

# A successful architectural embodiment of the philosophy of progressive education:

## The 1929 Cronk Memorial Kindergarten in Kumamoto

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### 進歩主義教育思想と幼稚園の物理的環境—クロンク記念幼稚園の場合—

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#### 要約

幼児教育のための物理的環境は、より良い教育実践のために教育思想を物理的環境に具体化すると同時に、主たるユーザーである子どもと物理的環境の相互交渉により、子どもの発達を援助する環境でなければならないであろう。本研究は、米国の進歩主義教育を導入したクロンク幼稚園（1929年築、現・神水幼稚園、熊本市）の園舎において、進歩主義教育思想がどのように具体化され、子どもの発達を援助する物理的環境（園舎・設備・家具・道具）が実現していたかを明らかにすることを目的とした。本園舎は、コロンビア大学のヒル（Patty S. Hill）の下で進歩主義幼児教育を学び、来日した宣教師パウラス（Annie P. Powlas）と米国で教育を受けた建築家・川崎忍が協働し、設計された。進歩主義幼児教育とは、子どもを尊重する児童中心の教育思想であり、民主主義社会の市民となるよう子どもを教育することを特徴としていた。設計当時の平面図や現地での実測調査で得た資料等を分析した結果、園舎は①子どもサイズが徹底され、②ヒルが考案した大型積木での集団遊びを可能にするために、大空間の保育室を実現するとともに、③社会での役割を学ぶために重視されたままごと遊びのために、ままごとの家が設置され、④保育室に保育者養成課程の学生が子どもを観察するためのギャラリーが設置されていたことを明らかにした。最後に、今後の課題について議論した。

#### Key words

progressive education, physical environment, Patty S. Hill, Annie P. Powlas, Shinobu Kawasaki

#### 1. Introduction

Every visitor to a kindergarten based on the Montessori educational philosophy learns that the essential elements of the physical environment of the kindergarten are unique embodiments of the educational philosophy of Maria Montessori (1870-1952). In fact, based on intensive content analyses of her books and articles, Takahashi (2015a; 2018) demonstrated that Montessori specifically theorized the role of the physical environment of a kindergarten for all children who, she believed, are born competent and autonomous. Montessori herself determined the essential nature of the educational environment of the Montessori Children's House. She carefully considered how the structure and contents of the building, with its facilities, furnishings, tools, and play materials, could effectively realize her educational philosophy to activate and support child development. According to Takahashi's analysis (2015a; 2018), Montessori's endeavor suggests that every physical environment should be designed with serious consideration of its users, that is, children and their purposes. Conventionally, however, most architects and/or designers have not been seriously concerned with how physical environments influence their users' behavior and thinking (Dudek, 2000; Senda & Fujimori, 2001). We should realize productive transactions between physical environments and their users

(Sameroff, 2009). The aim of this paper is to present an instance of the construction of a physical environment, that is, kindergarten buildings, facilities, furnishings, tools, and play materials (Garrison, 1926; Hill, 1923), based on serious consideration of its users: a Japanese example of the physical environment of a kindergarten that was designed and built to embody the philosophy of Progressive Education. Through detailed analyses of the physical characteristics of the Cronk Memorial Kindergarten (hereafter, the Cronk Kindergarten), built in Kumamoto City in Kyushu in 1929, I will discuss how successfully the Progressive Educational philosophy, which was introduced into Japan early in the 20th century, is embodied in the physical environment of this kindergarten. Fortunately, the building was left almost untouched by the war; it has been well maintained and is in use even now. The Cronk Kindergarten was first found and introduced by Kobayashi, a specialist in history of early education, in her paper (Kobayashi, 1975) and in her book (Kobayashi, 2009), but she was not concerned with the educational philosophy of the kindergarten. In this paper, I first summarize the propositions of the Progressive Education philosophy for early childhood. Then, I explain how the Cronk Kindergarten was constructed. Finally, I describe an investigation of how the philosophy is embodied in the physical environment of the Cronk Kindergarten.

