

**Towards An Everyday Utopia:
The Whole Earth Catalog and architectural practice in
American counterculture communes, 1968-1971**

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1. Introduction

The pursuit of utopia is an everlasting human endeavor, as demonstrated by the perpetual experimentation of self-sufficient communes. In the 1960s USA, under the influence of various political and environmental movements, especially the counterculture wave, thousands of young people left the cities to build up communities in rural areas. Often associated with hippies, drugs and sex, these communities were actually far more diverse and ambitious. There were artists' communes, like Drop City, as well as intentional communes, like Twin Oaks. "Far from running away from life or our social responsibilities, we are trying to make a new and better world," said Kinkade, one of the founders of the Twin Oaks Community in *A Walden Two Experiment*.¹ Carrying various utopian dreams and social political ideals, many of them worked hard to create sustainable, alternative lives with their own hands.

Inspired by these communities, Stewart Brand issued the first Whole Earth Catalog in 1968. The Catalog was conceived as an "evaluation and access device" of tools for communities.² Issued annually or bi-annually from 1968 to 1972, the Catalog was not only regarded as the bible of community residents in that generation, but also attracted far more people and became a new advocacy front for countercultural activists. With the decline of political demonstrations in the late 1960s, the Catalog marked a shift from utopian idealism and politics to a more practical approach.³

The Catalog was categorized into seven sections: *Understanding Whole Systems, Shelter and Land Use, Industry and Craft, Communications, Community, Nomadics, Learning*.⁴ Among them, the *Shelter and Land Use* section focused on contents related with the built environment in the communities. The topic of the contents varied from the well-known Dome to "primitive" vernacular architecture. Scholars have

¹ Kathleen Kinkade, *A Walden Two Experiment: The First Five Years of Twin Oaks Community* (New York: William Morrow & Co., 1973), 01.

² Stewart Brand, ed., *Whole Earth Catalog* (Menlo Park, CA: Portola Institute, 1968), cover page.

³ Andrew Kirk, "Appropriating Technology: The Whole Earth Catalog and Counterculture Environmental Politics," *Environmental History* 5, Vol. 6, no. 3 (July 2001): 383, <https://www.jstor.org/stable/3985660>

⁴ There were nine sections in the *Last Whole Earth Catalog*.

noticed the Catalog's interest in technical issues in construction and many of them have studied the form of the Dome as a symbol of counterculture communes. However, there hasn't been enough attention paid to the Catalog's consistent aim, which, according to Brand, was to induce real construction practice. Rather than presenting architecture as a unified entity, the Catalog disassembled it into various kinds of information for self-education by amateurs. As Sadler states, "Design, it appears from the Catalog, is everywhere and nowhere, a practice among practices, a system among systems."⁵ This emphasis on amateurish practice over traditional architectural language, such as space and form, drew criticism from architects at that time for being more technical than cultural and thus less human.⁶ Chaitkin labels counterculture architecture as "outsider architecture", as it deviated from the progression of styles and a test of the disciplinary boundaries in the transitional stage from modernism to postmodernism.⁷

Looking back from today, when the boundaries of what constitutes architecture are more ambiguous and the line between design and non-design becomes uncertain, it is imperative to rethink this "off track" unprofessional practice encouraged by the Whole Earth Catalog. What were the ideologies behind the refusal of professional architects' participation while emphasizing self-construction? What's the role of participants? How did the Catalog, through its selection and organization of content, induce the action, and furthermore, promote a new way of thinking towards architecture? Most importantly, what can we learn from these practices nowadays?

This essay will examine architecture in late 1960s American counterculture communities not as a style or form, but as a series of actions, by going forth and back between the Whole Earth Catalog and real works. It will employ multiple methodologies, including article review, diagram study as well as a ficto-critical approach. The first chapter will explore the complex ideologies behind the self-production fanaticism, with a focus on the struggle of the narrative in terms of scales. Concentrating on the *Shelter and Land Use* section of the Catalog, the second chapter will study its various contents in a systematic way and incorporate them into the real practice in communities. The third chapter will present a first-person fictional narrative based on discussions in the first two chapters and provides a critical reflection of personal experience in architecture practice induced by the Catalog. This essay aims to provide new insights into architecture in the late 1960s American communities by examining the narrative presented in the Whole Earth Catalog and communards, and additionally, to draw inspiration from it for contemporary architecture and society.

⁵ Simon Sadler, "An Architecture of the Whole," *Journal of Architectural Education* (1984-), Vol. 61, No. 4, (May, 2008): 110, <https://www.jstor.org/stable/40480872>.

⁶ Sadler, "An Architecture of the Whole," 109.

⁷ Charles Jencks and William Chaitkin, *Current Architecture* (London : Academy Editions, 1982), as cited by Blauvelt, 2015.

2. A Debate on Scale: Self within System

Man is small, and, therefore, small is beautiful.

— E.F.Schumacher, *Small is Beautiful*, 1973⁸

We can't put it together, it is together.

— *The Last Whole Earth Catalog*, 1971⁹

The main feature of the 1960s community movement in America was the desire to escape from large cities and turn to self-organized small communities in rural areas. These communities were guided by different kinds of idealisms, varying from traditional utopian ideologies to political advocacy. “The Communal idea is big enough to stimulate a lot of different dreams.” as Kinkade noted in her memoirs.¹⁰ Despite their differences, all of these community members shared a common fear and disdain towards the fast-expanding urban environment. B.F. Skinner, a behaviorist and author of *Walden Two*, which inspired several intentional communities, expressed his concerns about large cities in *Walden Two Revisited*, “what is so wonderful about being big? It is often said that the world is suffering from the ills of bigness, and we now have some clinical examples in our large cities.”¹¹

For most of the generation, the large cities were a symbol of a gigantic, greedy and monstrous American society, which was a threat to their personal and communal lives. The Vietnam War and the memory of the atomic bomb cast lasting shadows over American society for the whole 1960s. The young people were deeply skeptical towards the misdirected authority power which sought violence and death instead of the enhancement of life quality.¹² The fear of losing control over their own life induced numerous political, cultural and environmental protests in the cities, while a number of young people sought freedom and an alternative way of life outside the city in small, self-sufficient communities. Melville, a nine-year-old community resident, explained his decision, “I’m trying to keep from being swallowed by a monster — plastic, greedy American society, I need to begin relating to new people who are into taking care of each other and the earth.”¹³ By living in self-organized rural communities, these rebels wished to get rid of the Leviathan dominating the cities and return to a communal, anarchistic lifestyle.

⁸ E. F. Schumacher, *Small Is Beautiful: A Study of Economics as if People Mattered* (London: Blond & Briggs, 1973), 117.

⁹ Stewart Brand, eds., *The Last Whole Earth Catalog: access to tools* (Menlo Park, CA: Portola Institute, 1971), cover page.

¹⁰ Kinkade, *A Walden Two Experiment*, 02.

¹¹ B.F. Skinner, “Walden Two Revisited,” in *Walden Two*. (Indianapolis: Hackett Publishing Company, 2006), ix.

¹² Adam Rome, “‘Give Earth a Chance’: The Environmental Movement and the Sixties,” *The Journal of American History*, Vol. 90, No. 2, (Sep, 2003): 550, <https://www.jstor.org/stable/3659443>.

¹³ Keith Melville, *Communes in the Counter Culture: Origins, Theories, Styles of Life* (New York, 1972), 134-135, as cited by Rome, 2003.

Besides the devastating institutional power, the countercultural activists also resisted the social economic structure based on urban networks in which people became either a “consumer” or an “employee” and got alienated from their work. Instead, they wanted to work on projects of their own devising and gain autonomy from the consumerism system.¹⁴ This resulted in a much smaller scale of production based on individual persons and communities among the activists. The human-scale production in these communities was deep rooted in the traditional utopian ideal of self-sufficiency. On one hand, self-production was the way to keep the community operating independently from the economic structure they wanted to escape. On another, there was a common belief that working for oneself would bring more spiritual satisfaction. The optimism towards the feasibility of “handmade lives” was represented in Gene Bernofsky’s description of Drop City, “if we did nongainful work that the cosmic forces would take note of this and would supply us with the necessities of survival.”¹⁵

Counterculture activists’ embracing of technology in the late 1960s brought more promise to self-production. Throughout the century, many scholars had shown their concern over the abuse of technology on an urban scale. In *One-Dimensional Man*, one of the most influential books in the counterculture movement, Marcuse argued against “technological rationality” and warned that advanced industrial society creates a form of social control over personal life.¹⁶ The early generation of environmentalists turned to Wildness and stood completely against technology, while the new generation moved against this bipolar debate, seeking for ways to take advantage of it. British economist E. F. Schumacher promoted a type of “appropriate technology”, such as windmills and water turbines, which stood “halfway between traditional and modern technology” and could be applied to small-scale local communities and ecosystems.¹⁷ These types of technologies could be easily mastered by communities or individuals. For the first time, the community residents would get personal control of the technology instead of just being a user of the mass industrial system.

As the most popular guide for communes, The Whole Earth Catalog was also a strong supporter of this positive vision of self-production. According to Farber, this book was dedicated to an alternative lifestyle which “framed around self-production, economically sustainable practices, and artisanal skills.”¹⁸ The founder of the Catalog, Stewart Brand, made a statement in the beginning of the first publication in 1986:

¹⁴ David Farber, "Self-Invention in the Realm of Production," *Pacific Historical Review*, Vol. 85, No. 3, (Aug, 2016): 409, <https://www.jstor.org/stable/26419659>.

¹⁵ Timothy Miller, "The Roots of the 1960s Communal Revival," *American Studies*, Vol. 33, No. 2, (Fall, 1992): 89, <https://www.jstor.org/stable/40642473>.

¹⁶ Herbert Marcuse, *One-Dimensional Man* (Boston: Beacon Press, 1964).

¹⁷ Marilyn Carr, ed., *The AT Reader: Theory and Practice in Appropriate Technology* (New York: Intermediate Technology Development Group of North America, 1985), 6-11, as cited by Kirk, 2001.

¹⁸ David Farber, "Self-Invention," 417.

