Currency, with Recommendations*. (Washington, D.C.: Government Printing Office, 1899). 56.
8. César J. Ayala and Rafael Bernabe, *Puerto Rico in the American Century: A History since 1898*. (Chapel Hill, NC: University of North Carolina Press, 2007). 96.
9. *Ibid.* 101. Theoretically, this would provide land for the landless and reduce the overproduction of sugar on the island and increase other staple crops
10. *Ibid.* 102.
11. *Ibid.* 184-85.
12. Tugwell already made a name for himself in the Roosevelt administration as Undersecretary of the Department of Agriculture and was the architect of the Agricultural Adjustment Administration and the Resettlement Administration which included the design and construction of Greenbelt, MD. See K. C. Parsons, “Clarence Stein and the Greenbelt Towns Settling for Less,” *Journal of the*

American Planning Association 56, no. 2 (1990): 161-183. Tugwell resigned from the Roosevelt Administration in 1936 when his critics dubbed him “Rex the Red” when describing his programs as communist. He was Director of the New York City Planning Commission when Roosevelt appointed him Governor of Puerto Rico in 1941.

13. Ayala and Bernabe. 143-44.
14. Rexford G. Tugwell, “Message to the Fifteenth Legislature, Second Regular Session,” *Puerto Rico Public Papers of R. G. Tugwell, Governor*. Op. cit. 54.
15. *Puerto Rico: A Guide to the Island of Boriquén*. (San Juan, PR: Puerto Rico Department of Education, 1940). 127. There were 67 second unit schools in 1937 with a combined enrollment over 11,000.
16. Tugwell. *Puerto Rico Public Papers of R. G. Tugwell, Governor*. 131. Tugwell was adamant in keeping the cafeteria active even when school was not in session because it was the only time children were likely to have something to eat.
17. Tugwell, “Inaugural Address.” 7. Tugwell had the money to develop school and health centers but the U.S. Government restrictions on raw material consumption for the war effort prevented him from spending it. Building materials were difficult to obtain during the war. The island had lumber and there were a number of cement plants on the island. According to Tugwell: “We had worked and argued for months against the bureaucratic stupidity which kept us supine, but we were being defeated. A few things wanted by powerful interests we got. We were permitted to build a bottle factory but had the greatest difficulty with schools or health centers – and we argued for both with equal determination.” Tugwell. *Stricken Land*. 566.
18. Neutra, *Architecture of Social Concern in Regions of Mild Climate*. 71-73
19. “Puerto Rico,” *Architectural Forum*. 125.
20. Neutra, *Architecture of Social Concern in Regions of Mild Climate*. 61.
21. Neutra did not explicitly call out for herbal medicine, but he indicated being critical of defaulting to artificial drugs to maintain proper health and recognize the value of architecture fostering strong ties between nature and the human body. See Richard Neutra, *Survival Through Design* (New York: Oxford University Press, 1954). Esp. 91, 314-324, 350-354.
22. “Puerto Rico,” *Architectural Forum* 82, no. 3 (March 1945): 119-130. 120.
23. Richard J. Neutra, “Comments on Planetary Reconstruction,” *Arts and Architecture* 61, no. 12 (December 1944): 20-22, 42.
24. Neutra. *Architecture of Social Concern in Regions of Mild Climate*. 37.
25. Richard J. Neutra, “The School in the Neighborhood Center,” *Architectural Record* 95, no. 3, (March 1944). 96-98.