Jordan Troeller

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Citation details
Troeller, J. (2024). Milk-Carton Sculpture: Ruth Asawa, Geodesic Geometry, and the Maternal Counterculture of the Alvarado School Arts Workshop. The Art Bulletin, 106(3), 64–90.
https://doi.org/10.1080/00043079.2024.2357438
First published: 12.11.2024 by Taylor&Francis

Milk-Carton Sculpture: Ruth Asawa, Geodesic Geometry, and the Maternal Counterculture of the Alvarado School Arts Workshop

JORDAN TROELLER

Sifting through the papers of Ruth Asawa (1926–2013) some years ago, I came across hundreds of color slides depicting her work in the San Francisco Public Schools. This work was undertaken as part of the Alvarado School Arts Workshop, a group founded in 1968 by artist-mothers with children in the local Alvarado Elementary School. What caught my eye was the presence of an unexpected structure foregrounded against a brilliant blue California sky: a geodesic dome in the process of being built by teenagers on the rooftop of their high school (Figs. 1, 2). Associated with the counterculture of the 1970s as "the primary domestic symbol of the hippie lifestyle," the geodesic dome is typically aligned with a generation that had given up on formal institutions like the public school system.[1] One was more likely to find such domes in short-lived pedagogical experiments and in communal living far from the inner city. To stumble upon it in the San Francisco schools, an institution beset by convention and hierarchy, struck me as a discovery worth investigating.

What I found was that the geodesic dome and geodesics more generally—a branch of mathematical investigation into spheres derived from a study of Earth's curvature—played a significant role in the pedagogical strategies of the Alvarado School Arts Workshop. Founded in summer 1968 as a pilot program, the Workshop arose out of a dissatisfaction with the paint-by-number photocopies that passed as the week's art class. Asawa, who had fourth and sixth graders at Alvarado Elementary School at the time (and one older son who had just graduated from the school), was only one of many such mothers behind the Workshop's collective origins. Others included cofounder and architectural historian Sally B. Woodbridge,

1 Students at Mission High School in San Francisco, CA, building a geodesic dome, 1971 (photograph provided by Ruth Asawa Lanier, Inc.)

2 Students at Mission High School in San Francisco, CA, building a geodesic dome, 1971 (photograph provided by Ruth Asawa Lanier, Inc.)

the muralist and University of Chicago–trained artist Nancy Thompson, political organizer and writer Andrea Jepson, gallerist Sharon Litzky, and artist Anne Marie Theilen, who had studied in France and went on to run the city's Neighborhood Arts Program and, importantly, SCRAP (Scroungers' Center for Reusable Art Parts), which grew out of the Alvarado School Arts Workshop and has continued to supply arts programs in the schools ever since.[2] Several other women with ties to art and community activism also played significant roles, along with dozens of parents, community volunteers, teachers, and city politicians. At its height in the late 1970s, the Workshop was active in over fifty schools, transforming the teaching of art from an afterthought into an endeavor spearheaded by some of the most talented artists, architects, and craftspeople in the Bay Area.

Asawa, who introduced geodesics to the Workshop, had first encountered it from the farsighted engineer-architect R. Buckminster Fuller (1895–1983), whom she met at Black Mountain College in North Carolina. Asawa enrolled there in 1946, after her studies to become an art teacher at the Milwaukee State Teachers College in Wisconsin were stymied by the denial of a teaching placement because she had been born to Japanese immigrants. Black Mountain College cultivated her respect for artists who incorporate art and teaching into everyday life, and she often cited her experience with educators like Fuller and Josef Albers (1888–1976) as central to her turn to the schools.[3] Fuller's comprehensive vision of both design and education left a profound impact on Asawa and her fellow student (and later husband) the architect Albert Lanier (1927–2008). The couple maintained a decades-long friendship with Fuller and his wife Anne, who regularly visited them in their San Francisco home on trips to Northern California. When Asawa began to work in the schools, she adapted many of Fuller's spatial experiments to exercises appropriate for children. On several occasions, Fuller even visited the schools in which the Workshop was active, participating in classes and giving talks—a significant departure from his usual audience of university students.

Asawa believed her work in the schools was some of her most important work as an artist, and, beginning in the 1970s, she often incorporated it into exhibitions of her looped- and tied-wire sculptures, such as including a statement on art and education as part of a show at Dominican College in San Rafael.[4] Until recently, however, the Workshop has played little to no role in Asawa's reception as an artist, which has tended to exalt her abstract wire sculptures.[5] She began exhibiting these semitransparent, hanging and mounted forms in the early 1950s. With neither a sculptural base nor characteristics associated with Alexander Calder–like mobiles of the era, these sculptures initially met with skepticism that they qualified as sculpture at all. They were often regarded as decoration and interior architectural elements and exhibited in contexts like Laverne Showrooms, where design objects for purchase were treated as works of art. But they also were featured at the New York commercial art gallery Peridot, which showcased the work of Louise Bourgeois, and by the early 1960s, they could be found in several major art collections. However, just as Asawa's reputation seemed to be solidifying in New York, she declined offers to shift entirely to full-time production, which would have entailed a move to the East Coast and uprooting her family. Instead, she recommitted herself to San Francisco and to raising six children, setting out to try, as she put it, "to integrate that undertaking with 'being an artist.'"[6]

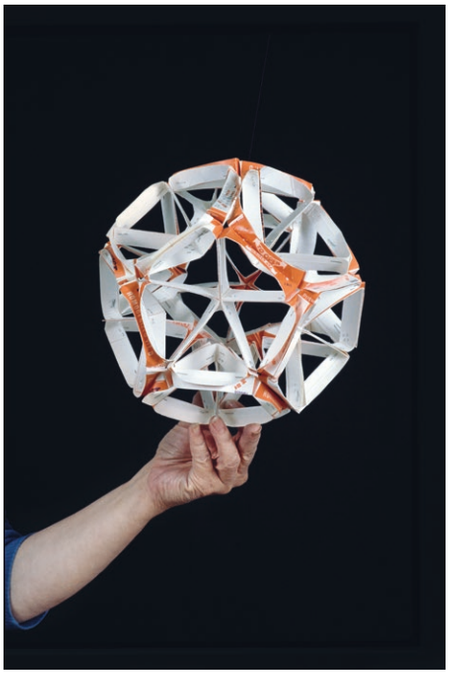
Asawa's abstract, looped- and tied-wire sculptures now comfortably reside in a well-established history of American postwar abstraction. But her work in the schools and her public commissions, including several prominent sculptural fountains, which she turned to in 1968 and continued until her health declined significantly in 2002, continue to be excerpted from this narrative. And this despite (or perhaps because of) their resounding success with the public, for she is a well-known and well-respected artist in the Bay Area. More research

still needs to be done on the public character of even the works art history now considers her private and thus seemingly more "serious" accomplishments—the looped- and tied-wire pieces. For Asawa, early on, had exhibited even these in a public forum: San Francisco's yearly art festivals, which foregrounded amateur craft, ceramics, and woodworking at a time when bronze and steel dominated definitions of sculpture. In two photographs taken by fellow artist-mother Phiz Mezey, also a resident in the neighborhood, we see Asawa hanging one of her now iconic sculptures in the unlikeliest of places, outdoors, at the corner of Beach and Polk Streets, and surrounded by a well-attended public arts fair (Fig. 3). Such a format later became a tool within the Workshop as part of its broader effort to democratize the making of art, and it is remarkable to see just how early it played a role even in the work that art history now considers to be separate from her work in the schools and even from her public commissions. Thus, as Sarah Archer has argued, Asawa's current status as a "rising star" in histories of postwar sculpture today is misleading; the matter is not one of obscurity, as it is often described, but of "the wrong kind of renown, at least in the view of contemporary art circles (then as now)."[7]

3 Phiz Mezey, Ruth Asawa installing a looped-wire sculpture at the San Francisco Art Commission Art Festival in Aquatic Park, 1954. Phiz Mezy Collection, San Francisco Public Library (artwork © 2024 Ruth Asawa Lanier, Inc./Artists Rights Society [ARS], New York; photograph provided by David Zwirner and Ruth Asawa Lanier, Inc.; photograph provided by San Francisco Public Library, Phiz Mezey Photographs and Papers)

In what follows, I propose that the Workshop was the site in which Asawa cultivated a form of sculptural production that fits neither established narratives of art education nor revisionist histories of modernist abstraction. This is work that challenges many aspects of art history's postwar narrative: it is self-effacing, collective, peripheral to the usual art-gallery-and-museum circuit, and—most of all—it was mother-led. What she and her fellow artist-mothers established through the Alvarado School Arts Workshop was a third integer that I describe as a maternal countercultural aesthetics. Although there have been "as many definitions of the term 'counterculture' as there were utopian fantasies during the actual counterculture," none have considered the artist-mother as a significant actor.[8] Those conventional markers of California's counterculture—drug use, protest, antiwar violence—are all tacitly opposed to dominant expectations around what a mother does and is.[9] But Asawa and her colleagues embraced this role, mobilizing radical pedagogical strategies in dialogue with art making in order to create objects that transformed social conventions.

Such objects, like the provisional dome on a school rooftop (see Fig. 1), were not meant to last. They were learning aids in which the goal was not a work of art destined for the museum, much less a commodity to be sold on the art market; the goal was instead to foster a child's creative development. In this respect, the Workshop can be contextualized in the broad shift, after World War II, toward "creative art education," in which the educational



4 A milk-carton construction made by students in the Alvarado School Arts Workshop, ca. 1970. Department of Special Collections and University Archives, Stanford University Libraries, Stanford, CA (photograph provided by the Department of Special Collections and University Archives, Stanford University Libraries, and Ruth Asawa Lanier, Inc.)

value of creativity was bound up with the expansion of a democratic society, as Amy Ogata has argued.[10] Ogata points to institutions like the Exploratorium in San Francisco, founded by physicist Frank Oppenheimer, where artists, including Asawa, fostered a hands-on engagement with "discoveries" instead of "lessons."[11] In such contexts, Asawa worked with washed-and-reused milk cartons. Salvaged from the school cafeteria and students' homes, these objects arose out of her engagement in the public schools, where hundreds of these were thrown out daily. The exercises soon became codified as "milk-carton sculpture," a term that invokes a provocative contrast between high and low culture. In their most complex formations, these objects are impressive, three-dimensional forms that further sculpture's long-standing commitment to exploring mass, volume, and space (Fig. 4). But as containers for milk for growing children, they also obliquely invoke the bodily terrain of maternity: as one of Asawa's daughters recalls, depending on how well the cartons were washed, they could smell of sour or stale milk, not unlike the sweatshirt of a nursing mother.[12]

This essay examines how Asawa, working collectively, extended Fuller's geometric principles into contexts and institutions that went far beyond what the inventor had ever envisioned. Although Fuller worked with many artists in the 1960s and 1970s, including other women committed to childhood development, such as June Jordan, I focus here on what was particular about the how these ideas became transformed in the space of the Alvarado School Arts Workshop.[13] Geodesics may have been a concept investigated by Fuller, but in the context of the Workshop, it was extracted from Fuller's advocation of technocracy and became a key strategy in the Workshop's maternal countercultural aesthetics. The "maternal," as I use it here, refers not only to the fact that the actors I discuss were mothers; it also describes how their paradigm of cultural production stood at odds with the dominant mode of avant-garde competition and innovation, following Lisa Tickner's theorization of the term.[14] The Alvarado School Arts Workshop should be seen first and foremost as an experiment in pedagogy indebted to a maternal politics of cultural transformation.