*“We are as gods and we might as well get good at it. So far, remotely done power and glory—as via government, big business, formal education, church—has succeeded to the point where gross defects obscure actual gains. In response to this dilemma and to these gains a realm of intimate, personal power is developing—power of the individual to conduct his own education, find his own inspiration, shape his own environment, and share his adventure with whoever is interested. Tools that aid this process are sought and promoted by the Whole Earth Catalog.”*¹⁹

In this statement, he questioned authorities while specifying the role of the book to provide tools for those who would work hard to get out of the system. Brand encouraged practical handwork and believes in the future possibilities that could be reached through it. As he later described the Catalog, “It is a book of tools for saving the world at the only scale it can be done, one hand at a time.”²⁰ One of the most crucial tools it provided was the appropriate technology mentioned above. The catalog introduced various household technologies from energy generators to devices for craftsmanship. While the meaning of “tools” extended further from that. As Kirk concludes, the key purpose of the Catalog was to “empower yourself” through “access to creative information”.²¹ Brand emphasized the rise of an “intimate, personal power” and supported it in various perspectives including knowledge, inspiration, real work guidance and communication platform. Self-production was no longer a single process in the Catalog but became an information and object network centered on each person, which was represented as different kinds of contents from book recommendations to product introductions in the book. And one of the reasons why the Catalog became so popular is that these self-centered tools made creating an alternative life by one’s own hands more promising and relatable. To many of the readers, working on a community themselves was more meaningful and practical than political protest and meetings.²² They could see how their own actions mattered through the book.

The division of oneself from the industrial consumerism system and the reconnection to a larger ecological network were two sides of the same coin, which indicated the embrace of a systematic way of thinking. The ecological ideal of interconnectedness was nothing new to the communal generation. Paul Potter, an influential figure in the New Left movement, supported a lifestyle that “all life lives within us” and “we live in all with its eyes and feeling with all of its senses.”²³ These ecological ideas inspired worship of the earth as a whole, which led to the birth of Earth Day as a national event. As an activist and a previous biology student, Brand was a faithful believer in this ideology. The most clear indication was the choice of the covers. Throughout the 4 years of publication, most of the covers used

¹⁹ Stewart Brand, ed., *Whole Earth Catalog*, cover page.

²⁰ James Baldwin, ed., *Whole Earth Ecolog: An Environmental: An Environmental Toolkit* (Three Rivers Press, 1990).

²¹ Andrew G. Kirk, *Counterculture Green: The Whole Earth Catalog and American Environmentalism* (Lawrence: University Press of Kansas, 2007), 03.

²² Kirk, *Counterculture Green*, 51.

²³ Paul Potter, *A Name for Ourselves* (Boston, 1971), 116-17, 205, as cited by Rome, 2003.

photographs of the earth taken from space by NASA. In 1966, right before the release of WEC, Brand organized a campaign to urge NASA to allow public access to photos taken during space missions. “Why haven’t we seen a photograph of the whole earth yet?” He made such a demand on the badges distributed during the campaign. The cover of the first Whole Earth Catalog was the first color photo of the earth taken by ATS-3 in 1967.(figure. 1) While the earth rise image on the 1969 Spring publication was the first color image of earth taken by a human from the moon.²⁴(figure 2) Brand pioneered in using these photographs in publications, and their impact was definitely profound. As Newberg and his coworkers argue, for the first time, the world appears in plain sight for everyone, so as the direct sense of the complexity and fragility of all lives on earth.²⁵ The whole earth was no longer a distant concept but became understandable and related to each person.

This emphasis of the transcendence from a personal scale to the Whole Earth was represented as working closely with nature in community lives. The back-to-land ideal has a deep tradition in American culture and got revived during the 1960s environmental movement. Most self-production in communities was based on this farming tradition, which represented a fantasy of past agricultural culture. The counterculture activists regarded it as a way back to the primitive lifestyle when humans and nature were closely connected. Kinkade called the farming “a romance”, “we were almost as excited about farming as we were about communal living.”²⁶ The agricultural practice didn’t get much attention in the first Catalog but became a more and more important topic in later publications, especially in the *Land Use* section in the Last Whole Earth Catalog, which, according to Gaglio, aimed to equip community members from cities with knowledge to start their rural life on land.²⁷ This reconnect with nature ideology was also indicated in *Shelter*. Lloyd Kahn, the editor of the “Shelter” section, showed his interest in vernacular architectural materials in various cultures, and later published an individual book *<Shelter>* in 1973 to deliberate his study on worldwide vernacular architectural practices. Meanwhile, the WEC’s approach goes further than that. Instead of promoting a totally primitive way of living, the team acknowledged the value of technology in both self-sufficient need and ecological practice.

The Catalog also attached much importance to the interdependence of communities and provided a networking platform for its readers. Brand encouraged readers to recommend books or products while choosing contents for the book. In *Supplement to the Whole Earth Catalog*, the section *Other People’s*

²⁴ “Timeline of first images of Earth from space,” Wikipedia, last modified April 27, 2023, https://en.wikipedia.org/wiki/Timeline_of_first_images_of_Earth_from_space.

²⁵ Yaden, David B., et al. “The Overview Effect: Awe and Self-Transcendent Experience in Space Flight.” *Psychology of Consciousness: Theory, Research, and Practice* 3, Vol. 3, no. 1, (2016): 01. <https://psycnet.apa.org/doiLanding?doi=10.1037%2Fcms0000086>.

²⁶ Kinkade, *A Walden Two Experiment*, 63.

²⁷ Caroline Maniaque-Benton and Meredith Gaglio, eds., *Whole Earth Field Guide* (Cambridge, Massachusetts : The MIT Press, 2016), 82.

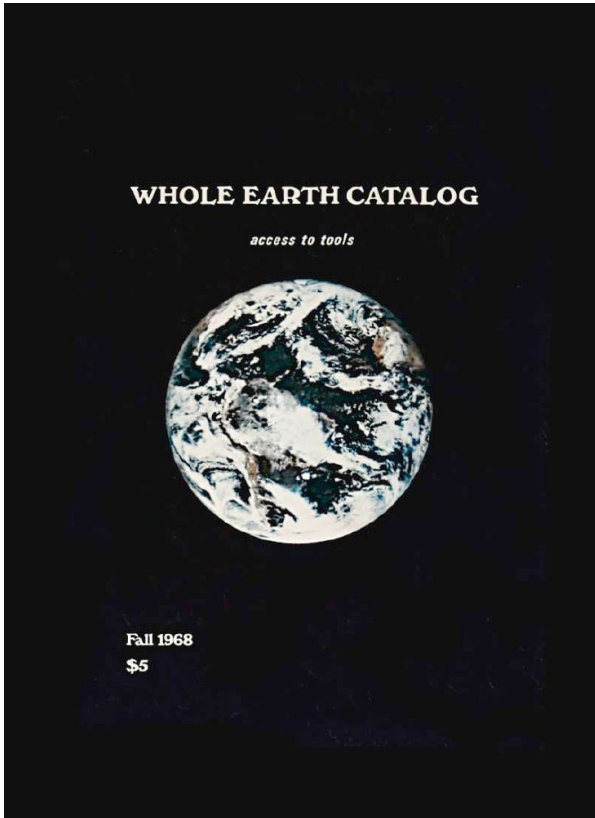


Figure 1. Cover Page. Whole Earth Catalog, Fall 1968.
(Photo courtesy of Stewart Brand)

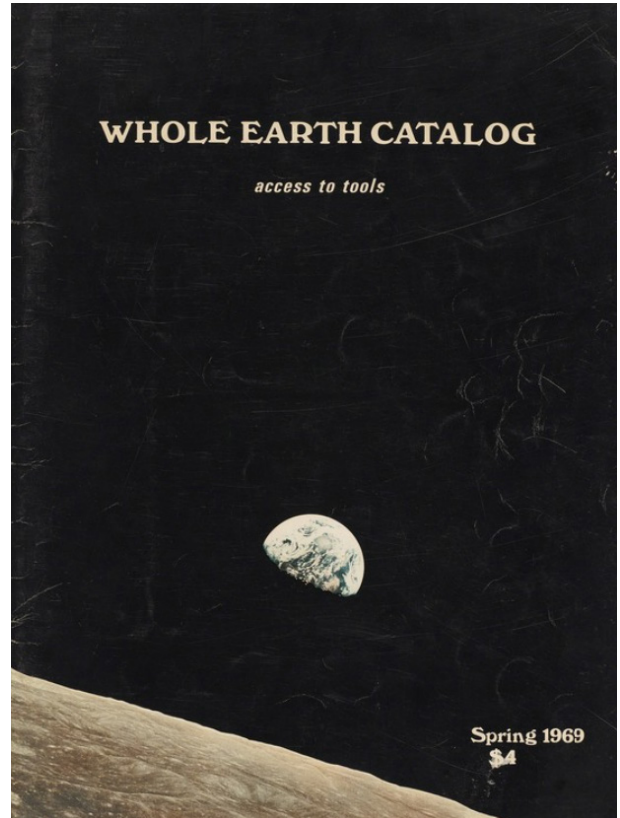


Figure 2. Cover Page. Whole Earth Catalog, Spring 1969.
(Photo courtesy of Stewart Brand)

Mail was for publishing requests and reviews from readers. Events among readers were also organized occasionally at the Whole Earth Truck Store, the base of the catalog. By boosting knowledge and experience sharing among readers, the catalog did not only solidify the community network, but also challenged institutional knowledge monopolized by experts.

In the Whole Earth Catalog, the debate over scale can not be simply explained as one conclusion but always about the relationship between individuals and the larger ecosystem. The debate proceeded through multiple perspectives related with the self-production practice in 1960s communes. The self-education aimed at breaking down the monopoly of knowledge by authorities and empowering individuals. The handmade life echoed to the ideal of reconnecting with the whole ecosystem while emphasizing the position of oneself in the network. Appropriate technology as tools got people out of the industrial system, promised personal control over technologies, and at the same time, explored new ways to live with nature. Ultimately, the Whole Earth Catalog represented a possibility of life which is based on individual actions but also always interacted with the system.

3. Architecture as Action

Born in the early stage of global industrialization, modern architecture went hand in hand with the positive belief in mass production and standardization, welcoming a universal lifestyle. Le Corbusier made his famous claim “The house is a machine for living in” in *Towards a New Architecture*.²⁸ He formulated five points of “new architecture”: the pilotis, the free plan, the free facade, the long horizontal sliding window and the roof garden.²⁹ The rational model of architecture composed of standard components echoed the need of construction efficiency in urbanization and set a clear boundary to the architecture discipline. The social-cultural protests against modern values also undermined modernist architecture in the 1960s. The once popular belief in architecture to create a better life had lost its myth. People urged more human-centered design based on daily lives. Many countercultural activists turned to personal amateur practices to find an alternative lifestyle deprived from the universal one proposed by modern architects. “Deep in any human is the builder's instinct.” Neil Smith made such a claim to promote counterculture home building.³⁰

²⁸ Le Corbusier, *Towards a New Architecture* (New York: Dover Publications, 1986), 04.