#### 2. The Progressive Education philosophy of Dewey and Hill

##### 2.1 Dewey's educational propositions

From late in the 19th century until early in the 20th century,

the Progressive Education movement in the United States was led by John Dewey (1859-1952). The movement can be traced to European ideas of education and child development such as those of Jean-Jacques Rousseau, Johann Pestalozzi, Friedrich Fröbel, and Maria Montessori. With specific reference to the ideas and practices of Rousseau and Fröbel, Dewey developed his ideas for reorganizing schools as effective agencies against the formalism of traditional education. The core of his beliefs on early childhood education, as articulated in his decades of publications (Dewey, 1897; 1900/1902/1915/1932/1990; 1915/2019; 1916), can be summarized in the following three propositions: (1) Children are competent and autonomous by nature, and, therefore, “The start must come from the child” (Dewey, 1900/1902/1915/1932/1990: 129); (2) children benefit from child-centered educational programs and activities; when they are active learners, not passive listeners of authoritative teachers, they learn through their own activities (Dewey, 1897; Dewey, 1900/1902/1915/1932/1990); (3) children should be educated to be social individuals who are members of society. As Dewey argued, “Education is the fundamental method of social progress and reform” (Dewey, 1897: 80). That is, he believed that education was the way to ensure democracy in society (Dewey, 1916/1997). Dewey therefore worked to establish progressive education in the United States. In 1904, he was invited to Columbia University in New York City, where he remained for nearly fifty years, sometimes teaching in the university’s Teachers College. In 1917, the university started the Lincoln School of Teachers College as a laboratory for the development of a new, progressive approach to elementary and secondary education.

## 2.2 Hill’s contribution to Progressive Education in early childhood education

Educator Patty S. Hill (1868-1946) joined Columbia’s Teachers College in 1905. As the director of the Louisville Free Kindergarten Association in Kentucky (1893-1905), Hill was so impressed by Dewey’s lectures at his summer seminar and his various writings that she adopted his philosophy as her grounding theory (Snyder, 1972). She stayed at Columbia for thirty years, from 1905 to 1935. Working at the same university as Dewey, Hill developed a new curriculum for early childhood education that was based on experiments and observations with young children in intensive, long-running studies in which all of the members of the department, including instructors and students, were involved (Hill, 1909; 1923). Hill and her collaborators compiled their findings in a book, *A Conduct Curriculum for the Kindergarten and First Grade* (hereafter, *A Conduct Curriculum*; Hill, 1923), which provided the theory, the curriculum, and the information on physical environment on which the construction of the Cronk Kindergarten was based. The book was published as the first volume of *Series on Childhood Education*, directed by Hill, for teachers and mothers of young children.

## 2.3 What is *A Conduct Curriculum*?

Hill’s book, *A Conduct Curriculum* (1923), consisted of her introductory chapter on the Progressive Education philosophy, and several chapters outlining a full early childhood education program, including descriptions of educational activities, materials for the activities, teachers’ manuals, descriptions of furnishings for educational environments, and discussions of the changes in children’s behavior, thought, and emotion that the program was intended to achieve. Consistent with Dewey’s educational philosophy, *A Conduct Curriculum* was organized to achieve these goals: (1) Children’s intentions should be accepted; (2) children should be educated in children-centered programs; and (3) children should learn to be citizens in a democratic society. The last goal was to be met specifically by teaching children “self-government” and “social cooperation”—concerns that run through every part of *A Conduct Curriculum*.

To teach “self-government,” children were to be encouraged to select their own activities, as well as to choose which of their school’s facilities, furnishings, and equipment they wanted to use (e.g., toilet rooms, lockers, tables and chairs, books, and toys). Hill and her colleagues insisted on the necessity of a child-friendly physical environment, with “low” and “small” facilities and equipment that children could use and manipulate by themselves (Hill, 1923: 7-8). They further emphasized that teachers should help children only when the children needed help (p. 11). According to Hill, “as the child selects his own problems, the activities of the work period are many and varied” (p. 18). Thus, through this curriculum, children were encouraged and even urged to be autonomous not only by the educational activities but also by the physical environment. Moreover, for the development of “social cooperation,” children were to be encouraged to learn how to work harmoniously in a group. It was supposed that through group activities, children could learn to consider and respect others, and to manage the group as a social organization. For example, when they had a conflict, children were urged to call a group meeting for discussion and to make rules if necessary. A specific form of play with dolls and a unique type of blocks (i.e., “Hill blocks”) was employed to teach “social cooperation” by providing opportunities for children to learn and practice social customs, social roles, and social cooperation.