Given that this is the first account of the Workshop not written by someone directly involved in it, I concentrate on those aspects particularly relevant to historical significance, including how it introduced a process-based approach derived from Albers's "pedagogical forms," as Jeffrey Saletnik has described them, into institutions typically estranged from that fairly narrow and elite development.[15] I then discuss Asawa's adaption of Fuller's geodesic architecture within the Workshop's curriculum, focusing on recycled milk cartons, which provided hands-on models for exploring these principles and culminated in the collectively written handbook *Milk Carton Sculpture*. I explore how these experiments can be situated within a broader field of the geodesic dome in countercultural education, both pragmatic and theoretical. Such examples help us to identify what was distinctive about the Workshop's use of geodesic geometry in contrast to similar efforts. Finally, I consider the stakes of the geodesic dome around housing and communal living, with Asawa's own domestic space as an example of this effort to reframe education as part of a holistic approach to everyday living.

"ART MOTHERS"

"There was no official name for the venture, no sixty-page Master Plan, no budget. There were artists to act as teachers and resource people, enthusiasm, and a definite philosophical intent," wrote Jepson and Litzky in their book *The Alvarado Experience: Ten Years of a School Community Art Program* (1978).[16] One of the few histories on the Workshop, *The Alvarado Experience* was written by two of the founding "art mothers," as one teacher put it.[17] Looking back from the vantage point of a decade, the Workshop had grown into an ambitious undertaking by the mid-1970s, intervening in dozens of neighborhoods, employing hundreds of

local artists, and impacting the lives of generations of students. More a "method than a structure," it de-emphasized its own identity as an organization: it owned few materials beyond a typewriter and a handful of tools and eschewed self-branding, even regarding its own letterhead as superfluous.[18] Instead, it focused its energies on content and people, bringing together artists and students, teachers and parents, school and public administrations in order to reimagine the role of education in the life of a city. The "Alvarado idea," for Asawa, was to integrate the artist back into the community, a seemingly simple proposition that held the potential to "really change the social structure of our lives," as she put it.[19]

A hallmark of the Alvarado School Arts Workshop was that it did not create a parallel educational environment but instead operated within existing public structures. In this, it more closely resembles the long tradition of women—often teachers—in the East Bay Area, who sought to transform public education and the crucial role of architecture in this history, as Marta Gutman has argued.[20] By the 1960s, these systems had become weighed down by bureaucracy and technocracy, rarely working collaboratively. For instance, the San Francisco Arts Commission, on which Asawa sat in 1968, saw itself as having nothing to do with the San Francisco Board of Education and initially scoffed at her proposal that it take on the question of the schools.[21] The arts, too, had become undervalued, with just sixteen art teachers for one hundred elementary schools in San Francisco. According to Woodbridge and Joan Abrahamson in 1973, part of this was due to "conventional wisdom" which held "that art is an esoteric pursuit reserved for the talented few who are trained in specialized schools after completing elementary and secondary education"—a pursuit that had no place at the primary school level. But it was also due to another development:

> Since the arrival of the space age signaled to the public school system that the arts must give way to science, very few elementary schools in San Francisco had an art teacher. Instead the classroom teacher taught what art he or she could shoe-horn into the curriculum. Students, parents and teachers were mutually dissatisfied with the practice of getting out the crayons and construction paper or stenciled pictures to produce a take-home piece of evidence commemorating Thanksgiving or Columbus' discovery of America.[22]

As Woodbridge reflected decades later: "In 1968, the participation of parents in changing school curricula to include the arts was not an acceptable idea, it was not even considered."[23] Asawa and the other Alvarado mothers understood this not as an aberrance but rather as the logical consequence of a system running as planned, a "system geared up to perpetuate the new technocracy by educating young citizens, particularly white middle-class males, for compliantly assuming their rightful place in the corporate hierarchy."[24] Whereas someone like Fuller saw this technocracy as a sphere of possibility, to be intensified and expanded, the "art mothers" deliberately countered its logic, seeking to dismantle that structure entirely.

But how exactly did this work? First, it is important to understand that the women involved all lived in proximity; it was, after all, the fact that they shared a neighborhood—and a school to which those neighborhood children were sent—that set out one significant condition for their involvement. Second, the economic situation in San Francisco mattered: Asawa and Lanier moved to the city in 1949 for its low rents and affordable living conditions. A single income could support a large family, allowing one parent (often the mother) to engage in activities that were not paid, such as child-raising, and—significantly in the case of the Noe Valley neighborhood where these mothers lived—a spectrum of creative pursuits. The mothers involved in the Workshop were essentially amateur craftspeople—potters, weavers, and jewelers but also writers, bakers, and community organizers. They were not paid for

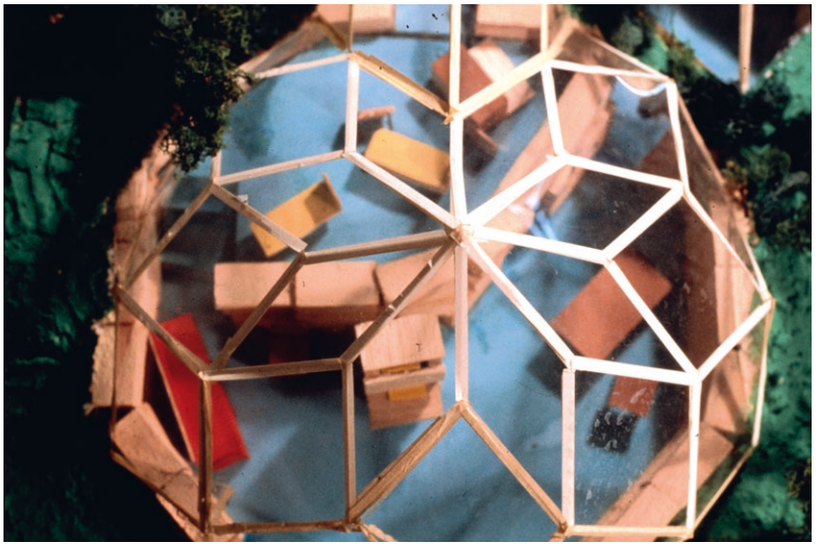
this labor, but at the same time, the modest cost of living allowed for it. Third, as Asawa's daughter points out, the Workshop was a product of a particular moment: it benefited from the agency that was just then arising out of the women's movement, but at the same time it unfolded in the years prior to that agency being shuttled into careers, with women working long hours away from the home and their children.[25] A newspaper article on the "Alvarado Mothers" with the headline "The Careers That Grew Out of the Arts Project" makes that point succinctly: these women could undertake this unpaid labor precisely because they did not yet have paying jobs.[26]

The Workshop began as a grassroots endeavor: Asawa and Woodbridge gathered together a group of other mothers with children at the school and, gaging interest, pitched a summer program to the principal of Alvarado Elementary School, who designated the space and resources over the summer break. This pilot program was so successful that the school allowed for it to continue, with spaces like the cafeteria and the school yard made available for the Workshop. In fall 1968, Asawa and Woodbridge served as parent coordinators at Alvarado Elementary School, while Theilen coordinated the program at the nearby Edison Elementary School. As parent coordinators, their tasks included gathering materials, arranging workshops with artists, and scheduling volunteer time with other community members, some of whom were part of the original parent-planning group. At no point were the Workshop's activities part of the official curriculum; rather, it was treated as an expansion and enrichment of that structure, with the aim of involving the entire school. Entirely fueled by a volunteer structure (until 1972, when parent coordinators were paid $200 per month from school-district funds), decision-making was collective and ad hoc, with Asawa playing a big role in encouraging professionally trained artists from the neighborhood, like Thompson, to devote their time and energy, and doing the groundwork to raise funding. This was a lasting goal: to place a working, professional artist into every public school. No artist was perceived as being too successful or too serious to be involved. For example, Asawa's son Paul later relayed that, at one point, she had wanted Richard Diebenkorn to teach painting and Francis Ford Coppola to teach filmmaking.[27] As the Workshop grew to include more schools in the area, it continued to follow this basic orientation and structure: a parent-coordinator assigned to a school; a parent-planning group of artists and nonartists; community volunteers; and professional artists from the neighborhood.

Asawa's own power as a well-known local artist allowed her to funnel resources to the Workshop, including from donors like the Zellerbach Foundation and the prominent Bay Area businessman William Roth, also a collector of Asawa's sculpture. This allowed the program to gradually expand to include three additional elementary schools by 1971 and Mission High School by 1972. Funds were mainly used to pay artists and acquire supplies. Furthermore, the program's success depended on its decentralized, volunteer-based structure, which capitalized on whatever opportunities might help the program grow. For instance, it expanded after 1971, when the San Francisco Public Schools were desegregated and students were bused all over the city.[28] Rather than shutting down their efforts, in which there was an emphasis on engaging artists from a school's local neighborhood, Workshop volunteers followed their children to these other neighborhoods and engaged parents and artists there. Another significant expansion occurred during the school year 1974–75, when sixty positions were funded through the Comprehensive Employment and Training Act (CETA), which allowed for twenty gardeners, twenty visual artists, and twenty performing artists to work in the schools as part of the Workshop.[29]

Although I do not address the question of race within the Workshop here, it is a topic that deserves further exploration. One could speculate that, in general, the Workshop was in

line with similar efforts at the time, such as the Black Panthers' Oakland Community School, to regain local power over the schools and to shift power away from Sacramento, where decisions were made on the state's educational policies, and put it back into the hands of community members.[30] Deeply antihierarchical, the Workshop sought to empower children in grade levels as early as first to take responsibility for their own education. A common refrain was the notion, as one principal saw it, of "self-subsistence, where you become an independent organism in the sense that you can provide for yourself . . . as a community you can organize your resources to do it."[31] Parents acted as coordinators responsible for gathering materials, arranging workshops with artists, and scheduling classroom volunteers, while local artists oversaw projects and workshops with the children spanning a variety of media and pursuits, including stained glass, mosaic, woodworking, gardening, theater, and photography (Fig. 5). These projects often lasted as long as the school-year and involved multiple grades, as well as a spectrum of differently abled students. As Woodbridge later pointed out, observers noted "that these groups worked as well or better together than when they were separated."[32]



5 A structure made in a woodworking workshop led by Anne B. Page and Jay Moss at Edison Elementary School, San Francisco, CA, ca. 1970. Department of Special Collections and University Archives, Stanford University Libraries, Stanford, CA (photograph provided by the Department of Special Collections and University Archives, Stanford University Libraries, and Ruth Asawa Lanier, Inc.)

Although such pedagogical experiments were widespread in the countercultural decades of the 1960s and 1970s, what is distinctive about the Workshop is that it lasted so long. Comparative initiatives, such as Anna Halprin's San Francisco Dance Workshop in the Central School in Sausalito (1966) and Allan Kaprow's Project Other Ways with the educator and philosopher Herbert R. Kohl in the Berkeley public schools (1968–1969), were short-lived.[33] In Halprin's case, dancers seemed to have had little familiarity with the structures of administration governing everyday decision-making processes and encountered challenges that left them frustrated. Kaprow, by contrast, maintained his own centrality in the project, adapting conditions to his vision for Happenings, with the whole project culminating in his work *Six Ordinary Happenings* (1969) and his falling out with Kohl. Maintaining a self-effacing approach that was highly responsive to the specific conditions at each school, the Workshop operated in an entirely different mode. Asawa and Woodbridge may have played a key role in founding the project, but they devised a structure of operation that did not depend on them: the program was run by a decentralized and broad spectrum of volunteers sited at each school, responding to its particular needs and restraints. Asawa's own house had served as the Workshop's informal headquarters until spring 1974, when it was given space in the school district's art department's office. By 1975, Asawa had turned over administrative duties to two part-time codirectors, Leah Forbes and Theilen. Asawa went on to help establish a magnet high school for the arts, which opened in 1982 as the School of the Arts (renamed the Ruth Asawa San Francisco School of the Arts in 2010). The year 1982 can be seen, then, as one date for the end of the Workshop, based on Asawa's involvement with it, although no exact date for its conclusion has been established. Spin-offs of the Workshop are still active today in a variety of forms of art programs designed, funded, and managed by parents: Asawa's eldest daughter, Aiko Cuneo (b. 1950), created another parent-led program at Rooftop Elementary School which trained another generation of artist-mothers and is still active; and her youngest child, the ceramic artist Paul Lanier (b. 1959), worked as an artist-in-residence at Alvarado Elementary School throughout the late 1990s and early 2000s, introducing students to the processes of modeling and firing clay.[34]

RECYCLING, MATH STRUCTURES, AND SCULPTURE

The overarching approach of the Alvarado School Arts Workshop—as with so many cultural developments of the 1960s and 1970s—was a concern for process over product; this is in part why art history should take it seriously. But unlike similar such attempts to take that avant-garde strategy into the classroom, as Kaprow did, or even to frame such involvements with the community as participatory artworks, as was the case with Bonnie Ora Sherk's *The Farm* (1974–87), an "environmental sculpture" located on seven acres near a freeway interchange in San Francisco, the artist-mothers involved in the Workshop never deemed it an artwork; indeed, such nominal objectives seemed beside the point (and I don't wish to anachronistically reintroduce them here). My point simply is to name one of art history's blind spots: the Alvarado School Arts Workshop was never properly deemed part of Asawa's oeuvre (even though she herself consistently included its projects when she was given an exhibition platform), which is why it has remained largely invisible to art history. Moving beyond even the designations of "participatory" or "social" artwork, the Workshop committed itself entirely to process and ephemerality. It was the making that mattered, just as it was everyday schoolchildren who supplanted the artist-as-author, thus moving beyond the paternalistic patterns of individualist aesthetic production.