²⁹ Le Corbusier. *Towards a New Architecture*, 116-123.

³⁰ NeilSmith, “Environment for Expanded Awareness,” *San Francisco Oracle*, Vol. 1, No. 11, (1967): 08, as cited by Farber, 2016.

Just like his opposition to industrial society, Brand was also a critic of modern architecture and professional design: “God Damn architects who bore and stifle and preen their chickenyard feathers. Give us more jungle birds like this one. If their buildings are inconvenient, good.”³¹ In the Whole Earth Catalog, he encouraged personal involvement in the making of their own living environment, which led to a change in the relationship between individuals and architecture. Instead of only being a user of a finished project, the communards were also the maker. It then became reasonable that, in the Catalog, architecture was no longer a result of design, a projection of future, but was read as a process of making in which the actions of individuals were highlighted. By naming the section on the human environment as *Shelter*, rather than “building” or “architecture”, Brand indicated his intention of emphasizing its relationship with personal daily life. While contents related to the process of making the environment were actually distributed beyond this section. The following part of this chapter will disassemble the traditional concept of architecture into a series of actions: concept exploration, material preparation, construction, operation, and review each of them from the interaction between the Whole Earth Catalog and real practices. The discussion will focus on the participation of communards as the subject of actions within a larger knowledge system.

3.1 Concept Exploration: self-education and possibilities of lifestyles

As mentioned above, self-education was a key factor in the Catalog’s self-empowerment network, and Brand’s strong objection towards formal architectural training made it especially so in building one’s own home. To move the authority to build from the architect's hand to individual community residents, the builders must be equipped with sufficient knowledge. The difference in knowledge needed for education in professional and amateur practices was decided by the different roles that the architect or individual habitant plays in the design-construction process: while the architect was an outsider, away from the whole picture, the resident was an insider, prepared to go through the whole life of the building. This difference would lead to a distinctive initial concept for self-construction, which considers more in terms of real-life experience rather than those in architectural language.

The self-education on concepts and theories was represented as recommendations of books introducing ideas from various architectural classifications in the Catalog, which involved contemporary radical experiments, vernacular architecture, and even works from modern architects. The exploration of lifestyles was combined with studies of the social-cultural values of different types of architecture. It was easy to notice that the selection of books in the section *Shelter* showed a clear personal preference of the editors, full of light touches and hardly enough for a comprehensive architectural education. However, the aim of these contexts was never to produce capable ‘architects’ with professional

³¹ Brand’s commentary in “Antoni Gaudi,” in *The Last Whole Earth Catalog*, 85.

mindsets but to inspire amateurs' interest and lead them towards a certain way of thinking suggested in the counterculture movement.

In the first two years of publication, the Catalog's interest in contemporary radical architects, such as Buckminster Fuller, Paolo Soleri, and Archigram group, was pretty dominant. Their works were put on the most conspicuous pages and took up more than half of *Shelter*. One of the contents throughout the whole series was *Architectural Design*, a UK-based architectural journal first launched in 1930.(figure. 3) The magazine was a frontier for these contemporary architects under the influence of its new editor, Peter Murray, in the late 1960s.³² In its recommendation in 1969, Brand wrote "Its coverage of developments in cybernetics and cybernetics, structural systems, philosophy, use trends, etc. is extraordinary."³³ While most of these radical experiments, perhaps except Fuller's dome, were considered far from the Catalog's practical motto, Brand held a futuristic optimism in equipping readers with new ideas and exploring alternative ways of living in a cybernetic world.

Contents on vernacular architecture adapted to this narrative of alternative life possibilities as well but emphasized more on its feasibility. Brand was fascinated with how traditional Japanese lived and introduced *The Japanese House* in the first Catalog.(figure. 4) "If you are going to build your own house and don't mind some inspiration on the subject, this book was aboriously made for you."³⁴ Another book, *Japanese Homes & Their Surroundings*, was attached to it as a complement introducing interior living conditions and object culture. Later publications added more varieties. A significant one is a nomadic lifestyle featured by portable shelters like tipi and yurt.(figure. 5) These forms learnt from nomadic cultures were valued as both economic and close to land.

In *The Last Whole Earth Catalog*. Brand borrowed the famous modernist architect Frank Lloyd Wright's ideas at the start of the section to manifest the support of a self-built life in the start of the section instead of previous works from contemporary architects:

*"Beware of the architectural school except as the exponent of engineering. Go into the field where you can see the machines and methods at work that make the modern buildings, or stay in construction direct and simple until you can work naturally into building-design from the nature of construction."*³⁵

³² Dennis Sharp, "Monica Pidgeon: Influential editor of 'Architectural Design' for more than 30 years," Independent, Nov 12, 2009, <https://www.independent.co.uk/news/obituaries/monica-pidgeon-influential-editor-of-architectural-design-for-more-than-30-years-1818794.html>.

³³ Brand's commentary in "Architectural Design," in *Whole Earth Catalog*, Fall 1969, 29.

³⁴ Tassajara Zen Center's commentary in "The Japanese Home," in *Whole Earth Catalog*, Fall 1968, 16.

³⁵ Frank Lloyd Wright, *Writings and Buildings: Frank Lloyd Wright*, selected by Edgar Kaufmann and Ben Raeburn (New York: New American Library, 1960), as cited by Brand, 1971.

This provides an inner perspective to rethink modernist architecture and well concluded the meaning of self-education in architecture practice. Nevertheless, self-education is a repetitive action throughout the whole process in the following sections. Every step could be read as a composition of knowledge and practice. The enrichment of oneself and the action launched by oneself keep interacting with each other and establish strong ties between the self and a larger knowledge system.

3.2 Material Preparation: sourcing and private experiments

The construction materials introduced in the Catalog showed great diversity, which echoed Brand's promise of providing communards with tools for various possibilities. The emphasis on materials was most evident in *The Last Whole Earth Catalog*, where materials were used to categorize different types of architecture on page notes. Both new and traditional construction materials were given equal attention, and their properties and sources were elaborated within a larger system, industrial or natural, included in other sections of the Catalog beyond *Shelter and Land Use*. Self-education on materials was given much importance to equip readers with sufficient knowledge to start the construction practice.

In the Catalog, new materials had a close relationship with the exploration of new structures in contemporary architecture, which came along with its support of technology use in communities. *The Last Whole Earth Catalog* introduced books about the properties of various industrial construction materials, especially plastic, in the *Industry and Craft* section. The new interest in plastic was linked to the attention paid to tension and inflatable structures. In the review of *Plastic in the Modern World*, Rosenthal suggested it was for people “longing for a comprehensive review of the world of plastics and/or some good solid reference material on the subject.”³⁶ The *Industry and Craft* section covered a lot of content on basic science and engineering theories, which supported a thorough understanding of materials in the industrial chain.

Vernacular materials, on the other hand, represented the connection between oneself and the natural system. The most common material for vernacular construction in America was timber, which had the potential to be directly acquired from the land. Starting from the second publication, the Catalog added a small section *Seeds and Trees* to provide information on seeds supplies. Later, it added more content on the properties of trees. In *The Last Whole Earth Catalog*, a page was named *Trees & Saws* under the *Land Use* section, which integrated all relevant information on tree species and harvest tools. However, despite this potential, the deep-rooted timber construction tradition in rural America had already established a mature wood market, which most communities still relied on to acquire wood in reality.

³⁶ Michael Rosenthal's commentary in “Plastic in the Modern World,” in *The Last Whole Earth Catalog*, 129.

While recycling was another source of wood used for construction. The Catalog provided information on materials sales for both vernacular and new materials, which, as industrial products, relied heavily on supply chains. This ‘promotion of goods’ section was the Catalog’s compromise with consumerism and the mass production system out of practical considerations.

Additionally, independent experimentation with new materials from the land were encouraged. This kind of experiment was common among communities due to economic and sustainable considerations. The Catalog published some people’s sharings of their experiments. There was an interaction between people who would like to build with stone and who had the knowledge of doing so.(figure. 6-7) The reply elaborated how to identify different types of rocks for construction in the environment, and the editor added one chapter on stoneworks. Most of these experiments were not practical compared to more traditional approaches. Kinkade recalled their failed attempts to build with rammed earth and tobacco sticks due to lack of experience: “Brian did not make any kind of connectors for the struts of the dome and just hoped they would stay together with staples.”³⁷ But it did, in some way, inspire personal creativity in living with nature.

3.3 Construction: guidebook and “how-to-do-it”

Construction was a core part of the whole self-build practice. It is no wonder that various kinds of guidebooks on construction techniques took up the largest section in the *Shelter and Land Use* category. Unlike books exploring ideas and concepts, guidebooks introduced a specific way of self-education which was not through knowledge, but through action, or “How-to-do-it.”³⁸ It was meant to involve the entire body of communards. They expected readers to follow the guides and transfer them into real practice. The key perspective of this “how” was how to deal with materials. In this way, the construction activity was a spontaneous growing process from material to the final form, which included material manufacturing, joint making, and assembling. The techniques were closely related to materials’ properties rather than the final result. The Catalog emphasized combining the contents of the books and real constructions together. According to the review Smith wrote for *Canadian Wood Frame House Construction* in the 1970 fall publication:

“Best way to learn to become a carpenter is to get some wood and a few tools and put them together somehow, however you can, practice, know the material and what you are trying to do with it. Then, when you are ready to build something, either find someone who has built something, or take a good long look at what you are living in now, or read a book. We carry a

³⁷ Kinkade, *A Walden Two Experiment*, 93.

³⁸ Brand’s commentary in “House Carpentry Simplified,” in *Whole Earth Catalog*, Spring 1969, 23.

bunch of carpentry books, their main worth is in the diagrams. From them you can figure out how other builders do it."³⁹

This evaluation did not only work for carpentry guidebooks but also for books on dealing with other materials, including various vernacular materials and experimental practices with plastic mentioned above. Not only the value of guidebooks in terms of teaching skills was put behind learning from real experience, but also their contents were regarded as a copy of others' work in reality. It was also represented through the selection of drawings for book reviews. Besides necessary technical drawings on joints, the Catalog put on a lot of diagrams and sketches which were easy to understand and follow. Many of them would include figures to involve readers in the construction process.(figure. 8-9) In the end, the guidebooks were not regarded as the replacement for real experience teaching but as supplements for those who may be lacking the skills, which "we've forgotten to do" but still remained instinct for people who had never left the industrial system.⁴⁰ To practice construction work was to break 'the Building Expert Mystique' and revive the body's nature to work with materials. The final projects were never the same model copied from the books, but improvised according to various situations and truly belonged to the builders themselves.(figure.10-11)

"How to use tools" was another perspective of this "how-to-do-it" discussion, which came along with the dealing of materials but also got independence when it came to small-scale technologies. It was often combined with information about products and appeared in the *Industry and Craft* section. Much of this discussion was combined with the use of technology for maintenance, which will be elaborated more in the following section.