Thus, Hill and her co-workers intentionally made principles of democracy the core of their curriculum, as Dewey did (Dewey, 1897; 1915/2019). Based on their experiments and observations, they argued that children could learn both “self-government” and “social cooperation” only in child-centered educational programs and a physical environment based on the wisely directed exercise of liberty (Hill, 1923). Hill stated, “In this way, the school serves as a laboratory of democracy, in which the technique of democratic citizenship could be gradually acquired” (p. xii).

### 3. The construction of the Cronk Memorial Kindergarten

#### 3.1 The architect: Shinobu Kawasaki

The Cronk Kindergarten was designed by a Japanese architect, Shinobu Kawasaki (1890-1972). He was born in Hiroshima, but moved with his father to the United States in 1904. In 1916, Kawasaki entered the University of California at Berkeley, where he earned a master's degree in architecture. In 1922, he returned to Japan and started his career as an architect, establishing his own studio in 1928 after working at foreign architectural studios. He was active for only ten years more, until 1938 (Kawashima, 2003); his other salient works include the Hongo Central Church (designed with American architect Joshua H. Vogel) in Tokyo (1929); the gymnasium and dormitory at St. Margaret's College & Schools, also in Tokyo (1936); and Doi House, in Hyogo (1937).

#### 3.2 The educator: Annie P. Powlas

The Cronk Kindergarten was planned by Annie P. Powlas (1891-1978), an American Lutheran missionary, to embody the principles put forth in *A Conduct Curriculum* (Hill, 1923). It was assumed that she chose Shinobu Kawasaki as the new kindergarten's architect. A. Powlas had studied Progressive Education for young children under Hill at Columbia University before she came to Japan as a missionary in 1919 (Powlas, 1978). It can be reasonably assumed that she had participated in the experiments and observations that contributed to the development of *A Conduct Curriculum* and was very familiar with the curriculum and its underlying principles. She and her sister, Maud O. Powlas (1889-1980), who also came to Japan as a missionary, worked as kindergarten teachers. Together, the sisters made efforts to construct a physical environment to materialize the educational practices that A. Powlas had learned at Columbia (Kobayashi, 2009: 368; Powlas, 1978: 92), and that were described in *A Conduct Curriculum* (Hill, 1923).

#### 3.3 The collaboration: Design and construction of the Cronk Memorial Kindergarten

The Cronk Kindergarten was constructed in April through August of 1929. It is a one-story wooden building with a mezzanine floor, with 310.2 m<sup>2</sup> (94.0 tsubo) of total floor area (see Figure 1). The building consists of a kindergarten section for 3- to 6-year-olds and a nursery school section for 18-month to 3-year-olds, as Figure 2 indicates.

Unfortunately, at present, I have no definite information as to why A. Powlas chose Kawasaki to design the Cronk Kindergarten, although it is likely he had both experience in working with foreign clients in Japan and the English skills to communicate with the American missionaries. Almost certainly, Kawasaki designed the kindergarten building in close consultation with A. Powlas. Her sister, M. Powlas, wrote, "To draw the plans for the building, Annie had used all she had learned at Columbia University under Patty Hill and much from books on kindergarten buildings" (Powlas, 1978: 107).

While only one original drawing and two blueprints of the main floor plan have been preserved, these suggest that consultations took place between Kawasaki and A. Powlas. On the original drawing and one of the blueprints, both dated Novem-



Figure 1: The Cronk Memorial Kindergarten, circa 1929

Source: Kuwamizu Kindergarten. (2009). *The 80th anniversary of the Cronk Kindergarten* [booklet], p. 8.