6 Students in the Alvarado School Arts Workshop working together on a milk-carton construction, ca. 1978 (photograph provided by Ruth Asawa Lanier, Inc.)

Much already has been written on Asawa's debt to her training at Black Mountain College, and I do not rehearse that extensive scholarship here except to point out that this training had its roots in developments in art education that long preceded both Asawa and Black Mountain College, and which were transmitted, in Asawa's case, through Albers, himself trained as a school teacher in Wilhelmine Germany.[35] Following Albers's commitment, in his own words, to "*tasting, testing, and trying*," students in the Alvarado program worked with found or donated materials, with an emphasis not on technical mastery but on an engagement with "basic ideas, of putting things together: sewing, weaving, knitting, gluing, using materials that any child can find at home, such as egg cartons, cloth scraps, yarn, string, newspaper, paper bags, and flour paste," as Asawa described it in a letter to a school principal (Fig. 6).[36]

This emphasis on crafts extended beyond small-scale handiwork to encompass a program that aimed at nothing less than the full-scale remaking of the educational environment. Beginning with the environment's physical contours, students transformed previously barren playgrounds, classrooms, hall corridors, cafeterias, and libraries with varying degrees of success, often having to contend with painters' unions and overworked custodians as well as graffiti and vandalism directed at their efforts (Figs. 7, 8). It also meant that the products of the Alvarado School Arts Workshop were largely ephemeral or discarded over time, consistent with its overall rejection of the aesthetic as a privileged sphere of experience. As Jepson and Litzky write:

> Given the time to explore the possibilities of their own creativity, children produced some wondrous art, only a fraction of which has remained permanently or semi-permanently in the school. Even on photographs and slides, it is impossible to keep record of the immense volume of work that has moved out of the schools and into the homes over the last ten years.[37]

7 Laurence Cuneo, A person hanging a milk-carton globe at James Lick Middle School in San Francisco, CA, ca. 1975 (photograph © Laurence Cuneo, provided by Ruth Asawa Lanier, Inc.)

8 Laurence Cuneo, Hanging milk-carton constructions made by students in the Alvarado School Arts Workshop, ca. 1975 (photograph © Laurence Cuneo, provided by Ruth Asawa Lanier, Inc.)

As at Black Mountain, this meant a revaluation of experience over and above the acquisition of facts—an approach that constitutes Asawa's understanding of a process-based art education. For a concrete example of how that worked out in practice, Jepson and Litzky describe a typical planning meeting as follows:

> The talk often centered on how best to work with children at school, how to transmit information without falling back on traditional authoritarian techniques, the value of encouraging rather than demanding, and the difficulties of accomplishing projects in classrooms filled with diverse personalities and widely ranging abilities.
>
> It was at these times that the most far-flung fantasies came up for perusal and discussion: if conditions were ideal, what would we ask for? . . . "The children should see chickens and roosters every day, have the chance to care for animals and see that eggs are not produced twelve at a time in the back of a supermarket. . . . Gardens, we need gardens. The lessons of nature are so important and observed so readily when a seed is planted. . . . What about bringing a sheep to school—shearing it and carding the wool and then weaving it so the kids could see the *whole* process? . . . Wouldn't it be great to have the high school kids come to Alvarado and work with our students in dance or drama or mime? It would set up a real connection between the schools. . . . My dream is to have an imaginative play structure in this barren school yard and real trees giving shade and maybe even sand for the very little children to tunnel in. . . . It would be so great to have a festival in the city that was just for kids with music and dance and art."[38]

Such proposals, Jepson and Litzky point out, "were just a few of the dreams, fantasies, and thoughts" that were in fact realized over the years as part of a mother-led initiative that sought to put the child in greater proximity to a range of experiences.

This mother-led initiative rejected the technocratic logic of standardized curricula and testing in an effort to reimagine social reproduction in an intimate confrontation with the cycles of birth, growth, life, aging, and death. This meant generating the conditions under which children would be exposed to a greater range of encounters than that offered to them by the society of consumption that had come to define postwar America, "the veritable cornucopia of consumer goods that seemed to materialize and dematerialize just out of reach."[39] Albers's process-based pedagogy was surprisingly compatible with this revaluation of experience, based as it was on his belief that art as such could not be taught; that only a coming into "visual consciousness" could be relayed.[40] Such a revaluation of experience at the Alvarado School Arts Workshop equated to forms that were surprisingly close to those employed by the counterculture during these decades. They included the so-called Balloon Happening at the second annual Music, Art, Dance, Drama and Science (MADDS) festival for children; and also—recalling the Human Be-In held in San Francisco's Golden Gate Park in 1967 (itself riffing on the teach-ins and sit-ins of the civil rights and free speech movements)—a "Dough-In" at the San Francisco Museum of Art (now the San Francisco Museum of Modern Art) in 1973. On the occasion of her retrospective there, Asawa invited one thousand school-aged children to occupy the galleries and create objects using a mixture of flour, water, and salt, thereby upending expectations of both the museum and the public alike.

It was in this context that the milk-carton project was born. Relaying a brief history of the initiative in a letter from 1981, Asawa locates its origins in a concern with waste and recycling:

> About nine years ago, while working in a high school, we found that half of the milk cartons on lunch trays were partially drunk and emptied by lunch monitors into two large soup pots and dumped daily. There was too much milk to pour on our garden project. Unopened cartons were thrown into the garbage can. The waste offended us and made us wonder how we could reduce this waste.
>
> A college graduate student mentioned her class project in paper cups and milk carton construction. As we were in desperate need of materials to do projects with the students, we saw the potential of the milk cartons.
>
> Buckminster Fuller had lectured to the students the year before and demonstrated how to construct the great circle with paper plates and bobby pins. We gathered thousands of milk cartons, washed them out and began experimenting with structures. Out of this began the building of milk cartons into geometric shapes and designs, globes for the cafeteria, playhouses for pre-school children and workshops for children at fairs and schools . . . built around recycling, math structures and sculpture.[41]

This brief account relays the core principles of this approach: using easy-to-find materials at hand; selecting materials that improve sustainability and reduce waste; instilling in children the connection between what they do as individuals and their impact on the environment; and finally, the impact of Fuller's experiments in geodesic geometry.

Emily Pringle has discussed the importance of Asawa's encounter with Fuller for her later engagement with the public schools, situating it within "the ethos of Black Mountain College, where persistence, self-sufficiency, and experimentation were foregrounded."[42] It is Fuller's emphasis on the generative potential of failure—rather than his enthusiastic embrace of the technologized classroom elaborated in his book *Education Automation* (1962)—that

found its way into the Workshop through the milk-carton experiments. As Jepson recalls, "Often those things didn't work," but the attitude was "Oh well, do it again . . . [Ruth] believed you could make mistakes and go on."[43] The "great-circle" demonstrations, which Asawa points to as a key precedent for the milk-carton experiments, were basic models that Fuller developed as part of his inquiry into geodesics. In mathematics, any great circle is the largest circle that can be drawn on a sphere. It can be represented through the cross section of a sphere, passing through its center, whose arc then represents a geodesic of the sphere (versus a "small circle," which would not pass through the center and thus represents a smaller arc). Fuller had worked with this geometrical principle to devise patterns that he could then apply to the construction of geodesic domes. One of the simplest models involved four paper plates, each folded in half and then into thirds. On a visit to Mission High School, Fuller demonstrated this model while a journalist reported on the results: "Play with the folds a bit and you get some very interesting shapes, especially when you start joining separate pieces. Pretty soon you're reasoning about circles and sectors and spheres . . . and domes. It's a mind-stretching exercise" (Fig. 9).[44]

9 Ruth Asawa and R. Buckminster Fuller demonstrating a great circle made from paper plates and bobby pins at Mission High School, San Francisco, CA, May 1973, as published in the *San Francisco Examiner*, May 20, 1973, 3. Department of Special Collections and University Archives, Stanford University Libraries, Stanford, CA (photograph by Jim Domke, provided by the Department of Special Collections and University Archives, Stanford University Libraries, and Ruth Asawa Lanier, Inc.)

The value of such an approach to teaching geometry was its concreteness. Citing the nineteenth-century British mathematician Grace Young, Asawa pointed out that the three-dimensional world of solid objects was much closer to a child's own experience of the world:

> By dealing with objects the child can touch and move and even toss around, more of the senses are involved and learning can take place naturally and in a spirit of fun and exploration. This approach to learning has been discovered and rediscovered many times. People have worked with art and mathematics to the mutual benefits of both fields.[45]

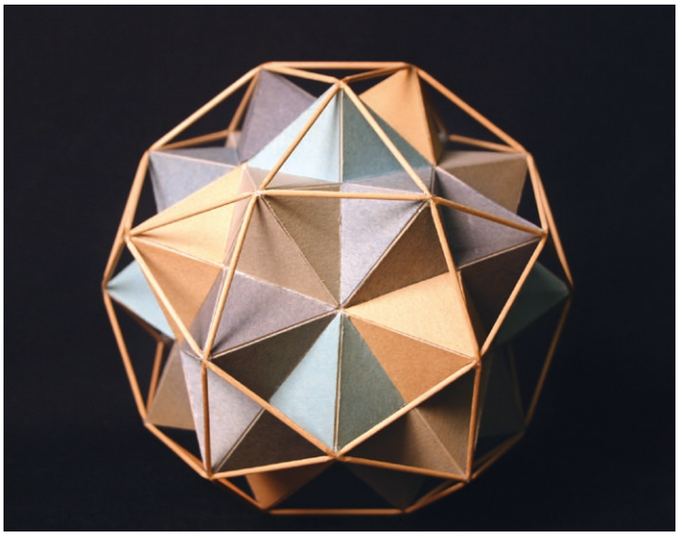
Asawa believed that the conventional school system of the late twentieth century failed to give children adequate concrete experience in handling geometric objects. Moreover, in starting with plane geometry and then proceeding to solid geometry, the standard approach was far too abstract. Such an approach might make sense to an adult mathematician writing a school textbook obliged to conform to standardized quantifications of so-called success in the classroom. But for the child, it was woefully out of step with his or her immediate experience and educational needs.