3.4 Operation:energy and appropriate technology

The operation and maintenance of houses ensured getting the house into real daily use, and therefore, essential to the living experience. One necessary matter to consider is energy. Brand was a strong advocate of the use of new energy sources, such as solar and wind energy, in combination with small-scale technology, that could be directly used for independent houses. He quoted Goldfarb's poem which praised the solar-heated rhombic-dodecahedron in *The Last Whole Earth Catalog*:

³⁹ J.D. Smith's commentary in "Canadian Wood Frame House Construction," in *Whole Earth Catalog*, Fall 1970, 27.

⁴⁰ David Farber, "Self-Invention in the Realm of Production," 417.

*“A man is blessed who assists in the building of a solar-heated-rhombic-dodecahedron. I don’t mean to say technology itself is holy. I mean heat rises. Rocks preserve heat. Asymmetrical dwellings can stand by themselves if properly arranged.”*⁴¹

Contents on new energies were categorized into the *Land Use* section in the Catalog, which strongly corresponded to the ideology of living independently while closely with nature. “They aren’t new sources; they are the oldest.” Wrote by Rosenthal in the review of *New Sources of Energy*, “The prospect of a truly self-contained habitable energy system is a romantic country.”⁴² To live in such a self-sufficient natural system was to get independent of the industrial energy supply in cities, which could be achieved through the use of “appropriate technology”, as discussed in the first chapter. The Catalog provided information on generators working with natural energies, such as wind generators, solar stills, and wood burning circulators.

Moreover, when studying new energies and appropriate technology for making a living environment, it was essential to note their value in unifying the structural and technical aspects of architecture, which were often segregated into two scales in mass-produced apartments. The infrastructure in cities was replaced by an independent operating system based on the scale of a house in the communities. In a self-built house using small-scale energy generators, residents could have full control over the artificial climate while keeping close to the sources. Besides products, this unification was better represented as guidebooks on operational systems in the Catalog such as *Practical Handbook of Plumbing and Heating, Wiring Simplified*, and some other contents in the *Audel Guides* series. In these guidebooks, the maintenance of the house was not regarded as a separate technique issue but as a supplement to the construction process.

In some cases these two practices were just integrated into one. In the review of *Your Engineered House*, Kahn wrote “This is an easy way for a beginner to frame a house (as opposed to stud-wall construction), and it gets a roof over your head right away.”⁴³ Starting to design a house from technical considerations was regarded as a practical and easy approach for amateurs like readers, which turned away from architectural expertise and focused on “a discussion and treatment of homes as human environments.”⁴⁴ The *Owner Built-Home* section was an intriguing example of this approach, as it not only introduced the book but also offered building suggestions based on the site and needs from expertise.(figure.12) In the communication between amateurs and the expert, all considerations, from

⁴¹ Sydney Goldfarb, *Speech, for Instance: Poems*, (N.p.: Farrar, Straus and Giroux, 1969), as cited by Brand, 1971.

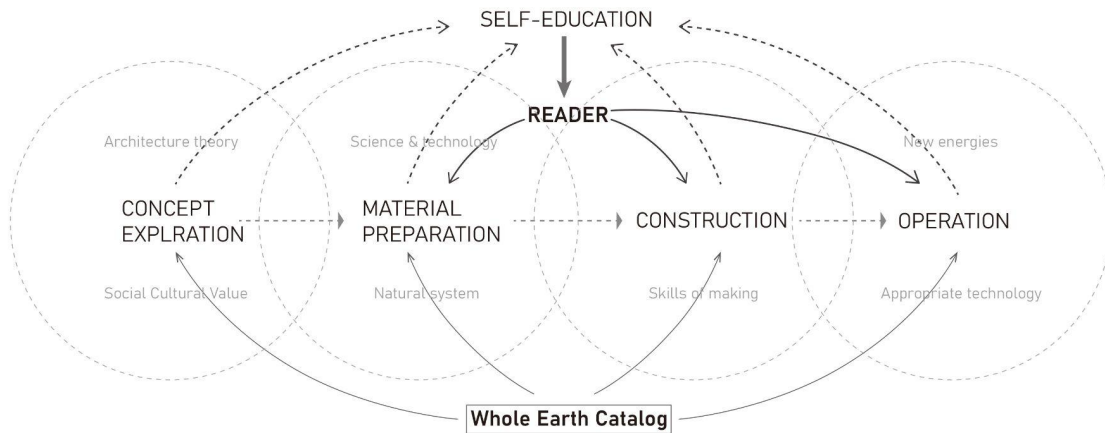
⁴² Michael Rosenthal’s commentary in “New Sources of Energy,” in *Whole Earth Catalog*, Spring 1970, 38.

⁴³ Lloyd Kahn’s commentary in “Your Engineered House,” in *Whole Earth Catalog*, Spring 1969, 22.

⁴⁴ Lloyd Kahn’s commentary in “Your Engineered House,” in *Whole Earth Catalog*, Spring 1969, 22.

the site, space, and technical issues, worked towards one same purpose, which was to make a place to live in.

3.5 Conclusion and Supplements



The Catalog serves as a public realm, which was composed of objects and allowed the actions of individual beings to be seen. Recommendations of books covered a wide range of fields and served for self-education orientated by alternative lifestyles. Guidebooks extended knowledge education to the involvement of the entire body and emphasized the connection between learning and making. Technical products strengthened this connection by providing physical tools in people's hands. The participation of amateur builders throughout the whole life of architecture resulted in architecture in the communities being more of a result of knowledge interactions, materials compositions, and human actions. The existence of individual beings, practices of architecture in communes, and the network of knowledge provided by editors kept interacting with each other through the Catalog. For better understanding, the previous part of the thesis categorizes contents into linear sections. However, the Catalog's approach to architecture was much more complex. The following part will add some points as supplements to the classification above.

The first thing to note is that, while the Catalog viewed architecture more as a spontaneous result of actions, the traditional architectural logic of 'how to make a form' was still represented in specific cases. These forms were given symbolic meanings in the community movements, where meaning,

form, and construction were inseparable. One famous example is the dome of Buckminster Fuller, whose work was a significant inspiration for Brand and many communes. “To some people, the word ‘commune’ and the words ‘geodesic dome’ are so firmly associated that they cannot imagine one without the other.”⁴⁵ The popularity of the dome led to a lot of relevant content being reviewed in the Catalog. Besides book recommendations, the editor of the *Shelter* section, Lloyd Kahn, published his own guidebooks on the dome, *Domebook One* in 1970 and *Domebook Two* in 1971, based on the foundation of the Catalog. The content of the books covered everything from basic geometric knowledge to various Dome experiments with different materials and details of construction like sealing and openings. In the story of the dome, the material or technique used for construction, even though still necessary, was no longer the core of the narrative. What mattered is the final form as a Dome, and the value of unity and equality it represented.

Another important point is the back-and-forth between the different stages of architectural practice. Not only the boundaries in-between them were not quite clear, but also the real practice did not always align with this sequence. Guidebooks on construction techniques also provided inspiration for alternative lifestyles, as the techniques always represented the cultures behind them. In the case of *Owner Built-Home*, operational considerations were put as the initial stage to start construction before structure. There were also other activities not directly involved in this process but still crucial to the making of the environment, such as land survey, which is related to specific site conditions in communities.

Finally, the Catalog underwent continuous refinement and adjustment throughout its publication years. The first Catalog in 1968 introduced only a few specific building types and limited technologies, like the dome and tipi, with little attention to other stages of architectural practice. However, later publications included more varied and systematic content. The 1969 Spring publication first included guidebooks related to specific materials. And in the 1971 Fall one, the editor added sections named *Water and Electricity* for operation issues. *The Last Whole Earth Catalog* was no doubt the most comprehensive one with the most information and the clearest classification. Each page was given a unique subtitle for easier research. Within the *Shelter* section, as previously noted, pages were mainly named after materials, through which content spanning different stages of architectural practice was organized in a cohesive manner. The systematic thinking of architecture as a series of actions was not immediately apparent in the early years but developed over time through continuous supplement and adjustment of contents, as well as constant interactions between the editors and feedback from readers’ real practices.

⁴⁵ Kinkade, *A Walden Two Experiment*, 97.

Architectural Design

This is the only architectural magazine we've seen that consistently carries substantial new information, as distinct from the stylistic eyewash characteristic of most architecture journals.

After a year of watching and using AD, it's clear that this is much more than an architectural magazine. It prints lots of news of American creative doings months before any U.S. publication. Its coverage of developments in cybernetics, structure systems, philosophy, use trends (e.g., communes), etc. is extraordinary.

Architectural Design
\$13.50 postpaid for one year (monthly)

from: Architectural Design
 26 Bloomsbury Way
 London W.C. 1

AD

DESPITE POPULAR DEMAND.

plendit... I have a divine idea.

His second was a world of perfect crystals. That was fun; there were 230 different types, all aesthetically intriguing. But each crystal was homogeneous, and therefore rather inert. It was a cold world (near zero), and left him dissatisfied. What he wanted was a blend of order and diversity, enough order to be pleasing and enough diversity to be continually forming new patterns, its fertility born of difference. Then he thought "Splendid, I have a divine idea. My next universe will be the scene of two competing tendencies: morphic processes generating three-dimensional geometrical order, and entropic processes leading towards dynamical disorder. That will make for unending variety, and when they're fluctuating nearly in balance something extraordinary will occur. The morphic processes will keep building ordered units and forming a great hierarchy of structural levels, from parts to wholes, while the entropy processes will tend to disperse the hierarchy. This subtle fluctuating balance will be called "life" by systems that display that vitality in a special mode to be called by them "thinking"."

I REPRESENT THE HIGH CAPITAL COST, LOW RUNNING/OPERATING COST SITUATION.

Bully for you, all them

Ford

Cauld? Pargul? Cull?...one of the most obscure structures in existence.