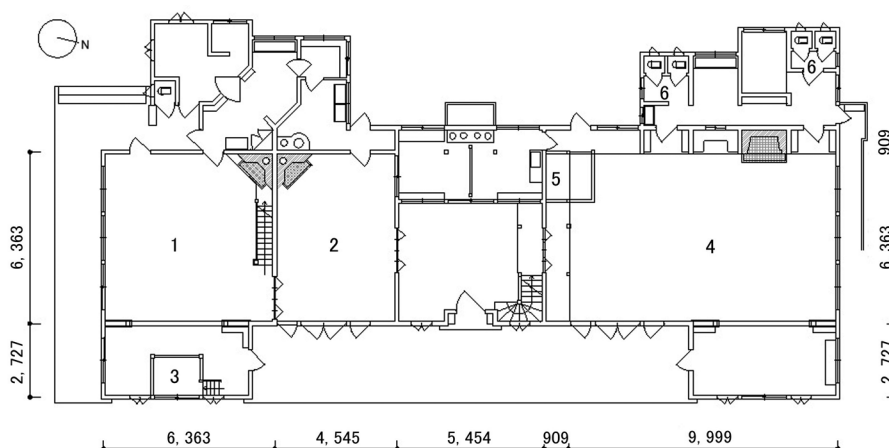


Figure 2: Main floor plan of the Cronk Memorial Kindergarten

Source: This figure is a reconstruction of a blueprint of a working drawing, dated March 17, 1929, by Setsuko Takahashi. Note: Nursery school section (1. classroom, 2. dining room, 3. doll house), Kindergarten section (4. classroom, 5. doll house, 6. WC).

ber 21, 1928, some modifications have been made to the drawings in pencil and red ink; these modifications are presumed to have been drawn during their consultations. The other blueprint of a working drawing, dated March 17, 1929, shows that Kawasaki re-designed the building to incorporate the modifications that had been added to the earlier documents. Therefore, I am confident that the building's design is a product of the collaboration between A. Powlas and Kawasaki. In other words, I can conclude that the Cronk Kindergarten is the result of the educator and the architect working together to try to embody *A Conduct Curriculum* (Hill, 1923) in a physical building.

#### 4. The physical environment of the Cronk Memorial Kindergarten

In this section, I describe my research to examine how the educational ideas and practices proposed by Hill are embodied in the physical environment of the Cronk Kindergarten.

##### 4.1 Research method and documents

In this research, I used three kinds of evidence: (1) I examined the original drawings of the building; as mentioned above, I have one original drawing and one blueprint of the main floor plan, both dated November 21, 1928, and another blueprint of the main floor plan, a working drawing dated March 17, 1929; (2) I visited the kindergarten and stayed for ten days in 2010, when I measured the dimensions of the building, furnishings, and facilities; (3) I analyzed related materials and documents, such as photos, official publications of the kindergarten, and reports of the Lutheran Mission; and (4) I interviewed two former teachers, who each had served as a director of the Cronk Kindergarten, and who had worked there between 1946 and 1996, to ascertain how they had actually used the rooms, furnishings, and equipment.

##### 4.2 Findings

The current research reveals the following four salient characteristics of the physical environment of the Cronk Kindergarten.

###### 4.2.1 Child-sized physical environment

The dimensions of all furnishings and facilities for children in the kindergarten building are appropriate for children's physical size. All windows in the classrooms are low enough for children to see outside (575 mm from the floor to the top of the windowsill). The height of all doorknobs makes them accessible to children (740 mm from the floor). Shelves are positioned so that children can reach and take down personal belongings stored on them (815-967 mm from the floor), as are the hooks in built-in lockers (705 mm from the floor) in the classrooms (see Figure 3).

It is evident that this educational environment was designed with serious consideration of the size of young children, and in accordance with the Progressive Education philosophy. One of



Figure 3: Child-sized physical environment: Low windows for children in nursery school classroom

Hill's collaborators wrote a book, "*Permanent Play Materials for Young Children*" (hereafter *Permanent Play Materials*, Garrison, 1926), for *Series on Childhood Education* (edited by Hill) which referred to empirical data based on their experiments at the Horace Mann Kindergarten and First Grade of Horace Mann School at Columbia University (hereafter, the Horace Mann Kindergarten). The book includes detailed descriptions of how to choose and use play materials and why facilities, furnishings, play materials, and tools must be child-sized, that is, small, light, and low to the ground. When children are constantly inconvenienced by chairs too large, windows and shelves too high, and the like, they will learn that they cannot govern their environment, and consequently they can hardly be expected to learn to govern themselves. In other words, a child-sized physical environment is indispensable for children to learn "self-government."