Although "art" remained a central term in the Alvarado program, the program sought to imagine it as a prism for a comprehensive, environmentally oriented education rather than consider it one (undervalued) subject among others. Asawa believed that conventional schools placed too great an emphasis on reading and arithmetic and not enough on a holistic engagement with the world that revealed the connectedness of knowledge. In this she agreed with Fuller's critique of traditional education as woefully inadequate, "the lovingly administered nonsense of grownups" for which children had little use.[46] "Virtually

everything we thought we understood concerning education is fast becoming useless or worse. For example, because experiment invalidates most of the axioms of mathematics such as the existence of solids, continuous surfaces, straight lines, etc.," Fuller argued, what is "taught in all elementary schools is false, irrelevant, discouraging, and debilitating to the children's brain functioning."[47]

By gathering, washing, cutting, measuring, and assembling milk cartons into geometric forms, children were exposed to a huge diversity of three-dimensional forms. They acquired a complex mathematical vocabulary, replete with terms like "icosahedron" and "rhombicuboctahedron," and participated in a multisensory process of building complex forms out of simple shapes. In this way, they gained a better comprehension of the relationship of part to whole, of micro- and macrocosm, and of individual and collective that were entirely missing in the conventional workbook model of school curricula. The milk-carton project also dovetailed with other such efforts in California to adopt mathematics teaching materials not found in textbooks, such as the Early Childhood Experience Kit marketed by the Cuisenaire Company of America—described as "meaningful math"—which even included three-dimensional models of the same shapes that Alvarado School Arts Workshop students were making with milk cartons.[48]

Through such hands-on exploration, Asawa argued, more of the child's senses became involved in and contributed to the learning process, creating more dynamic and enthusiastic learners. Asawa and her colleagues did not simply think such crafts should be integrated into an existing curriculum, as was the implicit proposal of the Early Childhood Experience Kit, but believed that such hands-on activities should *replace* traditional forms of learning. Cutting strips from the milk carton to create complex polyhedrons fostered the acquisition of geometric concepts that would then form the basis for lessons in algebra, trigonometry, and calculus.



10 R. Buckminster Fuller (designer) and Charles B. Ryan (fabricator), *Icosododecahedron with Compound Octahedron Inscribed,* ca. 1960–63. Paper and wood toothpicks, diam. 6¼ in. (15.9 cm) (photograph provided by Southern Illinois University Collection of R. Buckminster Fuller, Special Collections Research Center, Southern Illinois University, Carbondale, IL)

11 Slides of milk-carton art produced by students in the Alvarado School Arts Workshop, ca. 1980, Department of Special Collections and University Archives, Stanford University Libraries, Stanford, CA (photograph provided by the Department of Special Collections and University Archives, Stanford University Libraries, and Ruth Asawa Lanier, Inc.)

Such models resembled those that Fuller himself had made to elaborate his geodesic principles of comprehensive design (Figs. 10, 11). These were not simply geometric exercises but concrete manifestations of his holistic philosophy. "The tetrahedral and hexagonal geometries propounded by Fuller," K. Michael Hays argues, "were empirical structures flowing from 'microcosm to macrocosm,' the dynamic basis of biological organisms as well as social formations and cultural practices, making interconnections across all of humanity and nature and promising fundamental transformation in social and mental life."[49] They were models of how the natural world could provide structures for new forms of architectural development using simple materials with which to experiment, such as folded sheets of typing paper to create models of the DNA helix. And Fuller drew on research like D'Arcy Wentworth Thompson's *On Growth and Form* (1917), which explores the morphological similarities of organic structures and argues for the mathematical basis of structure and growth in the natural world. Asawa's interest in math as a way to teach about the natural world is evidenced by her collection of clippings of interviews that address this idea.[50] Fuller's son-in-law, the filmmaker Robert Snyder, even riffed on Thompson's title when he named his documentary film on the artist *Ruth Asawa: Of Forms and Growth* (1978), dedicating a good part of the thirty-minute footage to her work in the schools.

Over time, as such techniques took hold, teachers and school administrators began to recognize that students who participated in the Workshop did better in more conventional subjects, such as math and reading, and showed improvement in general skills, like concentration. Many of the milk-carton structures were incredibly complex, far exceeding the

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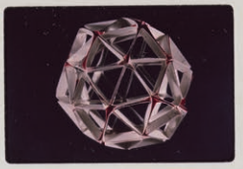
FILE NO:

2 SEP 84 P6
Pentagonal Star

3 SEP 84 P6



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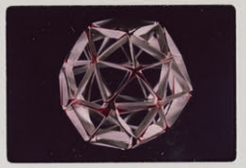

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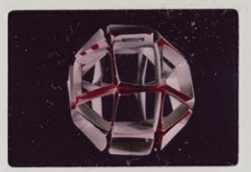
Rhombicuboctahedron



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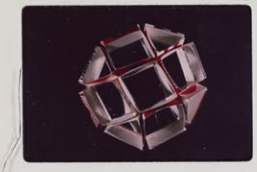
Rhombicuboctahedron



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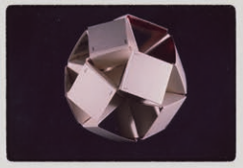

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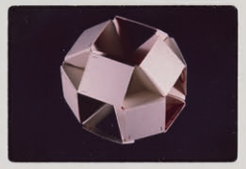


9 SEP 84 P6

10 SEP 84 P6
variation of Triakis Octahedron

12 SEP 84 P6
Collapsible Star

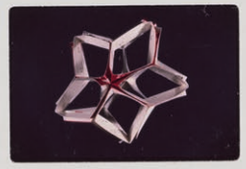
13 SEP 84 P6

14 SEP 84 P6

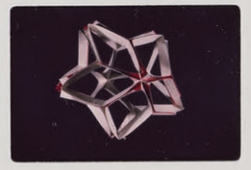
15 SEP 84 P6
Rolling Star

16 SEP 84 P6

17 SEP 84 P6

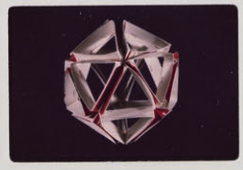


18 SEP 84 P6
Pentakaidecahedron



19 SEP 84 P6
ICOSAHEDRON

20 SEP 84 P6
ICOSAHEDRON



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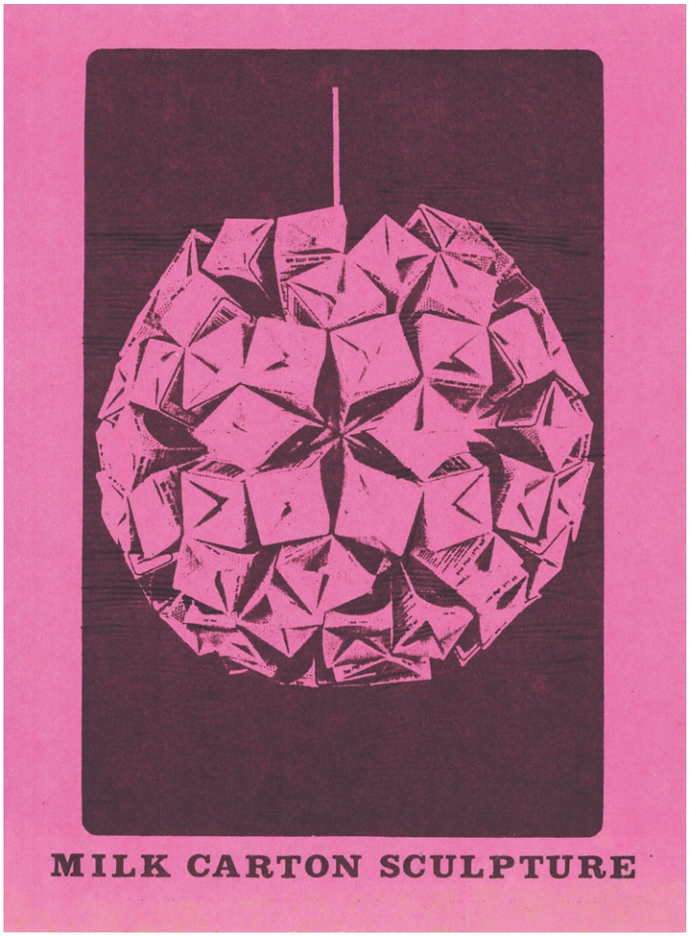
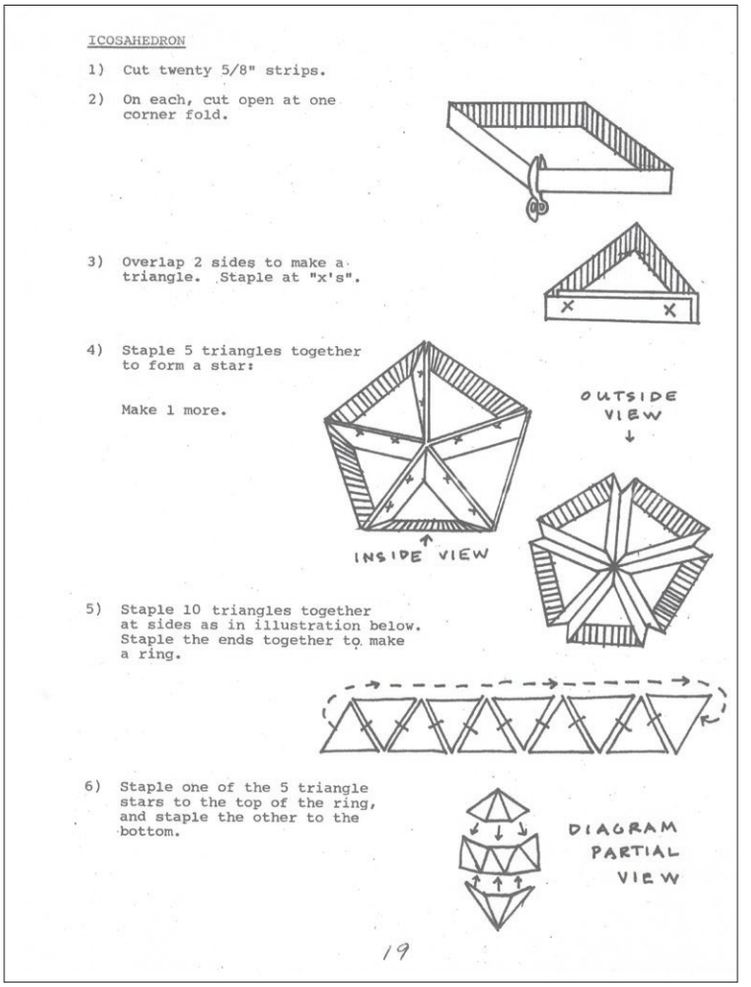




12 Cover of Ruth Asawa et al., *Milk Carton Sculpture* (San Francisco: self-pub., 1983) (photograph provided by the author and Ruth Asawa Lanier, Inc.)

13 Page showing how to create an icosahedron structure using milk cartons, from Ruth Asawa et al., *Milk Carton Sculpture* (San Francisco: self-pub., 1983), 19 (photograph provided by the author and Ruth Asawa Lanier, Inc.)

expectations that teachers usually had for what their students could accomplish, with one journalist describing the results as "something which appears to have been designed by a microbiologist."[51]

The illuminated milk-carton globe in the hallway of Mission High School was featured on the cover of *Milk Carton Sculpture*, a self-published instructional manual for these exercises (Figs. 12, 13). Billed as a "pictorial 'how-to' book," *Milk Carton Sculpture* is the only object that remains from these experiments in the schools—that, and the many photographs documenting students' work, which were taken by Anne Page, Laurence Cuneo, Michael Dixon, and other photographers, comprising a rich spectrum of visual material in lieu of the objects themselves. The book was a collective endeavor written by Asawa; her eldest daughter Aiko Cuneo; her collaborator on many projects, Mae Lee; and John Brunn, Mary Lee, and Sara Morgan. It was the result of two years of work cataloging the various shapes that proved most useful, drafting instructional drawings, researching a bibliography, and pitching the project to publishers. In this respect, it resembles many such countercultural publications that sought to democratize knowledge and which framed themselves explicitly as educational projects, such as Stewart Brand's *Whole Earth Catalog* and Lloyd Kahn's *Domebook*.[52] In a letter to a literary agent, Asawa relays how she hoped to include photographs in the book's published form. Although the agent admitted that the idea was "a wonderful one," the book idea did not seem "viable" on the basis that "it is much too complex and intricate for the students themselves to read. And I doubt that parents would buy the book so that they could help their children."[53] The book was never formally published, but it was circulated among the volunteers and teachers who participated in the Workshop and continued to

employ these strategies to convey valuable hands-on experience to children with a variety of learning strengths.