Peter Brookes/Dad

It is worth noting that the piezoelectric effect has been observed in a number of organic materials, among them wood, bone, tendon and skin and the argument has been put forward by Chagnon and Levine and others that the piezoelectric properties of these fibrous polymeric materials function as stress-sensing devices in living organisms and could account for the evolutionary and self-organizing structural characteristics of living things. In wood, stress concentrations due to wind loads would produce an electric potential proportional to the stress in any part of the tree, which might act as a growth signal, causing greatest growth in the parts that are stressed most.

As a combined sensor/effector device the possibilities are even more exciting. The most obvious and immediately valuable—if vaguely banal—proposition is that of producing a compression structure with infinite stiffness.

Figure 3. "Architectural Design," Whole Earth Catalog, Fall 1969. (Photo courtesy of Stewart Brand)

The Japanese House

Without getting all sentimental and exotic we're still going to agree that Japanese make better houses than anybody else (they also have the fastest growing economy in the world, but that's another story—or is it?). If you're going to build your own house and don't mind some inspiration on the subject, this book was laboriously made for you. It's a great big Christmas present of a book full of yummy photos and diagrams and details of technique, all of which seems right within reach: I can do it. Nice cure for nothing-can-be-done-because-it's-too-expensive-big industrial blubs.

(Suggested by Zen Mountain Center)

\$27.50 may choke you up, in which case get *Japanese Homes and Their Surroundings*, \$2.50 from Dover Publications—straight information on how to hand-make a lovable environment.

SECLUSION IN BUILDING is an essential instrument for establishing, or preserving, the freedom of man. Far, only in solitude can man escape from the coercion to which he is subjected when among the masses

The Japanese House — A Tradition for Contemporary Architecture

Heinrich Engel
 1964, 466 pp.
\$27.50 postpaid

from: Charles E. Tuttle Co., Inc.
 Rutland, Vermont 05701
 or WHOLE EARTH CATALOG

Japanese Homes and Their Surroundings

Edward S. Morse
 1880, 1901, 372 pp.
\$2.70 postpaid

from: Dover Publications, Inc.
 180 Varick St.,
 New York, N. Y. 10014

\$2.50 postpaid

from: WHOLE EARTH CATALOG

21

Figure 4. "The Japanese House," Whole Earth Catalog, Spring 1969. (Photo courtesy of Stewart Brand)

The Indian Tipi

Tipis are cheap and portable. To live in one involves intimate familiarity with fire, earth, sky, and roundness. The canvas is a shadow-play of branches by day, people by night. Depending on your body's attitude about weather, a tipi as dwelling is either a delight or a nuisance. Whichever, you can appreciate the elegant design of a tipi and the completeness of the culture that produced it.

The Laubin's book is the only one on tipis, but it is very good. All the information you need, technical or traditional, is here, and the Laubins are interesting people.

Later we discovered that the idea of a ventilating pipe underground to the fireplace is the very best way of insuring a clear lodge and the most heat.

It is a joy to be alive on days like this, and when we come back to the tipi, after a long ride or a hike in the mountains, the little fire is more cozy and cheerful than ever. The moon rises high in the late fall nights, and when it is full, shines right down through the smoke hole. Its pale white light on the tipi furnishings, added to the rosy glow of the dying fire, is beautiful beyond description.

Indians had definite rules of etiquette for life in the Tipi. If the door was open, friends casually walked right in. If the door was closed, they called out or rattled the door covering and awaited an invitation to enter. A shy person might just cough to let those inside know he was waiting. If two sticks were crossed over the door, it meant that the covers either were away or desired no company. If they went away, they first closed the smoke flaps by lapping or crossing them over the smoke hole. The door cover was tied down securely and two sticks were crossed over it. The door was thus "locked," and as safe in Indian society as the most strongly bolted door would be in our civilization today.

The Indian way of attaching peg loops, as illustrated, is not only ingenious but easy and sturdy—far better than either sewn or stampered grooves. Insert a peg about 1/2 of an inch in size on the under side of the cover about six inches above the edge, at a point wherever possible, and around this peg tie a piece of 3/16-inch cord. Double the cord, tie it in either a square knot or a clove hitch about the outside, then join the free ends in a square knot. Marbles will do if you cannot find smooth round pebbles.

The Indian Tipi
 Reginald and Gladys Laubin
 1957, 208 pp.
\$4.95 postpaid

from: University of Oklahoma Press
 Sales Office
 Faculty Exchange
 Norman, Okla. 73069
 or WHOLE EARTH CATALOG

Shelter & Land 19

Figure 5. "The Indian Tipi," Whole Earth Catalog, Fall 1968. (Photo courtesy of Stewart Brand)

3. Earth is great in warm climates, but in any moderate or cold climate it'll give you the rheumatism by thanksgiving time.
4. I built using an African technique that lets you build domes and vaults without formwork. Thus the whole house, roof and all, is dirt, and that's cheap (about \$1/square foot for materials). None of your references cover this sort of thing. Two troubles remain, however:
 - a) It still breaks your back and takes forever.
 - b) This type of construction shrinks and cracks a lot more than adobe or rammed earth—a real problem.

Edward Allen
Wellesley, Massachusetts

For Stone Houses

I read the letter about rocks for building purposes [p. 21 in the March Catalog]. I'm a geology major, and think I can help a little.

First, he says the land is covered with volcanic rocks. These will fall into three types

1. Dark, heavy, fine grained basalt.
2. Glassy massive obsidian, various colors.
3. Light weight cellular pumice or scoria.

Of these three, the basalt is the best for building. It's tough, very hard, and weathers slowly. The obsidian is essentially glass, and though stronger than steel, it is easily broken. It is strong enough to build with, but may be too non-porous and smooth to mortar together. It also weathers slowly. The pumice and scoria is no good for uses requiring standing weight, such as a wall. However, it will make an excellent insulator for hollow walls or sub floor fill.

If the rocks are of many different types, you will have to examine each type for three necessary characteristics:

1. It should be hard and heavy.
2. It should be fine grained.
3. It should not weather appreciably.

To check weathering, break the rock and match the fresh surface to the old surface. Only a slightly faded appearance on the old surface is permissible. A different color on the outside as compared to the inside is indicative of severe chemical weathering. Also check the hardness of the weathered surface. If it is flaky or crumbly, it's no good.

Also check the well rounded rocks in any stream beds which may be on the property. These rocks are often the most resistant and hardest

Roy, L. Porter
Virginia Beach, Virginia

Stone Works

Stone walls & buildings. These are actually weaker than they look. It was the wood frame houses that survived the Alaska earthquake. Cement got no give like wood & stonework is much slower than carpentry.

Still it looks like all time and we went ahead. In planning make sure your foundation extends deeper than the frost will. Here in Maine frost heave is a prime consideration for a stone building could easily be cracked to bits.

Surround the foundation with rocks of any size & type up to grade to allow for movement. Don't pack dirt in there.

As for type of rocks to build with, granite is best. Save your really square stones for corners. Stratified, slate, etc. (I don't know the geological terms) are no good. These sedimentary types are porous and the water they suck up will expand/contract and you're in trouble. If you toss it down on the pile & it shatters there you are. But don't slam it cause anything would crack from that.

Use forms to get the straightest walls. Within these you can lay up vertically faster than without, but time saved is lost putting the forms together so the outside surface should be the consideration for forms. Our walls are straight enough to sight down tho it's a personal aesthetic.

Even with forms, don't just toss the rocks & mortar in. A strong beautiful wall is laid up rock by rock. No other way. I worked with a mason of 60 years to learn to lay fieldstone. Practice is the way. Knowing which rock to choose from your pile. Like a puzzle with no two parts the same. Choosing the wrong rock means that your work comes down on your feet. (So don't be barefoot!) Also cement contains lye that burns like brimstone. Wash the stuff off afore it eats your very hide. After a few weeks you'll have to wear rubber work-gloves as your hands will be most tender. An old Maine stonemason told me that "Even a round rock has a flat side if you can find it."

After building a while you'll understand this. Lay up a rock for strength always thinking of the rock that will rest atop it. Don't be cheap with the mud (cement) but learn what it won't do. Sometimes a rock will get a better bite on another when they're dry & just have cement around their edges. Like bricks only more tricky. If you decide to eyeball it (build without forms) stretch 2 strings down your outside dimension & lean over & sight down. When you only see one string that's your limit. Careful that a rock doesn't protrude & throw your line off. It's easy to build it too wide.

Have a large pile of rocks to choose from. Tiny to fist size stones are what you need to trig up the biggies that wobble. Little triangular shapes are best. Build a wall that rests on rocks tho, not tiny trigs or cement. The old timers here built walls without any kind of mortar (!) but just skill in laying. Those walls are still solid 130 years later. So LAY up your rocks, don't glue them up.

Progress right around your foundation a layer at a time so that when you come back to the starting point you'll be laying on dry or almost dried wall. This isn't possible if you're using forms. This because you have to build right up several feet & then move this whole rig down the line.

We built a building 30x36x11 with foundations 4 feet deep on a 1 ft. poured concrete footing. Wall thickness was 1 1/2 ft. up to grade & a foot above ground. Solid enough for Maine but you might scale this down a great deal in a milder climate. (By the way, if you're building stone walls around an existing building it would be most simple, for you already have your forms. Accordingly if you plan to have studded interior walls go ahead & put up your studding & then cover the outside with plywood & build along that. The plywood could be removed when the cement dries & shifted for use again.)

We used an old gas engine to run our mixer. Keep cement from the motor & you'll be ok. Rocks are plentiful in Maine. For special rocks try the seashore or a tombstone dealer for scraps. We got lots of colored marble & granite for a six-pack of Schlitz. Some states forbid selling old tombstones but we got some fragments for the walls. Neighbors consider any messing with tombstones goulsh so turn the lettering to the inside. You may have the sheriff's grandmaw's rock.

Lay your heaviest rocks around your feet, as lifting gets hard above your chest. Favorite, sentimental, or mystical rocks stand out from eyelevel to about eight feet up. Don't bury that romantic special thing at ankle level. We tried to get a piece of the moon for our wall but NASA never came through. A few meteors might be astrologically favorable for your project. Since our walls went up eleven feet we laid from the flatbed of a 2-ton truck above 5 or 6 feet. This proved to be an ideal mobile staging with room for two masons, mortar box and a large rockpile.

When the walls are finished go back and point up around your rocks. Pointing is a mason's signature. Use pointing cement only in small batches (a mixer full will dry out before you could use it) & a small trowel. The stuff is quick drying & sticks when you flip it in the cracks.

Look around at good walls before you start. Observe or work with a mason if possible. Don't get discouraged. It takes a bit of laying to make those rocks stay up there but you can do it if you can dig it. Consult the *I Ching* on any major problem.