Moreover, it is noteworthy that the furnishings and facilities of the kindergarten were designed not only to support children's autonomy but also to allow them privacy. For example, in the kindergarten section, the windows and doorknobs in the toilet cubicles are child-height, but the doors and partitions are adult-height. In addition, the toilet space is divided by gender. In the interview with a teacher who had worked at the kindergarten, she reported that the American missionaries deeply respected the children's privacy, and she believed this was why the restrooms were separated by gender. Interestingly, the original drawing and blueprints showed that Kawasaki changed the plan for the toilets after consultation with A. Powlas.

In contrast, nowadays, at most nursery schools in Japan, doors and partitions of cubicles for 3- to 6-year-olds, who have finished toilet training and neither require nor wish assistance, are designed to be adult-centered: doors and partitions are low enough for caregivers to see inside, and toilets are shared by both genders (Takahashi & Motooka, 2010).

The design of the Cronk Kindergarten demonstrates that A. Powlas respected both children's autonomy and their human rights, and indicates that the physical environment designed by



A. Powlas and Kawasaki was intended to embody the Progressive Educational philosophy developed by Dewey and Hill in the United States.

#### 4.2.2 A spacious classroom

The Cronk Kindergarten has two sections: a kindergarten section and a nursery school section. As shown in Figure 2, the nursery school is divided into two rooms: a classroom and a dining room, whereas the kindergarten has one spacious classroom.

The kindergarten classroom provides approximately 63.6 m<sup>2</sup> (9,999 mm × 6,363 mm), and there is no post in the center of the room. As Figure 4 shows, the kindergarten was built with a conventional Japanese framing method, but Kawasaki, using his knowledge of Western framing methods, employed a Western-style roof truss to enable this spacious classroom to be constructed without center posts breaking up the space.



Figure 4. The spacious classroom in the kindergarten section  
Note: The Western-style roof truss and observation gallery can be seen.

Hill designed what came to be known as Hill blocks to respond to children's need to build large enough houses, boats, or cars to enter and play in. These blocks are of various sizes and include corner blocks, iron poles, and wheels. Children older than 5 were allowed to use the corner blocks and iron poles to build large, two-story houses, as shown in Figure 5. Moreover, the Hill blocks were so large and heavy that the children were naturally motivated to work with others when they played with



Figure 5: Playing in a house built with Hill blocks  
Source: Hill, P. S. (1923). p.24.

the blocks. Encouraging such collaborations among children is specifically emphasized in *A Conduct Curriculum* (Hill, 1923).

As Dewey described in 1915 his book (Dewey, 1915/2019), the kindergarten at Columbia University had big blocks that were so large (i.e., Hill blocks) that building a house with them required the whole class's collaboration and many days. In fact, it was reported that the dollhouses, once built, were kept for many days, and sometimes even for a few weeks, and the children would develop doll play in them (Garrison, 1926). Furthermore, it was reported that the children loved to build houses with Hill blocks for doll play, through which they learned social habits and responsibility as a member of society. Dewey claimed that the best success of doll play came when the children's instinctive activity linked up with social interests and experiences (Dewey, 1915/2019).

The Cronk Kindergarten had sets of Hill blocks. The largest blocks of them were 882 mm × 72 mm × 36 mm, weighting 950 g, and the corner blocks were 882 mm × 117 mm × 116 mm, weighting 4,750 g. Building houses and boats with them were most popular group activities among the children. In fact, the two teacher interviewees, who had both worked for more than forty years at the kindergarten, reported that houses built with the blocks were kept for weeks, and the children developed various social activities in and near the houses as same as in the Horace Mann Kindergarten (Garrison, 1926). Therefore, the children needed a spacious kindergarten classroom to develop such group activities with the blocks.