HIPPIE MODERNISM

The doubt expressed by the literary agent about student performance and parents' engagement in the schools was not unfounded: by the early 1980s, the state of education had become an urgent issue in California's political agenda. In 1974, the state superintendent appointed individuals, including Asawa, to the Commission for the Reform of Intermediate and Secondary Education (RISE). Asawa's voice on this committee was decisive and based on years of working in the schools. She argued that the arts needed to move from their more traditional location at the margins of the curriculum to the center of an experience-based learning approach, which would leave behind rote repetition and memorization to focus on direct encounters with the child's physical world. This was in line with other voices calling for arts-education reform, including David Rockefeller Jr., who published an article in the *New York Times* which Asawa annotated, underlining his point that the arts should become "a tool for general learning": "We advance this idea not in opposition to the back-to-basics movement but in the conviction that the arts properly belong among the basics."[54]

The so-called back-to-basics movement was a conservative response to the alternative-education movements that had emerged from California's counterculture. An example of this "liberalized education"—again, one that appears in Asawa's files—is that of the Pasadena Alternative School. Reported on in *Newsweek*, the school was an experiment in "open education," in which conventional forms of social control like dress codes and behavior rules were done away with in order to give students decision-making power over their educational environment:

> Barefoot and blue-jeaned, the students themselves decide what and when they want to learn. Among the available options are leatherwork, gourmet cooking, weaving and something the school calls "hip lit"—all for credit. No tests measure the students' progress, no grades indicate their relative standing or achievement; instead, the teachers gauge their students in terms of creativity.[55]

This was an approach to education that bucked authoritarianism and discipline, opting instead for values like self-sufficiency and independent thinking.

Fuller's research into geodesics and education were also based on such values, derived from a form of "hippie modernism," as Greg Castillo argues, which views the child as a figure of unalienated subjectivity; reconfiguring the school classroom through such design interventions became an urgent task of the counterculture.[56] Experiments by Sim Van der Ryn and Jim Campe in a Berkeley elementary school, as part of a course in the College of Environmental Design at the University of California, Berkeley, demonstrate the use of geodesic architecture in these contexts (Fig. 14). Evidenced by the Polaroid photograph of a dome in the hand of one child, these multimedia interventions sought to empower the child, giving him or her the tools to navigate a technologically determined world. As Gutman writes, such experiments also relied on dome architecture and recycled materials, although they tended to create semiprivate institutions, such as the Odyssey School in Berkeley in which Van der Ryn and Campe were also involved.[57] Photographic documentation suggests that these interventions were visually indistinguishable from the Alvarado School Arts Workshop's use of the same structures in the public school system (Fig. 15). And yet oddly, the Workshop has remained overlooked in such accounts, in which the focus has remained on overtly radical projects as well as male protagonists who experimented with such forms in collaboration with children, including Kahn's "impromptu dome class" at Pacific High

School in the Santa Cruz mountains.[58] In addition to the marginal role played by women in this history, "the elitist character of the movement is equally apparent," as Margaret Crawford has pointed out, with many of these men having been educated at Stanford University, for instance, or possessing the social and economic security to experiment with such alternative lifestyles without jeopardizing their futures.[59] It is also likely the status of the women of the Alvarado School Arts Workshop as *mothers*—whose contribution to their children's school was, and still is, understood as part of their expected labor as housewives—which has further caused their accomplishments to be omitted from such histories.

Countering such alternative efforts was the back-to-basics movement, embodied in schools like the competing John Marshall Fundamental School, three miles away from the Pasadena Alternative School. The former followed a tradition-oriented education, including grades, standardized tests, strict dress codes, and detention. This was a return to the so-called three Rs—reading, writing, and arithmetic:

> The curriculum is strict and basic; it features computational arithmetic (i.e., the old math), reading drill in standard phonics, and rigorous homework requirements from kindergarten on. At lunchtime, teachers, and volunteer parents move about the cafeteria correcting table manners. There are no graffiti on the Marshall walls; in their place hang framed patriotic sentiments and didactic homilies ("Happiness Is Manners"). A thirty-five-page school handbook spells out the Marshall goals in jargon-free clarity: "Traditional education, order, quiet, and control."[60]

The two educational approaches represented two social forces in the late 1970s: one committed to the project of a radical reform of everyday life, and another calling for a return to law and order, which, in the arena of education, was "no longer willing to accept the pharmacopoeia of educational nostrums that has been handed them by a relative handful of well-meaning but sometimes misdirected innovators," in the words of the *Newsweek* article.[61]

This debate is a matter for art history because at the core of the issue is the question of creativity: To what extent should the individual be afforded access to his or her own creative forces? And when do those creative forces need to be reined in for the good of a larger social order? Answering those questions means accounting for the place of the arts in education. For Asawa, at least, the response was clear: the arts and the creativity they engendered did not lead to social chaos but rather represented the only way forward if cities were to continue serving their constituencies. Already in 1969, in a statement that she published in the *San Francisco Examiner*, Asawa took a stand on the city's educational politics, drawing explicitly on the language of the counterculture:

> In the seventies public education must become relevant for all of our City's children. To that end, I would like to devote the time that I can give—not to meetings, panel discussions, prolonged telephone conferences, fund raisings, lecturing to groups of educators obtaining college credit for advanced degrees—but in direct work with as many children as I can reach in an area in which I am competent; the making of art, and relating it to their immediate living and neighborhood. There are many more citizens who are willing to work for the same goal in areas in which they are competent. We must attempt to educate whole individuals. Poetry, dance, drama, art, music and building must become as much a part of that education as physical education, home economics and driver education. We must begin to dilute secondary learning (reading and memorizing) with direct experiences (learning from a potter, a carpenter, a gardener, or a mechanic). This City cannot continue to excuse itself for the poor

14 Jim Campe, Schoolchildren with a project from Sim Van der Ryn's Arch 284 course at University of California, Berkeley, 1969. Environmental Design Archives, University of California, Berkeley (photograph provided by the Environmental Design Archives, University of California, Berkeley)

15 Students in the Alvarado School Arts Workshop building a geodesic dome, ca. 1975 (photograph provided by Ruth Asawa Lanier, Inc.)

> and irrelevant education in our public schools, blaming it on "deplorable deficiencies in the homes the children come from." We as a City once vaunted as "the City who knows how" must try to discover not how to drop out, but to tune in and use that fresh energy that is loose in our young people.[62]

Asawa's last point—that we discover "not how to drop out, but to tune in"—is a direct invocation of Timothy Leary's countercultural slogan "turn on, tune in, drop out," widely used at the Human Be-In in 1967, in which over thirty thousand people participated. I do not know if Asawa participated in the event, but she certainly knew of it and its significance. Her use of the phrase can be interpreted as a sly revaluation of its meaning: whereas the slogan was associated with the use of psychedelics, the embrace of mind-expanding media (Leary later attributed the slogan to Marshall McLuhan), and especially the rejection of conventional social institutions like marriage and the schools, its appropriation by a working mother and housewife transforms it into a call to *recommit* to society. Asawa's ambition was nothing less than to radically transform these institutions through their appropriation by artists, reclaiming them from technocratic bureaucracy and putting them back into the hands of those who relied on them most.

The question then becomes whether Asawa's efforts belong to what Eva Díaz has called "the Bucky Fuller–*Whole Earth*–Drop City–Ant Farm constellation," in which the reimagination of shelter and domestic space played a crucial role in the era's search for new forms of being in the world.[63] To date, they have not been part of this constellation, likely because it was a project whose protagonists—mostly middle-aged mothers pursuing art forms deemed amateurish—did not resemble the constellation's heroes: Brand and his *Whole Earth Catalog* devoted to self-sustainable living, Drop City as an autonomous artists community in rural Colorado, and Ant Farm as a San Francisco–based media collective working with architecture, performance, and video. Drop City, however, like Asawa, was awarded one of Fuller's Dymaxion Awards, suggesting that the architect-engineer saw them as pursuing similar concerns. As Díaz has argued, by "politicizing the technocratic, libertarian logic of Fuller's theories," groups like Drop City and Ant Farm sought out radical alternatives to middle-class conventions by embracing the geodesic-dome structure.[64]

The Alvarado School Arts Workshop, too, took up this challenge. Especially important in relationship to the milk-carton sculpture was Fuller's argument that comprehensive design—his term for a holistic approach to the human environment—could solve the era's resource crisis; that the problem was not a matter of scarcity or overpopulation but the efficient use and distribution of planetary resources at all levels, from the clothes worn by the individual to the planning of global communication systems. Believing that Cartesian geometry inaccurately represented nature, Fuller pursued geodesics as a picture of "nature's own coordinate system" and thus the only representational system adequate to distribute its resources.[65] He also deployed maternal metaphors in his writings, describing humanity as not only "the residents of human Wombland" (that is, planet Earth) but also all those not yet born, "those young citizens of worldaround [*sic*] Wombland," who are "living comfortably inside their mothers' wombs."[66] Moving beyond the maternal as metaphor, the Alvarado School Arts Workshop instantiated a maternal aesthetics in its commitment to working with children, cultivating environmental sustainability and disregarding its reputation in the eyes of the mainstream art world. Domes such as that built on the roof of the Mission High School were not only an experiment in constructing this architectural geometry; at the Alvarado School Arts Workshop they also served as a greenhouse garden which the schoolchildren helped to tend and harvest together with artist-gardeners.

Indeed, such a conception of geometry was an argument for holism—for a conception of the arts and sciences, of culture and nature, of growing and aging as together part of a life experience that could be summed up as "education." Geometry and gardening went hand in hand when Asawa and her fellow art mothers, together with students, explored nature as a multidimensional space of observation, play, and caretaking. The Alvarado School Arts Workshop implemented this holistic approach by integrating artists into the schools, with the long-term goal of reproducing this structure in all aspects of public life, including in places like welfare offices and hospitals. It effectively applied Fuller's theory of "comprehensivity," which he defined through the figure of the artist-scientist as a practitioner who defies disciplinary boundaries: "artists are human beings whose comprehensivity was not pruned down by the well-meaning but ignorant educational customs of society."[67]

An example of that comprehensive worldview can be seen in another slide found in Asawa's papers, this time depicting Fuller's Dymaxion Map of the world (Fig. 16). Projected onto the surface of an icosahedron that was flattened out into two dimensions, the Dymaxion Map furnished fewer distortions than the more conventional Mercator projection. It also depicted the continents as one continuous land mass, emphasizing the interconnectedness of the world. Alvarado Elementary School children created their own rendition of the map in blue and orange, blown up to billboard proportions. It was likely created as part of a conference for children held at De Anza College in Cupertino, California, in October 1982 in conjunction with the grassroots project Children as Teachers of Peace, which was founded by the psychologist Gerald Jampolsky after speaking to schoolchildren about war, nuclear weapons, and especially "what peace meant to them."[68] Hundreds of children from several states were invited to discuss their concept of peace. The idea for the project was based on the simple fact that although children have never had a voice in the politics of nuclear diplomacy, they were the ones who would be most affected by these potentially catastrophic decisions. This was the kind of whole-world thinking advocated by Fuller in his defense of education as helping "children coordinate their spontaneous comprehension of the whole instead of becoming specialists."[69] Fuller believed that this holism was the key to the humanity's survival; "we can no longer think in terms of single status entities—one thing, situation, or problem—but only in terms of dynamic changing processes and series of events that interact complexly."[70] Furthermore, the role of education in establishing peace might be a way to contextualize the Alvarado School Arts Workshop in relationship to the revival of Montessori methods in the 1960s, given that Maria Montessori also believed in this potential.[71] Beyond this connection, however, the Workshop and educational reform methods such as those developed by Montessori or Emmi Pikler share only a superficial connection, as the two are significantly distinct: whereas the former set out to place a professional artist in every school, if not every public institution, the latter developed methods and specific learning materials that did not necessarily privilege art above all other endeavors.