Mark Mendel
Dixmont, Maine



Figure 7. "For Stone House" & "Stone Works," The Last Whole Earth Catalog, 1971. (Photo courtesy of Stewart Brand)

People in Stone Houses

Friends—

Me & my old lady are gonna settle on some land east of Redding—off Highway 44 towards Lassen, about 1/2 way between the two. The land is literally covered with a volcanic rock—I'm not sure what kind, yet. Here's my questions—well, here's my plans first. I'd like to build a rock house, if that kind of rock is at all useable. NOW the questions—

Know of any good books on Rock identification & rock use (most minerology don't talk about rock use). Any on house building with rock? Which government agencies might have pamphlets & give advice to someone like me? And do you know of anyone who does this kind of building who I could write to for advice & inspiration?

Anything, now that we've blown our money on land, to cut down the cost of building a home.

Peace—

V. I. Wexner
Ukiah, Calif.

Fred: Try library under Masonry. Lots of books, out of print, so we can't carry them.

Stewart: Stone Shelters, MIT Press.

Cappy: There are lots of books on the subject, but they're all out of print, since building houses out of rock is somewhat passe. Government agencies [a very good idea] Agriculture & Interior are your best bets; just write to Dept. of _____, Wash DC & it'll probably get to the right person.

Hi, Mimi!

Do you know of any good books on rock identification and rock use? Most minerology books don't talk about rock use. Know you are very busy, and thanks if you can help. Fred

That isn't an easy question to answer; we've been debating for about a year which of two rock books to stock, as they are the only two in the field that are much good at all. One is *Kemp's Handbook of Rocks* by Grout, published by Van Nostrand (if it is still in print, I hope) and the other is *Rocks and Rock-Forming Minerals* by Pirsson-Knopf, a Wiley book (and again, hopefully still in print!) These are primarily on identification—I can't think of any book that deals with rock use per se.

Mimi

Figure 6. "People in Stone House," Whole Earth Catalog: The World Game, Mar 1970. (Photo courtesy of Stewart Brand)

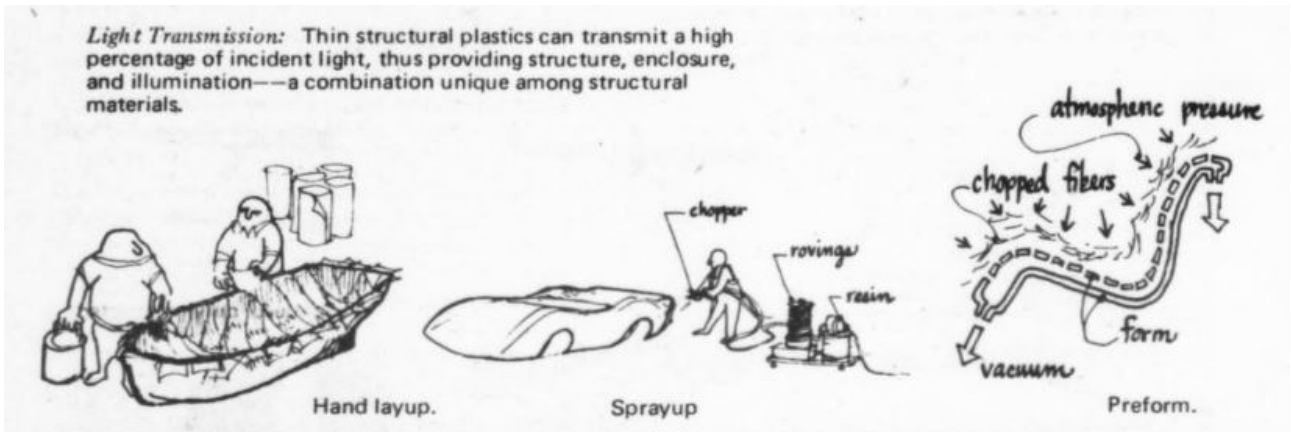


Figure 8. Diagram from "Plastics for Architects and Builders," Whole Earth Catalog, Spring 1970. (Photo courtesy of Stewart Brand)



Figure 9. Diagram from "Earth for Home," Whole Earth Catalog, Fall 1970. (Photo courtesy of Stewart Brand)



Figure 10. Joann, David, and their infant at The Chapel. Bob Fitch photography archive, Stanford University Libraries.

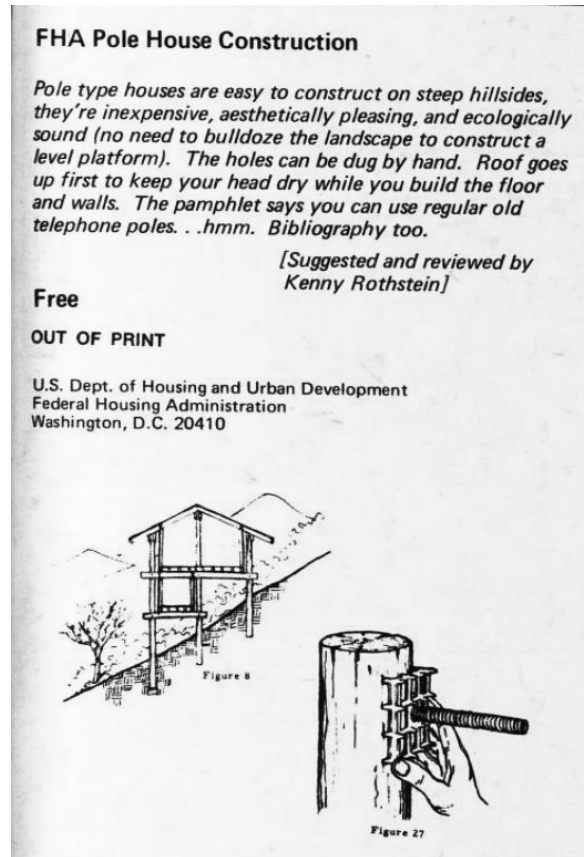


Figure 11. "FHA Pole House Construction," The Last Whole Earth Catalog, 1971. (Photo courtesy of Stewart Brand)

The Owner-Built Home

Kan Kern makes a unique offer to anyone thinking about building his own home: for \$10 he furnishes a preliminary house design, as well as a copy of *The Owner-Built Home*, which is about the most useful book on building available.

For the design, send him a sketch of your building site, along with space requirements and personal likes and dislikes; or you may prefer to get the book first and read the first chapter on "Site and Climate" before sending in the information.

The book is sound advice on the best low-cost building techniques from around the world: Africa, India, Israel: countries that cannot afford U.S.-style waste. Much of it is not in print elsewhere.

A 1" concrete floor with loading stresses of 450 lbs per sq ft; houses built of earth, woven bamboo and bottles, as well as of conventional materials. How to hook up your plumbing in a simple central core.

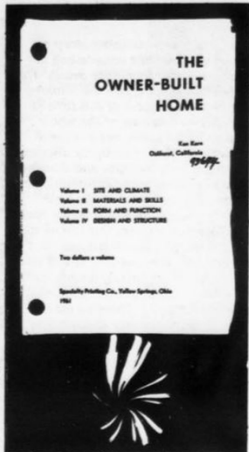
Good dope on concrete-proportions, additives such as sawdust or emulsified asphalt for "comfort cushion" floor. Details on wood framing, how stud wall houses are overbuilt, the strength of threaded nails.

There is much good data on building with rock and earth; how to make a sliding form for rammed earth and a discussion of the strength of rammed earth and soil cement. Why don't you hear anything these days about earth wall buildings?

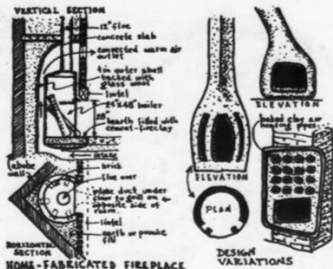
Inasmuch as there is nothing in bare earth to sell, no commercial group can be found to extol its merits.

Lots more, with a bibliography at the end of each chapter for further research. Kern is currently adding new sections to the book: homemade fireplaces, construction tools, and utilizing salvage materials.

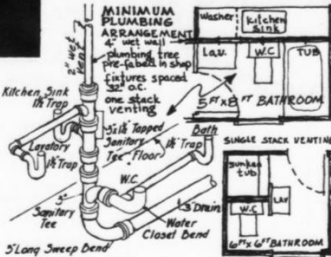
From the point of view of glare-control, the customary practice of placing the kitchen or bathroom window over the sink is ill-founded. The object requiring our attention should be the brightest thing in view. When something else is brighter, such as a glossy painted surface or a sink window, then a conscious effort is required to concentrate on the object requiring attention. Ability to see is thereby reduced, since our eyes will be adjusted to the brighter surface. A sink in a kitchen or bathroom should be placed so that the light from the window will come from the side or from the top, and not from the front.



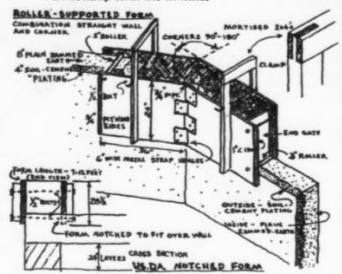
The Owner-Built Home and preliminary house design (send sketch, etc.)
 Kan Kern
 1961; 300 pp.
\$10.00 postpaid
 from: Kan Kern Drafting
 Sierra Route
 Oakhurst, CA 93644



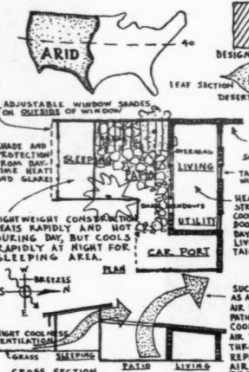
We come, thirdly, to the admixture of ventilating currents with combustion products. Count Rumford was the first to give extensive study to inside-fireplace proportions. His final rule-of-thumb is that the back of the fire-space should be equal to the depth of the recess. Deep fuel beds produce more smoke than the grate. Experience proves that the rate of smoke-emission increases proportionally with the depth of the firebox, especially in the early stages of firing.