#### 4.2.3 Dollhouses

Each of the classrooms has a Japanese-style dollhouse in it. The drawing and blueprints indicate that Kawasaki designed these dollhouses, which are large enough for the children to enter. In *A Conduct Curriculum* (Hill, 1923), as I mentioned above, it is pointed out that doll play is one of the most important activities for learning social habits and social roles. In *Permanent Play Materials*, Garrison (1926) also wrote that the children older than 5 loved to build dollhouses with Hill blocks, and she also mentioned that younger children made dollhouses with packing-boxes or boxes kindly given to the kindergarten by neighbouring grocery stores. Thus, she indicates that younger children need to have their own dollhouses to develop their doll play.

It is noteworthy that the dollhouses Kawasaki installed were Japanese-style. This is 'an ethnographic translation' of Hill's educational practice into a Japanese tradition of child play. These dollhouses are not only Japanese style but also well equipped with Japanese furnishings. The floors are laid with tatami mats. In addition, the nursery school dollhouse has a shoji (a sliding paper door) and a kohshi-do (a Japanese-style lattice door), while the kindergarten dollhouse has a window decorated with bamboo. The dollhouse in the nursery school is more elaborately equipped than that in the kindergarten. It is two-storied with a

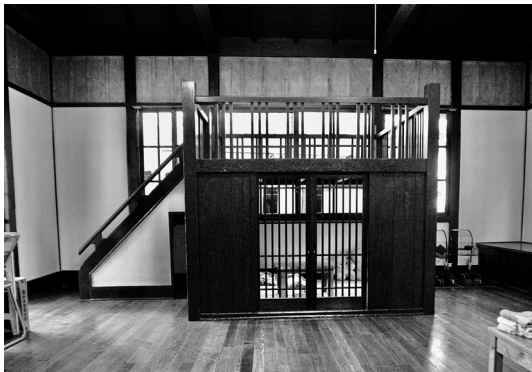


Figure 6: Japanese-style two-story doll house in the nursery school classroom

Note: The staircase can be seen on the left side of the doll house.

gentle staircase (tread width 170 mm; riser height 150 mm), so it can be used safely by infants and young children (see Figure 6).

The original drawing, with modifications in pencil, indicates that originally Kawasaki had planned a one-story dollhouse in the younger children's classroom; however, it appears that after consultation with A. Powlas, he changed his plan and built the two-storied one. This is probably because children in nursery school, 18-month to 3-year-olds, are too young to actively develop social activities by themselves and need more ample support in their physical environment (Takahashi & Motooka, 2011).

#### 4.2.4 Observation galleries

Each classroom has an observation gallery, as Figures 7 and 8 show. There is no clear description of the necessity of an observation gallery in *A Conduct Curriculum* (Hill, 1923) or in other documents related to the kindergarten. After intensively examining the galleries, I have concluded, at least for the present, that their main purpose must have been to provide an observation space for students and researchers of childcare to learn about children's mentalities and activities.



Figure 7: Observation gallery in the nursery school classroom



Figure 8: Observation gallery in the kindergarten classroom

Hill claimed that observation and record-keeping of children were the basis for college course in her department. She suggested to a teacher who tried to teach the first-grade reading, "Observe the children and follow their lead as you have been doing. That is the best way to teach reading or anything else." (Snyder, 1972: 260). A. Powlas must certainly have intended to observe the children in order to develop and refine her own educational philosophy and methods based on her experiences with Hill at Columbia University. *A Conduct Curriculum* (Hill, 1923) was developed through intensive experiments with and observations of young children, and as A. Powlas participated in the endeavor, she must have recognized the importance of observation.

In 1926, the Lutheran Mission founded a girls' high school, Kyushu Jogakuin, in Kumamoto, where they planned to offer kindergarten teacher training courses as an advanced course for the graduates of the high school (Aoyama, 2006; Norman, n.d.). As the Cronk Kindergarten was near the high school, it is reasonable to assume that the kindergarten's observation galleries would afford opportunities for students and researchers majoring in child education (Takahashi, 2015b). Unfortunately, Kyushu Jogakuin was not able to carry out their kindergarten teacher training course during World War II, and it was not until 1972 that, the kindergarten teacher training course was set up at the Lutheran junior college, that is, in Kyushu Jogakuin Junior College (Miura, 1976).