16 Billboard created by students in the Alvarado School Arts Workshop, ca. 1982, Department of Special Collections and University Archives, Stanford University Libraries, Stanford, CA (photograph provided by the Department of Special Collections and University Archives, Stanford University Libraries, and Ruth Asawa Lanier, Inc.)

The mothers of the Alvarado School Arts Workshop sought to implement art as a holistic approach to education through a hands-on engagement with a broad spectrum of materials and techniques of making. The idea was to move away from the abstraction that characterized standardized testing and computer-based learning, with Asawa even expressing publicly her doubt around the effectivity of computers in the classroom.[72] In its insistence on the importance

of the public school system and the everyday reproductive labor of educational caretaking—what I describe as its "maternal aesthetics"—the Alvarado School Arts Workshop differs substantially from other feminist projects at the time, such as Womanhouse in Los Angeles, whose founders had no contact with the Workshop. Though many of the artists involved in such explicitly feminist initiatives were themselves mothers, this was a moment in mainstream, second-wave feminism in which an embrace of that position, especially as an artist, was fraught with ambivalence.[73] Asawa did not identify explicitly with this younger generation of feminists, as was typical of her modernist generation (she was born in 1926); to describe her as a feminist would be anachronistic and misleading. What I am arguing instead is that the practice she and her colleagues followed was unusual for its time in that it does not fit into mainstream engagements with feminism (which largely eschewed motherhood) or properly belong to the longer history of women-led educational progressivism, given its emphasis on the professionally trained artist working in the schools. It was instead a *maternal* aesthetics in Tickner's sense of the term: the embrace of collaboration and gratitude as fundamentally challenging the more typical patrilineal inheritance of competition and rivalry—of sons killing fathers, as summed up in Harold Bloom's *The Anxiety of Influence* (1973), which Tickner cites.[74] Instead of a narrative of Oedipal rivalry, Tickner suggests instead a Persephone-Demeter narrative in which mother and daughter are mutually constitutive. In Asawa's case, we have something similar: an artist who continually expressed gratitude toward her teachers for their profound effect on her understanding of art and pedagogy. At the same time, Asawa exhibited an enormous degree of innovation. She took what she had learned and applied it in environments that Fuller and Albers rarely visited or valorized, given that they were largely concerned with education at the university level rather than in elementary schools. In many ways, she moved beyond the categories of art and artist, realizing entirely the era's obsession with the movement of art into life.

THE GEODESIC DOME AND THE HANDMADE HOUSE

In a short film made on the occasion of the Children as Teachers of Peace conference, one child attributes the persistence of war to the problem of the ego—that is, that selfishness and greed underlay geopolitical conflict.[75] The idea, characteristic of California's counterculture, was an implicit expression of a core philosophy underlying dome construction. Such structures were not simply new architectural proposals but rather were seen as furnishing "a new kind of space in which to create new selves."[76] This new self, I propose, can be seen as compatible with the alternative (maternal) subjectivity that Tickner details, a subject formation which rejects the classic (patriarchal) Freudian model.

Fuller, who had built himself a dome home in Carbondale, Illinois, pointed out in a lecture he gave in 1977, attended by Asawa, that this revaluation of the individual, prominent in such countercultural experiments, coincided with a historical moment in which corporations were colonizing the concept of an "individual." Asawa dutifully wrote in her notes from the lecture: "Corporations are ruthless; they are not persons, they are entities."[77] She was especially struck by Fuller's indictment of the destructive logic behind the use of fossil fuels. Fuller saw humanity as "lethally shortsighted," assuming that

> the great infinity is going to keep right on taking care of ignorant carelessness and waste. "So what the hell?" say the 'down-to-earth' status-quoers. "Pump all the fossil fuel energy-depositing of billions of years out from the Earth's crust. Burn it up in a century. Fill all your bank accounts with ten-place figures. To hell with the great-grandchildren. Let them burn up our space vehicle Earth's oceans with hydrogen fusion. Let them do the worrying about tomorrow."[78]

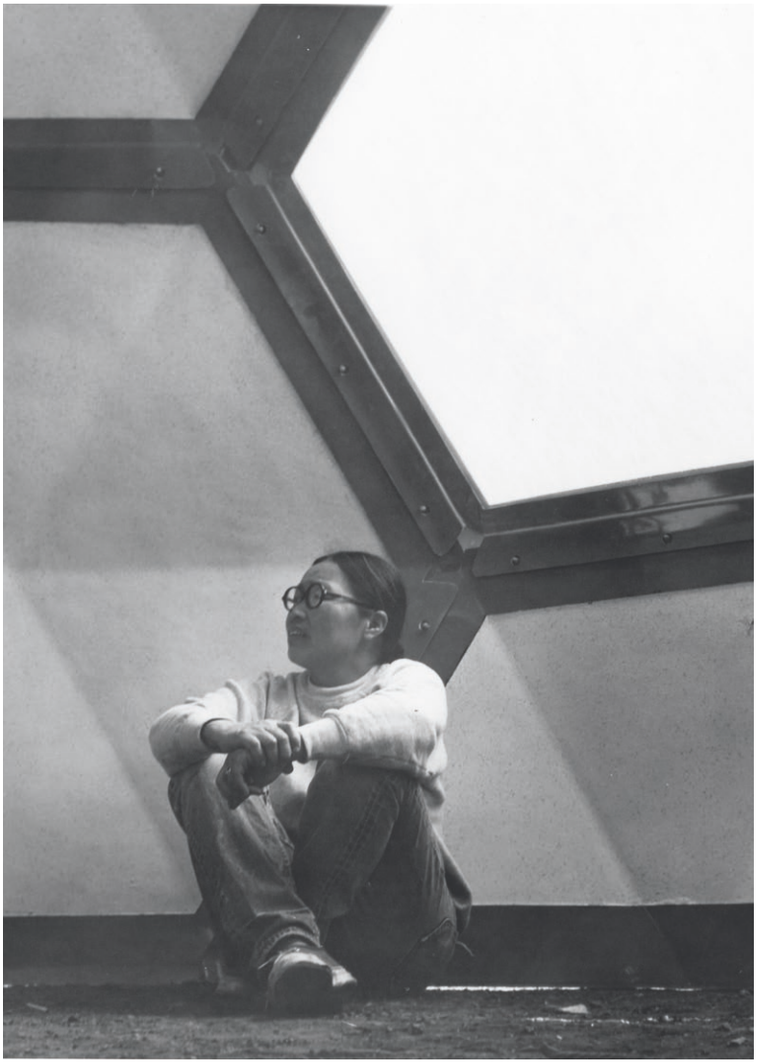
In a letter to Fuller's son-in-law Snyder, Asawa underscored this point: "What Buckminster Fuller has been saying for the past fifty years has finally entered our consciousness. Our limited world view has kept us from realizing that he has been warning us of our own self-destruction if we continue on this path of self-interest, greed, and ignorance."[79]

In a contribution to an anthology of texts on and by Fuller, Asawa wrote about his impact on her own trajectory, dating all the way back to his visit to Black Mountain College in the summer of 1948, when he led the students in an attempt to create a freestanding dome (which failed): "It was the experience of that unique summer that set the course of my life as an artist, as a parent, and as an active member in our community."[80] Adding to Asawa's contribution to the anthology, her husband Albert Lanier stressed the generativity of Fuller's openness to experimentation, in which success is defined as what one achieves only when one stops failing.[81] This inversion of the usual logic, in which failure is understood as something that must be avoided, was particularly attractive to artists and architects. As Díaz argues, what galvanized artists was not Fuller's advocacy of a technocratic utopianism in which all social problems could be reduced to inefficient management but rather his "proposal of a model of experimentation that accommodated failure in the name of a larger holistic program."[82]

17 Interior of R. Buckminster Fuller and Anne Fuller's dome home in Carbondale, IL, with a hanging looped-wire sculpture (*Untitled* [S.266]) by Ruth Asawa, ca. 1965 (artwork © 2024 Ruth Asawa Lanier, Inc./ Artists Rights Society [ARS], New York; photograph provided by David Zwirner and Ruth Asawa Lanier, Inc.)

Fuller's respect and admiration for Asawa was equally immense. In the early 1960s, he and Anne commissioned one of her looped-wire hanging sculptures for their own dome home and explored with her the possibility of a fountain sculpture for the garden (Fig. 17). In a 1971 letter of recommendation on Asawa's behalf to the Guggenheim Foundation, Fuller described her as "the most gifted, productive, and originally inspired artist that I have ever known personally. That statement includes many of this century's most celebrated 'greats.'" He drew special attention to her "prolific flow of trans-visible wire mesh sculptures, drawings, paintings, and abstract structures. Her creative productivity is all the more astounding when it is discovered how many children she has reared."[83] Note here the implicit suggestion that creativity and motherhood are at odds; that Asawa could do both was all the more laudable, he argued. He went on to praise the Alvarado School Arts Workshop, describing it as a series "of creative innovations in educational techniques."[84]

On trips to San Francisco, Fuller regularly visited Asawa and Lanier's Noe Valley home, which he described as "one of the most fascinating and inspiring houses I have ever visited."[85] The garden was full of projects in various forms of completion, including several milk-carton structures hanging from trees (Fig. 18). Asawa and Lanier also hosted field trips by schoolchildren, who were able to see firsthand the studio of a professional artist. As one journalist observed, the couple's "bulging Maybeck-style house on Castro Street is both an art and youth center."[86] In addition to supporting room-size installations of Asawa's looped-wire sculptures,



18 Laurence Cuneo, Milk-carton constructions hanging from trees in the front garden of Ruth Asawa's San Francisco home, ca. 1980 (photograph © Laurence Cuneo, provided by Ruth Asawa Lanier, Inc.)

19 Laurence Cuneo, R. Buckminster Fuller, seen through a glass geodesic object made by Bruce Sherman, ca. 1980–83 (photograph © Laurence Cuneo, provided by Ruth Asawa Lanier, Inc.)

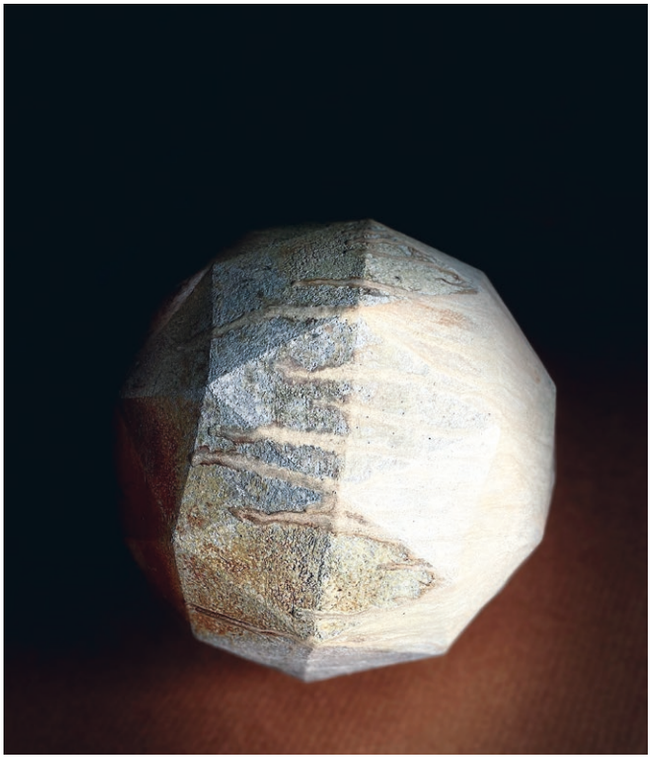
20 Ruth Asawa seated inside a geodesic dome, ca. 1976 (photograph provided by Ruth Asawa Lanier, Inc.)

the home was furnished with Fuller-inspired objects, including so-called geodesic light globes, which Asawa's teenage son Xavier fabricated and sold. During Fuller's involvement in Expo 1967 in Montreal, in which the architecture of the US pavilion was one of his geodesic domes, Asawa offered to make these globes to be hung in the interior of the pavilion—a plan that was never realized.[87] For many years, Asawa and Lanier's living-room table held a geodesic dome made of glass by the artist-craftsman Bruce Sherman; this object served as a lens through which Asawa's son-in-law Laurence Cuneo photographed Fuller in a striking portrait that merges the engineer with his architectural creation (Fig. 19).