When his new tea-room and garden were completed at Sakai he invited a few of his friends to a tea ceremony for the house-warming. Knowing the greatness of Rikyu, the guests naturally expected to find some ingenious design for his garden which would make the best use of the sea, the house being on the slope of a hill. But when they arrived they were amazed to find that a number of large evergreen trees had been planted on the side of the garden, evidently to obstruct the view of the sea. They were at a loss to understand the meaning of this. Later when the time came for the guests to enter the tea-room, they proceeded one by one over the stepping-stones in the garden to the stone water-basin to rinse their mouths and wash their hands, a gesture of symbolic cleansings, physically and mentally, before entering the tea-room. Then it was found that when a guest stopped to scoop out a dipperful of water from the water-basin, only in that humble posture was he suddenly able to get a glimpse of the shimmering sea in the distance by way of an opening through the trees, thus making him realize the relationship between the dipperful of water in his hand and the great ocean beyond, and also enabling him to recognize his own position in the universe; he was thus brought into a correct relationship with the infinite.



This book is being written in a rammed earth studio that I built four years ago. During the planning stages I made a study of numerous types of wall forms; then improved on some of the more salient features. I ended up with a type of roller-supported plywood form that can be adjusted to fit any corner angle.



Ideally, the best guarantee against capillarity is a continuous air space between floor and ground. A low cost floor of this nature was developed a few years ago by Dr. Billing of the Central Building Research Institute, India. Although described as a light duty floor, it was subjected to loading stresses up to 450 lbs. per square foot without showing any sign of distress. (Most building codes in America require a 30 to 50 lb. per square foot minimum, but in conservative residential occupancy the furniture loads seldom exceed 15 lbs. per square foot, uniformly distributed). The CBRI floor consists of a one-inch thick lightly reinforced concrete slab, resting on plunger piles. To make a hole for a pile a crowbar is driven into the ground to a depth of three feet. The hole thus made is then filled with fine concrete. The piles are spaced on three foot centers. The slab consists of two layers of concrete, each 1/2-inch thick, spread over Hessian, a form of burlap. After a few weeks the loose earth filling settles and an air space is formed under the slab which finally rests on the concrete piles. An effective heat insulation results: the floor is cool in summer and warm in winter.

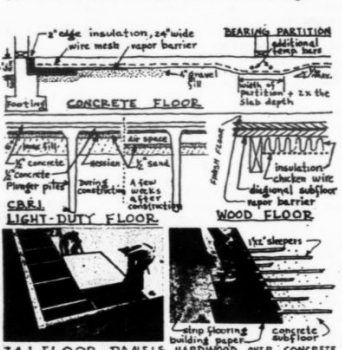


Figure 12. "The Own-Built Home," The Last Whole Earth Catalog, Fall 1969. (Photo courtesy of Stewart Brand)

4. A Story of a Communard

As discussed above, the involvement of communards and their interaction with the *Whole Earth Catalog* were important factors in commune architectural practice. In order to provide a more concrete illustration of how the Catalog was utilized in these practices, this chapter will introduce a fictional character who lived in a commune during the early 1970s and tell her story of building her own home with the Catalog in first-person narrative. This figure serves as a Pars Pro Toto, embodying the experience of thousands of communards during that time, and helps to explain the self-empowerment effect that the Catalog had on its readers.

1970 Spring

I finally made up my mind to leave my mundane, meaningless city life and move to a commune with two friends. Residents in the community welcomed us warmly, but they told us that currently, there were no available rooms for us. If we planned to stay here for a long term, we had to build our own house. We got excited about the idea of starting a new life by making our own home. After settling down in a small cabin temporarily, we initiated our plan by searching for the type of building we wanted. An older member recommended the Dome to us as soon as he heard about our plan. He showed us a book called Domebook One and couldn't stop talking about how the dome is exactly for us commune residents. The book was interesting to read with many cases in other communities, but we were worried about its practicality in terms of waterproofing as well as space efficiency. As this would be our first time to build, we didn't want to take any risk to try such new things.

Then, another member led us to the library of the community, where he showed us some big block books named Whole Earth Catalog. "We are all fans of this series." That guy told us, "Stewart is a real genius, you can find almost everything you need to construct a new house here, even being a newbie. And you definitely will enjoy reading them." The books did amaze us. We had never seen anything like this before. Compared to normal magazines, reading them was more like walking in a shopping mall to pick up goods.

Our expectation of life here was very simple, self-sufficient, and close to nature. While the possibilities provided by new technologies like plastic were quite inspiring, we paid more attention to those vernacular materials which came from the environment. One of my friends got fascinated with the description of primitive stone shelters. However, we had no idea where to get so many stones. In the end, we agreed that an earth home made of pressed blocks would be a good choice since the material was "the cheapest and most abundant" and the blocks would be easy to produce with the machine.⁴⁶

⁴⁶ Charlie Tifford's commentary in "Earth Homes," in *Whole Earth Catalog*, Spring 1970, 27.

Furthermore, a house made out of soil sounded quite natural and sustainable! As no one's familiar with this technique, we finally ordered the Handbook for Building Homes of Earth from the Catalog and purchased a CINVA-RAM moulder recommended by it. In the meantime, we sketched our site and sent it to Kern together with some thoughts about our earth home to ask for more technique suggestions.

1970 Summer-Fall

After receiving the book and feedback from Kern, we set to work on preparing materials. We realized that we would need timber to make the framework for the house. When we tried to contact a carpentry company and order tools from the Catalog, a fellow member of the commune stepped in, offering instructions on wood craftsmanship and leftover materials from his own house construction. This was definitely good news for us, as we were lacking in funds. With his guidance and our own hard work, we learnt the skills pretty fast. Within a month, we were able to build the roof framework ourselves! Although exhausted, we felt immensely satisfied and proud of ourselves.

After a short break, we moved on to constructing the rammed earth wall, following the guidebook we ordered step by step. The first challenge was to get the right soil. We did research around our site and tested the soil under the book's instructions. Then, we stabilized the soil by mixing it with cement. Using the CINVA-RAM moulder, we produced dozens of blocks and began to build based on our sketches and Kern's feedback. The house would include three bedrooms, a toilet, and a small living room. The Catalog also helped a lot when we looked for supplies of sundry materials to furnish the house, like glass and waterproof membranes. We continued to order new materials from the Catalog throughout the entire process of construction. However, I have to mention that the CINVA-RAM moulder was absolutely not as easy to use as the Catalog said.

*While working on the structure, we also kept technique considerations in mind. Energy was a problem quite far away from us while living in the city, but now we had to take it seriously. By that time, the community already had a lot of electricity generators, but the idea of renewable energy was quite appealing to us. "There you are with your friends on your hill putting sun and wind through useful changes that are not only apparent to you but an integral part of your living."⁴⁷ What Rosenthal described was exactly what we wanted. With the assistance of other communards, we installed solar panels on the roof and wired our home according to the book *Wiring Simplified*. Since winter was coming, we purchased a stove to ensure a comfortable indoor temperature. By the end of October, the whole project was almost finished, and we began moving in while adding furniture for daily use. In November, we hosted a party in our new home and invited other members of the commune. Living in a*

⁴⁷ Michael Rosenthal's commentary in "New Sources of Energy," in *Whole Earth Catalog*, Spring 1970, 38.

home built by ourselves was unimaginable for us while living in the city, but we really managed to do it in just a few months! All thanks to our friends and the Catalog!

Later

*In the following years, we did some maintenance work regularly for our home. It was amazing how much I learnt from this process. When I arrived in the commune, I was some spoiled child who knew nothing about where things came from or how things worked. I was a mere consumer relying on supply chains for everything I needed. However, the experience of building our home let me realize that it was not impossible to learn the skills and survive on our own, on nature. As one communitarian once described, "All you have to do is start. And then the house does it. It grows. And you serve its growth."⁴⁸ I learnt in multiple ways, from others or from books. And the skills I learnt also helped me a lot in our following years living in the community. I got so excited about my building experience that I wanted to share it with more people, so I wrote a letter to the Catalog about our story of making an earth home. In 1971, a couple moved to the community and hoped to build their own home like ours, and we provided our assistance to them. During the construction, *The Last Whole Earth Catalog* was published. It was an even much more comprehensive one than its previous versions, which included more choices of how to build a home. Even though I no longer needed it for construction, I still enjoyed reading it and exploring the new information it provided.*

And what was more important than the skills we learnt was a lifestyle, which was integrated into our daily lives over the years. I had never lived so independently but simultaneously, so close to nature before. Everything in our home was made by our own hands. I could still remember how we made it when I saw a brick or a wire. And my body also remembered every action, every sense of the materials. The existence of myself was never so clear. While at the same time, I lived in a house made of earth, using energy generated from sunshine, sheltered by a roof constructed of materials from others. I had never so clearly realized that I live in a system like this. Everything was interconnected. The home didn't exist by itself, every part of which was a result of interactions between myself and the world.

⁴⁸ Feather, "Build Your House To Suit You," *Country Women*, No 9, (January, 1974), 2-3, as cited by Castillo, 2018.



Figure 13. Construction of roof framework in Twin Oaks Community, 1960s. (Photo courtesy of Ray Jesse Blatt)

Dome ✗

Shelter and Land Use

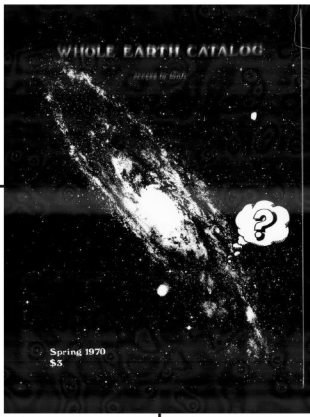
Domebook One
 A book like this first for domes, with detailed step-by-step construction on building different types of domes, most of them geodesic.
 A variety of the best describes domes built as part of the curriculum at an experimental high school, several of the structures built almost entirely by 15-17 year olds.
 There are both simple and detailed explanations of geodesic geometry, exterior photos of the different domes, interior floor plans, and sketches of details.
 Geodesic, about factory construction that allows you to calculate exact lengths for different size domes are published back for the first time - can be 8' diameter for "College Bookroom," 10' for "University for "Urban Institute."
 The value of the dome design is emphasized; the purpose of the book is to communicate the builder's experience. Exchange of the authors is to increase individualized home building, construction, & progress.
 [The above is a light trying to review his own book. He's done the same thing, and you can see why.]



We have 100 more domes like this in about 1000 pages. Most of these are on building domes here in 17 years old.
 See and see the book in person at the 8th Annual International Geodesic Conference in San Francisco, California, 1970.
 A limited time offer: \$10.00 per copy, plus shipping and handling. The address happens to be in the same place as the publisher's address, but you can order by mail.

Domebook One
 1970, 160 pp.
 \$3.00 postpaid
 See more \$2.25 each
 from: Whole Earth Catalog
 Order quantity please.

from: Dennis
 Box 100
 Los Gatos, CA 95030
 or: WHOLE EARTH CATALOG
 Order quantity please.