The teacher interviewees reported that during the years they worked at the kindergarten (1946-1996), the galleries were used by parents to observe their children. Heltibridge (1931), the former principal of the Cronk Kindergarten, wrote that a visitor to the kindergarten sat on the chair in the observation gallery to watch children in *Lutheran woman's work*. Just before the opening of the Cronk Kindergarten, A. Powlas moved to Tokyo for another Lutheran Mission. Because of failure of offering a kindergarten teacher training course at Kyushu Jogakuin in 1920's, and A. Powlas's leaving, the observation gallery was not used for its original purpose.

## 5. Conclusion

To learn how I might provide child-friendly physical envi-

ronments for young children, this study examined how and why a Japanese architect, Shinobu Kawasaki, designed the building of the Cronk Kindergarten to embody child-centered educational ideas in collaboration with an American Lutheran missionary, Annie P. Powlas, who had been trained by the Progressive Educationalist Patty S. Hill. I have come to the following two conclusions.

First, my investigations of this building and related documents indicate indispensable elements in the child-friendly physical educational environment of the Cronk Kindergarten. Three features were revealed: (a) child-sized furnishings and facilities that support autonomous behavior among young children; (b) a spacious kindergarten classroom that provides enough space to fully enjoy block-building group activities; (c) Japanese-style dollhouses to motivate children to practice enacting social roles and customs.

Second, the present findings suggest that the successful embodiment in the Cronk Kindergarten was the product of an excellent collaborative process by an educator and an architect. That is, it was a collaboration between an ambitious educator, A. Powlas, who had learned Hill's Progressive Educational philosophy and knew thoroughly what might be expected of the children who would be the building's users, and a well-trained architect, Shinobu Kawasaki, who could combine Western and Japanese construction techniques to bring into being various specifications envisioned and proposed by A. Powlas.

## 6. Future directions

At present, the data related to the Cronk Kindergarten are not sufficient. I have only limited information on the planning of this building. Most of the original drawings and blueprints were lost during World War II and a fire in Kawasaki's home office in the 1970s. If I could unearth more evidence in the future, I might come to understand more precisely the process of the consultation between the educator and the architect. In addition, I have only scanty information on A. Powlas's educational ideas. She was a very ambitious and active person (Kobayashi, personal communication, February 20, 2011), but after moving to Tokyo she engaged in rescue work and did not write about her educational ideas.

Thus, due to several reasons including war, fire, the early departure of the trained educator, and, at this distance in time, the decease of many of those involved in the project, the historical evidence is still limited, and further investigations are needed. At present, this study certainly reminds me that physical environments can surely afford and support children's behavior and development. The Cronk Kindergarten thus illustrates that there are productive transactions between physical environments and their users.

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## References

- Aoyama, S. (2006). *Martha B. Akard no boken: Nihon no joshi kyoiku, fukushi ni sasageta Amerika josei senkyoshi* [The adventures of Martha B. Akard: American female missionary devoted to girls' education and welfare works in Japan]. Domesu-sha. (In Japanese)
- Dewey, J. (1897). My pedagogic creed. *The School Journal*, 54 (3), 77-80.
- Dewey, J. (1990). *The school and society & The child and the curriculum*. The University of Chicago Press. (Original work published 1900, 1902, 1915, 1932)
- Dewey, J. (1997). *Democracy and education: An introduction to the philosophy of education*. The Free Press. (Original work published 1916)
- Dewey, J. (2019). *The schools of utopia & Schools of tomorrow*. Madison & Adams Press. (Original work published 1915)
- Dudek, M. (2000). *Kindergarten Architecture: Space for the imagination, 2nd ed.* Spon Press.
- Garrison, C. G. (1926). *Permanent play materials for young children* (Introduction by P. S. Hill). Charles Scribner's Sons.
- Heltibridle, M. (1931). In a Japanese kindergarten. *Lutheran Woman's Work*, 24, pages unknown.
- Hill, P. S. (1909). The future of the kindergarten: In the light of its origin and influence upon Modern philosophy and education. *Teachers College Record*, no. unknown, 29-56.
- Hill, P. S. (Director), Burke, A., Hughes, E. V., Conard, E. U., Rankin, M. E., Dalgliesh, A., Thorn, A. G. & Garrison, C. G. (Co-authors). (1923). *A conduct curriculum for the kindergarten and first grade*. Charles Scribner's Sons.
- Kawashima, T. (2003). Doi Uchizo-tei to kenchikuka Kawasaki Shinobu ni tsuite [The Doi house and its architect Shinobu Kawasaki]. *Shishi kenkyu kiyu Takarazuka* [Bulletin of City History in Takarazuka], 20, 92-129. (In Japanese)
- Kobayashi, K. (1975). Nihon ni okeru nursery school (2): Saisho no shokai to setsuritu wo chushin ni [The nursery school in Japan (2)]. *Kunitachi ongaku daigaku kenkyu kiyu* [Bulletin of Kunitachi Music College], 9, 99-117. (In Japanese)
- Kobayashi, K. (2009). *Nihon no yoji hoiku ni tsukushita senkyoshi, ge-kan* [Missionaries in Japanese early education, Vol. 2]. Kirisuto-shinbun-sha. (In Japanese)
- Miura, Y. (Ed.). (1976). *Kyushu jo gakuin no 50nen* [Kyushu jo gakuin 50th anniversary]. Kyushu jo gakuin. (In Japanese)