Fuller's own dome home in Illinois and Asawa's Maybeck-style, brown-shingled craftsman home represent distinct, incomparable moments in countercultural architecture. They are paradigmatic examples of "two diametrically opposed forms of dwelling: the geodesic dome and the handmade house."[88] This contrast can be grasped by comparing Cuneo's photograph of Fuller with another taken of Asawa—likely in one of the domes created as part of the Workshop (Fig. 20). Fuller and Asawa, who maintained a lifelong friendship until Fuller's death in 1983, represent two versions of the countercultural ethos: Fuller's philosophy became a brand name and a kind of traveling-salesman pitch, articulated repeatedly in lectures for specialized and academic audiences. Asawa's approach, by contrast, took elements of Fuller's "comprehensive design" into the public school system, arguing that for such ideas to be realized, they must be democratized. Spearheaded by the artist-mother, the Alvarado School Arts Workshop emerges as a paradigmatic example of this latent maternal counterculture.

The comparison of Fuller's and Asawa's approaches to geodesics, in other words, asks us to rectify a triple erasure—the erasure of the Workshop from histories of educational reform, from Asawa's canonization as a modernist, and from accounts of Black Mountain College's impact on postwar art education. Above all, the lacuna emphasizes how much Asawa's identity as a mother underwrote this erasure: "decimating the mother and reinventing the father" was, after all, a central preoccupation of American modernism, as Ann Douglas long ago pointed out.[89] The Alvarado School Arts Workshop mobilized specific aesthetic strategies—in this case, three-dimensional geometry—that have, until now, been restricted to contexts associated with a male-dominated, avant-garde aesthetics of commune living and ecoengineering, even if they were, in fact, more broadly disseminated than has thus far been acknowledged. That they were also shaping arts curricula in a public school system, far from the centers of artistic modernism, is difficult for art history to grasp. But doing so presents us with an opportunity to revise histories of experimental arts pedagogy and to better contextualize contemporary practices that foreground so-called social and participatory artworks.

Asawa passed on that ethos to her own children, two of whom served as artists-in-residence in the Alvarado Elementary School in the 1990s and 2000s. Aiko Cuneo frequently led workshops with baker's clay, while her son Paul Lanier, a ceramicist, set up kilns and introduced schoolchildren to forming and firing clay. Such an engagement relied on a social fabric of trust and long-standing relationships in the neighborhood. This is not to say there were not hurdles to overcome during the Workshop's heyday. But the crucial element was the existence of a group of parents—including many women and mothers—teachers, and administrators, who envisioned other modalities of education beyond those prescribed by statisticians and technocrats. Asawa, too, was deeply skeptical of a society in which teachers had to be "qualified" by a technocratic apparatus in order to step into the classroom, and she cites this logic as one of the prime ways in which society was wasting the talent of its members, effectively disenfranchising its own future generations.[90] (It was because of this bureaucracy that Asawa herself, ironically, was never allowed to teach formally at the School of the Arts, which she had helped to establish.) All that is embodied in an object that I stumbled upon during a visit to Asawa and Lanier's former home. Sitting on the same redwood veranda that had witnessed endless exchanges between Asawa and the community of the Alvarado School Arts Workshop was one of Paul Lanier's works as a contemporary artist: Fuller's geometries reenvisioned in clay and transformed by a visionary pedagogical experiment (Fig. 21).



21 Paul Lanier, *Wood-Fired Stoneware Two-Frequency Icosahedron*, 2001, wood-fired stoneware, 14 × 14 in. (35.6 × 35.6 cm). Private collection, San Francisco, CA (artwork and photograph © 2024 Paul Lanier; photograph provided by Ruth Asawa Lanier, Inc.)

JORDAN TROELLER teaches at Leuphana Universität, where she holds the Junior Professorship of Contemporary Art History and Aesthetic Practice. Funded by a Freigeist Fellowship from the VolkswagenStiftung, she also directs the interdisciplinary research group The M/Other Project: Creativity, Procreation, and Contemporary Art [Institute for Art, Music, and Education, Leuphana Universität, 21335 Lüneburg, Germany, jordan.troeller@leuphana.de].

DISCLOSURE STATEMENT
No potential conflict of interest was reported by the author(s).

NOTES

My thanks to Aiko Cuneo, Addie Lanier, and Paul Lanier for answering seemingly endless questions about their mother and their own experience working in the schools, and to Henry Weverka and Vivian Tong for their assistance with fact-checking and gathering information and images. Conversations with Sandra Halladey and Susan Stauter, and three anonymous readers reports, also improved the essay. I am indebted to Elizabeth Otto and Peter McMahon for making possible a residency in fall 2022 at the Cape Cod Modern House Trust, where much of this article was written. Funding for the article's research was made possible by the Andy Warhol Foundation Arts Writers Grant, the Terra Foundation Research Travel Grant, and the VolkswagenStiftung.

1. Margaret Crawford, "Alternative Shelter: Counterculture Architecture in Northern California," in *Reading California: Art, Image, and Identity*, ed. Stephanie Barron, Sheri Bernstein, and Ilene Susan Fort (Berkeley: University of California Press, 2000), 256.

2. For one of the earliest retrospective views of the group, see Mildred Hamilton, "The Careers That Grew Out of the Arts Project," *San Francisco Examiner*, January 27, 1980, Scene section, 1–2. See also Sally B. Woodbridge, "The Alvarado Art Workshop," in *The Sculpture of Ruth Asawa: Contours in the Air*, rev. ed., ed. Timothy Anglin Burgard and Daniell Cornell, exh. cat. (San Francisco: Fine Arts Museums of San Francisco, 2020), 258–63.

3. Ruth Asawa, "Community and Commitment: An Interview with Ruth Asawa," by Stephen Dobbs, *Art Education* 34, no. 5 (September 1981): 14–17. Asawa told Dobbs: "My belief in having professional artists work with students originates from these experiences at Black Mountain College, a work-study community with faculty and students performing, eating, farming and even sharing kitchen duties together" (14).

4. In 2000, Asawa stated: "I had a choice of pursuing a career in New York or somewhere like that, or go to the schools. I chose to go to the schools. I think it's more important." Quoted in Ray Delgado, "Mural, Mural on the Wall," *San Francisco Examiner*, July 14, 2000, cited in Emily Pringle, "The Artist as Lifelong Learner: Ruth Asawa and Education," in *Ruth Asawa: Citizen of the Universe*, ed. Emma Ridgway and Vibece Salthe (London: Thames and Hudson, 2022), 148. See also Asawa's epigraph to *Sculpture: Ruth Asawa* (San Rafael: San Marco Gallery, Dominican College, 1970), cited in Woodbridge, "The Alvarado Art Workshop," 258. The statement is reprinted in full in Ridgway and Salthe, *Ruth Asawa*, 163.

5. Asawa's retrospective at the San Francisco Museum of Art in 1973 focused entirely on her abstract wire sculptures. See Gerald Nordland, *Ruth Asawa: A Retrospective View*, exh. cat. (San Francisco: San Francisco Museum of Modern Art, 1973). The subsequent large exhibition of her work at the De Young Museum three decades later still privileged this aspect of her career. See Timothy Anglin Burgard and Daniell Cornell, eds., *The Sculpture of Ruth Asawa: Contours in the Air*, exh. cat. (Berkeley: University of California Press, 2006), with a revised edition published in 2020. Exhibitions in the last few years, spearheaded by curators Helen Molesworth, Ridgway, Salthe, and Tamara Schenkenberg, have significantly expanded our understanding of the artist's multidimensional pursuits, returning to Asawa's own expansive view of the arts in education. See Ridgway and Salthe, *Ruth Asawa*; Schenkenberg, ed., *Ruth Asawa: Life's Work* (St. Louis, MO: Pulitzer Arts Foundation, 2019); and Molesworth, ed., *Ruth Asawa: All Is Possible* (New York: David Zwirner Books, 2022).

6. *Ruth Asawa: Honor Award Show, September 22 to October 22, 1976* (San Francisco: San Francisco Art Commission Gallery "Capricorn Asunder," 1976), 46.

7. Sarah Archer, "Maker to Market: Ruth Asawa Reappraised," *Journal of Modern Craft* 8, no. 2 (July 2015): 143.

8. Peter Braunstein and Michael William Doyle, eds., introduction to *Imagine Nation: The American Counterculture of the 1960s and '70s* (New York: Routledge, 2002), 6.

9. Such markers define Thomas Crow's recent study *The Artist in the Counterculture: Bruce Conner to Mike Kelley and Other Tales from the Edge* (Princeton, NJ: Princeton University Press, 2023).

10. Amy Ogata, *Designing the Creative Child: Playthings and Places in Midcentury America* (Minneapolis: University of Minnesota Press, 2013), 148.

11. Ibid., 178.

12. Addie Lanier in conversation with the author, August 1, 2023.

13. See, for example, Cheryl J. Fish, "Place, Emotion, and Environmental Justice in Harlem: June Jordan and Buckminster Fuller's 1965 'Architextual' Collaboration," *Discourse* 29, no. 2/3 (Spring–Fall 2007): 330–45.

14. Lisa Tickner, "Mediating Generation: The Mother-Daughter Plot," in *Women Artists at the Millennium*, ed. Carol Armstrong and Catherine de Zegher (Cambridge, MA: MIT Press, 2006), 85–120.

15. See Jeffrey Saletnik's study of Josef Albers's impact on the process-based work of Eva Hesse and Richard Serra: *Josef Albers, Late Modernism, and Pedagogic Form* (Chicago: University of Chicago Press, 2022), esp. 47–65.

16. Andrea Jepson and Sharon Litzky, *The Alvarado Experience: Ten Years of a School Community Art Program*. (San Francisco: Alvarado School Art Workshop, 1978), 5. Asawa had arranged for a rented apartment, so that Jepson would have a place to write. Jepson, telephone interview with author, December 15, 2020.

17. Shirley Dindjelis (?) to Ruth Asawa, June 1, 1970, folder 5, box 134, Ruth Asawa Papers (M1585), Dept. of Special Collections and University Archives, Stanford University Libraries, Stanford, CA (hereafter cited as Asawa Papers).

18. Ruth Asawa and Albert Lanier, "Art, Competence and Citywide Cooperation for San Francisco; Architecture, Gardens and the Individual," interview by Harriet Nathan, 1974 and 1976 (Berkeley: Regional Oral History Office, Bancroft Library, University of California, Berkeley, 1980), 177 (hereafter cited as Nathan interview).

19. Nathan interview, 171.

20. See Marta Gutman, "The Physical Spaces of Childhood," in *The Routledge History of Childhood in the Western World*, ed. Paula Fass (London: Routledge, 2013), 249–66; and Gutman, *A City for Children: Women, Architecture, and the Charitable Landscapes of Oakland, 1850–1950* (Chicago: University of Chicago Press, 2014).