STORY OF CONSTRUCTION BY WEC

Concept

Plastic ✗

Stone ✗

Earth ✓

Modern Plastics
 The most complete book for builders and hobbyists. It is designed to help you select the right plastic for your project. It includes information on plastic properties, manufacturing, and processing. It's full of ideas and there's no need to go to a plastics store. A manual that meets the needs of the home builder, the professional, and the hobbyist.
 \$10.00 postpaid
 from: Modern Plastics
 1199 G Street
 Tacoma, Washington 98401

Stone Shelters
 This is an utterly beautiful book, a study of the people, history, geography, and vernacular architecture in a small area of southern Italy known as the Murge di Trulli.
 The several different types of stone shelters of the region are covered in detail, including some dwellings built from solid stone, unroofed stone domes called trulli, and others built with "ragged patchwork technique" by the masses of itinerants.
 The book is primarily concerned with how the architectural forms came into being and how the building techniques derived from the needs of the builders.
 Descriptions and text are clear, photos superb.
 Stone Shelters
 Edward Allen
 1968, 158 pp.
 \$13.50 postpaid
 from: The MIT Press
 50 Anna Street, Room 705
 Cambridge, Massachusetts 02142
 or: WHOLE EARTH CATALOG



Handbook for Building Homes of Earth
 No. FB 179 227
 \$3.00 postpaid
 from: U.S. Department of Commerce
 Clearinghouse for Federal Scientific and Technical Information
 Springfield, VA 22161
 Rammed earth walls are made by tamping moist earth into forms. The walls are rammed directly upon the foundations and in sections. The forms are similar to those used for concrete except they must be stronger.
 One distinct advantage of rammed earth construction claimed by its proponents is that the earth used to make the walls requires less handling than is required by any other form of earth construction. Many believe that this advantage more than offsets the disadvantage of the heavy and relatively complex form which must be periodically moved and carefully levelled as the work progresses.
 Fig. 36. Chink 808 molder for the production of an concrete block, respectively blocks.

The Owner-Built Home
 Ken Kern makes a unique offer to anyone thinking about building his own home: for \$10 he furnishes a preliminary house design, as well as a copy of The Owner-Built Home, which is about the most useful book on building available.
 For the design, send him a sketch of your building site, along with space requirements and personal likes and dislikes; or you may prefer to get the book first and read the first chapter on "Site and Climate" before sending in the information.
 The book is sound advice on the best low-cost building techniques from around the world: Africa, India, Israel, countries that cannot afford U.S. style wares. Much of it is in print elsewhere.
 A 1" concrete floor with loading stresses of 450 lbs per sq. ft. houses built of earth, woven bamboo and burlap, as well as of conventional materials. How to look up your plumbing in a simple central core.
 \$10.00 postpaid
 from: Ken Kern Consulting
 Santa Monica
 Chatsworth, CA 91304

Material

Plywood Shop ✗

Soil

American Plywood Association
 What makes plywood such a desirable building material is its extremely favorable cost/strength ratio. Also, it's quick to install, as each piece you nail down covers 32 square feet.
 The American Plywood Association has hundreds of pamphlets available on different uses of plywood: roofs, walls, floors, cabin plans, pole buildings, barns.
 Write, asking for lists of publications:
 Residential Construction Literature Index
 Agricultural Literature Index
 General Construction Literature Index
 Industrial Literature Index
 Consumer and Do-It-Yourself Literature Index
 free
 from: American Plywood Association
 1199 G Street
 Tacoma, Washington 98401

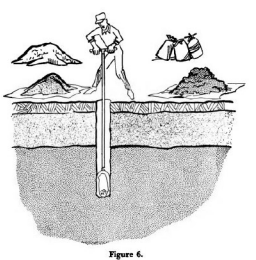


Figure 6. Soil Digging

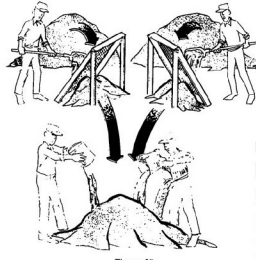
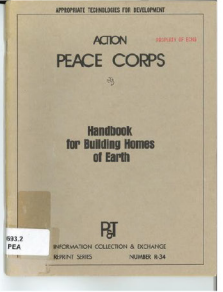


Figure 35. Soil Screening



Recycled Timber

Construction

Capentry Work

Pressed Earth Block

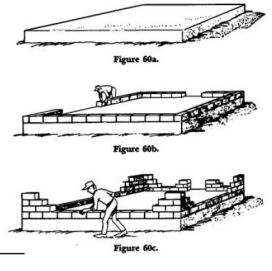
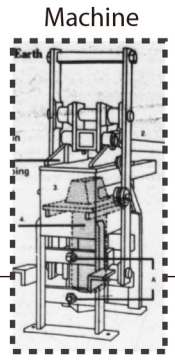


Figure 60c. Blocks Laying

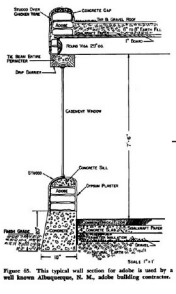


Figure 36. Furnishing

Sundry Materials
 ACTION PEACE CORPS
 INFORMATION COLLECTION & SERVICE
 BURNING SORES NUMBER 8-34

Operation

Energy

Equipment

Stove

New Sources of Energy
 Well, they aren't new sources: they're the oldest: sun, wind, earth heat (geothermal). But OK, to us they're new, and indeed they're exciting. The prospect of truly self-contained habitable energy systems is romantic country. There you are with your friends on your hill putting sun and wind through useful changes that are not only apparent to you but in an integral part of your thing.
 Michael Rosenthal first hipped us to this remarkable set of U.S. documents which arose from a conference in Rome in 1965. If you're deeply into solar or wind energy there's lots of stuff here untold elsewhere. Japanese solar-pumps-simple elegant water heaters up on the roofs, thoroughly described in Vol. 5. Traditional Dutch drainage windmills with suggested adaptations for other early-technology applications in Vol. 7. And so on. A tonne.
 [Suggested by Michael Rosenthal]

A two-bladed turbine of 3.6 metres diameter can equal the human output of power with modest winds of 45 metres per second and is well suited to drive the type of centrifugal pump shown in Figure 2. Based on one of the oldest regional Dutch systems, this complete rotating bucket filling water turbine has been built in the bottom by centrifugal force. As sufficient revolutions per second were derived from the bucket at the top. Even particles of fluid get as much static energy during filling as its obtaining energy of velocity, so that the total efficiency is limited to 50 percent.
 Proceedings of the United Nations Conference on New Sources of Energy
 Vol. 1 General Sessions - \$2.50
 Vol. 2 Geothermal II - \$5.00
 Vol. 3 Geothermal I - \$5.00
 Vol. 4 Solar Energy I - \$7.50
 Vol. 5 Solar Energy II - \$4.00
 Vol. 6 Solar Energy III - \$5.00
 Vol. 7 Wind Power - \$3.50
 from: Sales Section, United Nations, New York, N. Y. 10017

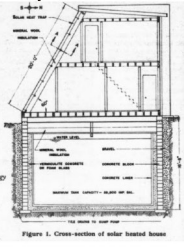


Figure 1. Cross-section of solar boiler box

Wiring Simplified
 Other than that this book is a most useful tool for the home electrician, the thing is that it is that it has a hole punched at the top through which, for hanging over a hook, this is a kind of...
 Everything you'll need to wire your home yourself!
 \$1.25 postpaid
 from: The McGraw-Hill Companies
 1221 Avenue of the Americas
 New York, New York 10020
 or: WHOLE EARTH CATALOG

Stove
 \$60-100 plus shipping for different sizes of "Automatic" Stoves from the factory in Alameda.
 from: Safety Automatic Heater Co.
 P.O. Box 700
 Danville, Ala. 36000

5. Conclusion

In the late 1960s, as the national wave of political movements in America throughout the decade began to wane, the *Whole Earth Catalog* took over the expectations of making a change in the modern way of life by promoting real actions in counterculture communes. Production in communes was characterized by small-scale approaches based on a single person or a community, standing in contrast to the gigantic industrial and consumerist system of the metropolis. Meanwhile, the Catalog inherited ecological ideas from previous movements and emphasized the connection between people and the “Whole Earth,” leading to a constant interaction between individuals and the network he was in. Just as Farber states, architectural practice was “near the epicenter of their new ethos of self-production.”⁴⁹ Following the scale debate of production, the self-build practice in communes, led by amateur builders, moved away from traditional architectural expertise and engaged in various explorations with the support of the Catalog. Instead of viewing self-build as a means to make architecture, the focus shifted from the outcome to the process of making and empowerment of communards through it. Architecture practice, in the narrative of the Catalog and commune, became an anthropological approach that centered on people’s activities.

Overall, the *Whole Earth Catalog* provided an intriguing perspective on redefining architecture and its relationship with people. The knowledge and ideas it promoted had profoundly influenced people’s way of living, even after they went back to cities. However, it’s also necessary to acknowledge the incompetence and learn from the failure of the commune architecture practice. One of the most common criticisms was the dominance of individualism. Unlike their political predecessors, most communards only cared about changing their own lives.⁵⁰ The larger ideology of systematic thinking was often overshadowed by individual pursuits of freedom in reality. This highlights the potential danger of human-scale practices in effecting larger social change. After *The Last Whole Earth Catalog*, Brand continued to publish the Whole Earth series sporadically until the 1990s, in which he also reflected on the earlier individualist thinking in the *Whole Earth Catalog* and attached more importance to ecological living.

The Catalog had left a rich legacy for sustainable architecture today including passive design and new energy sources. However, its impact extended beyond ecology. The Catalog’s anthropological approach to architecture, which blurred the line between design and non-design and brought it back to people’s daily life, should also be highlighted. In the postmodern era where the grand narrative of knowledge has been dismantled, the interaction among different disciplines has become more and more vital. Today, the past way of formulating architecture with specific design languages can no longer work. The

⁴⁹ Farber, "Self-Invention," 421.

⁵⁰ Farber, "Self-Invention," 442.

Catalog's approach provides a framework for seeing architecture as an ongoing process, shaped by interactions with other realms. It also questions the traditional relationship between designers, users, and architecture by involving amateur builders, and provides a possibility of how these three could be integrated through an insider, rather than outsider perspective throughout the practice. This shift in perspective has the potential to bring the making of the living environment back to habitats, bridging the gap between designers and users and enabling a more comprehensive architecture practice.

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