- Norman, L. W. (n.d.). Types of women's work. In E. T. Horn & L. W. Norman (Eds.), *Japan: historical series* (pp. 31-39). The Women's Missionary Society of the United Lutheran Church in America.
- Powlas, M. (1978). *Gathering up the fragments*. Era Press.
- Sameroff, A. (2009). The transactional model. In A. Sameroff (Ed.), *The transactional model of development: How children and context shape each other* (pp. 3-21). American Psychological Association.
- Senda, M. & Fujimori, H. (2001). Tokubetsu taidan: Kukan no motsu hoiku-ryoku [A dialogue: An educational power of space]. In M. Senda, *Yoji no tame no kankyo dezain* [Environmental design for young children: Building and playground of kindergarten] (pp. 4-15). Sekai-Bunka-sya. (In Japanese)
- Snyder, A. (1972). *Dauntless women in childhood education 1856-1931*. Association for Childhood Education International.
- Takahashi, S. (2015a). Kodomo no tame no butsurei teki kankyo towa nani ka: Montessori kyoiku no baai [What is a child-friendly educational environment?: A lesson from the Children's house of Maria Montessori]. *Journal of Human Environmental Studies*, 13 (1), 21-36. (In Japanese with English abstract)
- Takahashi, S. (2015b). Shinpo-shugi kyoiku shisou to butsurei teki kankyo: Cronk yochien no baai [The progressive educational principles and physical environment: A case of the Cronk Memorial Kindergarten] [Paper presentation]. *Dai 68 kai Nihon hoiku gakkai taikai yoshi-shu* [Summaries of presentations of the 68th Annual Meeting, Japan Society of Research on Early Childhood Care and Education], DVD-Rom, 125. (In Japanese)
- Takahashi, S. (2018). *Yoji kyoiku no tame no kukan dezain: Montessori kyoiku ni okeru kenchiku setsubi kagu dogu* [Children's educational spaces: A legacy of Maria Montessori]. Kazama-shobo. (In Japanese with English abstract)
- Takahashi, S. & Motooka, N. (2010). Kodomo no tame no kenchiku kukan: Shinpo-shugi kyoiku no tame no ensha no baai [Architecture for Children: A Case Study of Cronk Memorial Kindergarten] [Paper presentation]. *2010 nendo Nihon kenchiku gakkai gakujutsu koen kogai-shu* [Summaries of Technical papers of Annual Meeting 2010, Architectural Institute of Japan], 649-650. (In Japanese)
- Takahashi, S. & Motooka, N. (2011). A successful Japanese architectural embodiment of the principles of Progressive Education: The Cronk Memorial Kindergarten in Kumamoto, 1929 [Poster presentation]. *UIA2011 Tokyo: The 24th World Congress of Architecture*, DVD-Rom, 30370.

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