21. Nathan interview, 56.

22. Joan Abrahamson and Sally B. Woodbridge, *The Alvarado School-Community Art Program* (San Francisco: Alvarado School Workshop, 1973), 9.

23. Woodbridge, "The Alvarado Art Workshop," 258–59.

24. Braunstein and Doyle, introduction to *Imagine Nation*, 9.

25. Addie Lanier in conversation with the author, August 1, 2023.

26. Hamilton, "The Careers That Grew Out of the Arts Project," Scene section, 1.

27. See "Interview with the Asawa Family," in Ridgway and Salthe, *Ruth Asawa*, 177.

28. On the history of post-Brown desegregation in San Francisco, see Rand Quinn, *Class Action: Desegregation and Diversity in San Francisco Schools* (Minneapolis: University of Minnesota Press, 2020).

29. This overview of the Workshop summarizes information provided by *Profile: The Alvarado School Art Workshop*, ed. NEA Education Program (Washington DC: National Endowment for the Arts, 1975). On CETA, see John Kreidler, "The CETA Years, 1975–1980," in Burgard and Cornell, *The Sculpture of Ruth Asawa*, 264–67.

30. See Ericka Huggins and Angela LeBlanc-Ernest, "Revolutionary Women, Revolutionary Education: The Black Panther Party's Oakland Community School," in *Want to Start a Revolution? Radical Women in the Black Freedom Struggle*, ed. Dayo F. Gore, Jeanne Theoharis, and Komozi Woodard (New York: New York University Press, 2009), 161–84.

31. Interview with Theodore Scoarkes, principal, Mission High School, December 1974, cited in NEA Education Program, *Profile*, 6 (ellipses in original).

32. Woodbridge, "The Alvarado Art Workshop," 259–60.

33. My understanding of both initiatives is indebted to Martha Freebairn-Smith and Phiz Mozesson, *Something That's Happening: A Portrait of the Sausalito School District* (Sausalito: Sausalito School District, 1968); and Catherine Spencer, "Allan Kaprow's Lesson Plans," chap. 1 in *Beyond the Happening: Performance Art and the Politics of Communication* (Manchester, UK: Manchester University Press, 2020), 31–80.

34. Author's interview with Paul Lanier, March 31, 2022, San Francisco. See also reflections on the Workshop by several of Asawa's children in "Interview with the Asawa Family," 174–83.

35. For a fuller account of Albers's impact on Asawa, see Jordan Troeller, "Drawing Lessons: Ruth Asawa's Early Work on Paper," in *Object Lessons: The Bauhaus and Harvard* (Cambridge, MA: Harvard Art Museums, 2021), 149–66. See also Mary Emma Harris, "Black Mountain College," in Burgard and Cornell, *The Sculpture of Ruth Asawa*, 64–88. Harris was one of the earliest authors to address the impact of Asawa's training.

36. Josef Albers, quoted in Saletnik, *Josef Albers, Late Modernism, and Pedagogic Form*, 48 (emphasis in original); and Asawa to Dr. Galant (principal of James Lick Junior High), November 23, 1968, folder 3, box 134, Asawa Papers.

37. Jepson and Litzky, *The Alvarado Experience*, 10.

38. Ibid., 9 (emphasis in original).

39. Braunstein and Doyle, introduction to *Imagine Nation*, 9.

40. Saletnik, *Josef Albers, Late Modernism, and Pedagogic Form*, 48.

41. Ruth Asawa to Marcia Argria, April 27, 1981, folder 5, box 115, Asawa Papers. The unnamed graduate student is likely Joan Abrahamson, who was a vital part of the Alvarado School Arts Workshop during these years.

42. Pringle, "The Artist as Lifelong Learner," 140.

43. Andrea Jepson, cited in Marilyn Chase, *Everything She Touched: The Life of Ruth Asawa* (San Francisco: Chronicle Books, 2020), 110.

44. Jim Wood, "Buckminster Fuller Incites to Artistry," *San Francisco Examiner*, May 20, 1973, 3.

45. Ruth Asawa et al., *Milk Carton Sculpture* (San Francisco: self-pub., 1983), folder 5, box 115, Asawa Papers.

46. R. Buckminster Fuller, "Emergent Humanity," in *Buckminster Fuller: Anthology for the New Millennium*, ed. Thomas T. K. Zung (New York: St. Martin's Press, 2001), 105–6.

47. Ibid.

48. See the supplement on California teaching materials entitled "Early Childhood Experience Kit," advertised by the Cuisenaire Company of America under the title "California Adopts Non-Textbook Mathematics Materials," in *Learning: The Magazine for Creative Teaching* (August–September 1975): n.p. This periodical regularly published articles on the Alvarado School Arts Workshop.

49. K. Michael Hays, "Fuller's Geological Engagements with Architecture," in *Buckminster Fuller: Starting with the Universe*, ed. Hays and Dana Miller, exh. cat. (New York: Whitney Museum of Art; New Haven, CT: Yale University Press, 2008), 11. Hays cites Anne Griswold Tyng, "Geometric Extensions of Consciousness," *Zodiac*, no. 19 (1969): 130–73, which explores the implications of Fuller's geometry for structures of consciousness—what she calls "mind-matter."

50. See, for example, Robert Colby Nelson, "Nature's '*Extraordinary*' Order," *Christian Science Monitor*, November 3, 1964, clipping in folder 3, box 3, Asawa Papers.

51. Nancy Scott, "Building a Better World with Milk Cartons," *San Francisco Examiner*, August 28, 1987, D2.

52. Stewart Brand, ed., *Whole Earth Catalog* (self pub., Fall 1968); and Lloyd Kahn, *Domebook* (Bolinas, CA: Pacific Domes, 1970).

53. Elizabeth Pomada to Ruth Asawa, October 29, 1981, folder 5, box 115, Asawa Papers.

54. David Rockefeller Jr., "Wanted: A New Policy for the Arts in Education," *New York Times*, May 22, 1977, 16, clipping in folder 1, box 88, Asawa Papers.

55. "Back to Basics in the Schools," *Newsweek*, October 21, 1974, 87, clipping in folder 2, box 88, Asawa Papers.

56. Greg Castillo, "Counterculture Terroir: California's Hippie Enterprise Zone," in *Hippie Modernism: The Struggle for Utopia*, ed. Andrew Blauvelt, exh. cat. (Minneapolis, MN: Walker Art Center, 2015), 90. Castillo draws on Marta Gutman, "Spaces of Childhood: A Radical Agenda for Design and Research" (lecture presented at the Townsend Center for the Humanities, University of California, Berkeley, October 30, 2014).

57. Marta Gutman, "Children of the Revolution: The Odyssey School Experiment in Berkeley," in *Design Radicals: Spaces of Bay Area Counterculture*, ed. Greg Castillo and Lee Stickells (Minneapolis: University of Minnesota Press, forthcoming).

58. Crawford, "Alternative Shelter," 253–54.

59. Ibid., 267.

60. "Back to Basics in the Schools," 87.

61. Ibid.

62. Ruth Asawa, "The 1970s," *San Francisco Examiner*, December 28, 1969, n.p., clipping in Albert Lanier and Mrs. Ruth Asawa Lanier file, San Francisco Public Library, San Francisco, CA.

63. Eva Díaz, "Dome Culture in the Twenty-First Century," *Grey Room*, no. 42 (Winter 2011): 84.

64. Ibid. The Dymaxion Award was established by Fuller himself and awarded by him to outstanding practitioners—artists and scientists—who worked holistically.

65. Fuller is quoted in Shoji Sadao, "A Brief History of Geodesic Domes," in Zung, *Buckminster Fuller*, 19.

66. Buckminster Fuller, "Revolution in Wombland," in Zung, *Buckminster Fuller*, 159, 154.

67. Fuller, "Emergent Humanity," 114.

68. See Cynthia Robins, "If Children Could Really Run the World," *San Francisco Examiner*, September 12, 1982, 112. The discussions culminated in Jampolsky's book *Children as Teachers of Peace* (Berkeley, CA: Celestial Arts, 1995); Jampolsky's Foundation for Spiritual Alternatives in Tiburon; and international trips of schoolchildren to speak with world leaders. One of the prominent supporters of Jampolsky's foundation was Pat Montadon, who had been a manager at the Joseph Magnin store in San Francisco when Asawa was commissioned to supply sculptures for the store's interior decoration in the early 1960s.

69. Fuller, "Emergent Humanity," 105–6.

70. Ibid.

71. See, for instance, Erica Moretti, *The Best Weapon for Peace: Maria Montessori, Education, and Children's Rights* (Madison: University of Wisconsin Press, 2021).

72. Asawa stated to the journalist Dan Borsuk in 1984: "When I see children sitting down in those cubicles staring at computer screen terminals, I sense we are teaching these youngsters to be farther and farther away from people." By contrast, she noted that "art exercises more mental skills than any other activity I can think of." Dan Borsuk, "Sculptor Sees Too Much Computer Education, Not Enough Art," *San Francisco Progress*, October 10, 1984, A3.

73. See, for instance, Miriam Schapiro's contribution to "Forum: On Motherhood, Art, and Apple Pie" (1992), in *M/E/A/N/I/N/G: An Anthology of Artists' Writings, Theory, and Criticism*, ed. Susan Bee and Mira Shor (Durham, NC: Duke University Press, 2000), 287–90. Schapiro recalls how fraught the word "motherhood" was for her when she gave birth to her son in 1956: "More than that—centuries of prohibitions made me guilty for even dreaming that I might be an artist as well as a mother" (287).

74. Tickner, "Mediating Generation," 88.

75. Attitudinal Healing International, "Children as Teachers of Peace with Mde. Sadat and Gerald Jampolsky, M.D.," 1982, YouTube video, 18:00 (quote at 4:44), https://youtu.be/gYYXgRr9KEI.

76. Red Rockers communards, cited in Crawford, "Alternative Shelter," 256.

77. See notebook page dated June 17, 1977, folder 9, box 3, Asawa Papers.

78. Fuller, "Revolution in Wombland," 159.

79. Alvarado [School] Arts Workshop to Robert Snyder, June 29, 1982, folder 1, box 4, Asawa Papers.

80. Ruth Asawa, "Black Mountain College," in Zung, *Buckminster Fuller*, 204.

81. Albert Lanier, quoted in Asawa, "Black Mountain College," 204.

82. Díaz, "Dome Culture in the Twenty-First Century," 86.

83. R. Buckminster Fuller to the Guggenheim Foundation, September 30, 1971, folder 6, box 3, Asawa Papers.

84. Ibid.

85. Ibid.

86. Mildred Hamilton, "A Tour of Ruth Asawa's San Francisco," *San Francisco Examiner*, September 19, 1976, clipping in the Ruth Asawa file, San Francisco History Center, San Francisco Public Library, San Francisco, CA.

87. The interior design of the pavilion was overseen by a firm other than Fuller's, and Anne Fuller relayed to Asawa that she and her husband had no influence over what would be included. The interior design ended up being a selection of painting and sculpture by primarily white, male, American artists, including Jasper Johns, who made use of Fuller's Dymaxion Map in a mural-sized painting. See Virginia M. G. Anderson, "A Map and a Painting: The Re-Working of Jasper Johns's *Map (Based on Buckminster Fuller's Dymaxion Airocean World)*," *American Art* 32, no. 1 (Spring 2018): 52–73.

88. Crawford, "Alternative Shelter," 250.

89. Ann Douglas, *Terrible Honesty: Mongrel Manhattan in the 1920s* (New York: Farrar, Straus and Giroux, 1995), 252.

90. See Asawa's handwritten notes as a member of the California Arts Council on the "sad state" of arts education, folder 1, box 91, Asawa Papers; and Chase, *Everything She Touched*, 161.