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Autonomy has long been a rallying cry at both 'ends' of the political spectrum, where the left and right start circling back around and through each other. Lydia Kallipoliti reflects on the significance of an architectural history of 'closed worlds'; projects designed not only to contain life within an enclosed space but also every single resource needed to sustain and produced by it, everything from air to feces.

## **ENDANGERED PIECES**

NATURE

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Sealed in a jar, Haus-Rucker-Co's *Piece of Nature* (*Stück Natur*, 1971–1973) model implies an architecture of un-rootedness. The miniature hut, covered in moss and dirt and secured with twine like a laboratory sample, suggests an insulated closed world, disconnected from the exterior environment; an excerpt of earth, neither receiving any input nor discharging output. The contained microcosm is as much a sample of nature as it is a representation of the earth in its totality. In the context of the alarming environmental crisis in the early 1970s, the jar represents an effort to preserve not only the fabricated sensation of domestic safety in a natural setting, but also the very idea of nature as something worthy of conservation.

Perhaps most enticing though is how Haus-Rucker-Co's encased domesticity marks the end of nature as an unbounded field and the beginning of its reconstitution or re-engineering, as they themselves advocate, in pieces. Their jar is a powerful illustration of a period of intense environmental anxiety, precisely because it is an excerpt of our lost idea of the untamed land. It is like a fossil, marking the demise of nature as an indeterminate field of its own and its subsequent translation in terms of resources and their exploitation.<sup>1</sup> Looking closer within this reflective image of our vanished sense of domesticity in the meadows, one may imagine other things lurking in the darker depths of the jar. Pamela Popeson of MoMA's Department of Architecture and Design, for example, imagines a little beach, a cliff, some hidden buildings and people, or even some wild animals.<sup>2</sup> Though independent of what one may or may not find in the jar, the contained primeval shelter - openly referencing Marc-Antoine Laugier's primitive hut in his Essai Sur l'Architecture<sup>3</sup> becomes a critique of not only our endangered earth, but also of architecture as an endangered species, as a thing of the past. If the primitive hut served for Laugier as an object to trace architecture's origins in nature and to argue for natural principles of construction and decoration as the closest analogy to reason,<sup>4</sup> the enclosed hut now stands as a preserved sample of a lost empire

## ARCHITECTURE OF CLOSED

of reason. Inside the sealed bubble, Walter Gropius' 'Stunde Nul' (zero-hour) had finally arrived and architecture had become a different animal;<sup>5</sup> following Reyner Banham's famous 'environmental bubble' and his call to literally forego the envelope in 'A Home is not a House', no more than a transparent membrane.<sup>6</sup>

In hindsight, the closed world of Piece of Nature signals a significant shift in the formation of domesticity as a synthetic discipline and the construction of the house as a machine that literally fabricates its own environment through the recirculation of material and energy resources. The canned domestic cosmos depicts a transformation in the field of ecology from the purity of nature as a realm outside of the man-made to a technologically mediated science of instrumentation. In his book The Closed World, Paul Edwards recalls the literature of Northrop Frye to argue for 'green worlds' - the unbounded natural setting of a forest, a meadow or a glade - as opposed to 'closed worlds'.7 The closed world of Piece of Nature sequesters the green setting within its boundaries, re-engineering nature in pieces of earth. Ultimately, it functions like an improvisatory sealed structure that regenerates new conditions out of what is available within its systemic borders. In a closed system, any modification occurs internally, affecting the organizational structure of the system alone.

The starting point to this story is the view of the whole earth, which had been highly anticipated throughout the 1960s and eventually reached its apogee in the famous *Earthrise* series of photographs taken by Apollo 8 in 1968.<sup>8</sup> These images, portraying mankind entrapped in the finite space of a sphere, may be held accountable for a collective feeling of anxiety in cultural imagination, as well as a broad body of literature projecting plans for our future survival within what Buckminster Fuller famously called our 'spaceship earth'.<sup>9</sup> This immersive imagery might also be held accountable for a genealogy of closed resource regeneration systems, or smaller, highly engineered earthly microcosms.

In 1976, Piece of Nature was published on the March cover of Casabella. Like the finite spherical earth, the jar proved to be a recurrent obsession for the Haus-Rucker group; the bubble was used as an organization of containment, to depict seclusion from a surrounding physical reality as well as an existential separation of the individual from the urban fabric and the social sphere. This deliberate detachment, to uproot the individual or the house from its context, is also evident in the group's earlier projects such as Balloon for Two, Environment Transformer and Oase No. 7, all of which are objects encased in bubbles: two bodies, a piece of a body - a head - and a piece of nature - a plant. Nevertheless, by the time the jar appeared in Casabella it figured as a response to Architectural Design's 'Autonomous Houses' issue published two months earlier, in January 1976.

In 'Autonomous Houses', edited by Martin Spring and Haig Beck, the architecture of un-rootedness appears under the umbrella of 'autonomy'; both popularizing an ecologically-minded, libertarian way of living and acting, as well as heralding detachment from the energy supply grid as a political statement against consumerism and capitalism. At the bottom left corner of Cliff Harper's ink illustration, a label warns readers: *Autonomous Property. KEEP OUT*.<sup>10</sup> Like Haus-Rucker-Co's primitive hut, the







Balloon for Two' by Haus-Rucker-Co, Vienna, 1967.



Haus-Rucker-Co, Environment Transformer (1968).



closed world of the autonomous house harkened back to a grass-roots mentality and pastoral iconography.<sup>11</sup> It represented a recognizable domestic environment removed from the urbanized landscape, thus seemingly peaceful and dedicated to the pursuit of happiness. as Leo Marx would argue.<sup>12</sup> This landscape was, nevertheless, equipped with invisible machinery that guaranteed its blissful sustenance as one autonomous from the authoritative grid of supplies, the tentacles of the power grid.

Though already outdated by the time the autonomous house appeared on its cover, the Architectural Design (AD) issue presented the British Alternative Technology movement to a larger audience. Similar to the jar, which was a fossil of a lost idea of domesticity in nature, the autonomous house was an illustration of the difficulty in reconciling previous notions of environmentalism, including farming and localism, with the instrumentalized regeneration of resources that in many respects demonstrate technological supremacy. That same year, the authors of the 'Autonomy' section in AD published Radical Technology,<sup>13</sup> a book that compiled Clifford Harper's 'Visions' with drawings of collectivized gardens, community workshops and autonomous terraces and gave visual foray to environmental autonomy as a tool for political liberation.

Following the 1973 oil crisis and a decade of dense environmental debates, terms such as 'self-sufficiency'. 'self-reliance', 'life-support' and 'living autonomy' were already pervasive in the lexicon of alternative technologies that had already preoccupied the British avant-garde scene for several years. Based on its biological definition, 'autonomy' refers to a system's organic independence and self-governance, a notion that was transferred to the domestic realm to advance the idea of the house as a closed system, un-rooted from its urban context. The 'autonomous house' was like a restored Garden of Eden and a real-time habitation experiment where architecture, systems theory and human biology could blend together in the hope of radical social reform.

In surveying these two closed worlds (the jar and the house), it is important to highlight the function of resource digestion, which is prerequisite to sustain environmental autonomy. The UK's Alternative Technology movement was ardently in favor of the recirculation of resources as a social cause. Framed as a response to this when published on Casabella's cover, we can read Haus-Rucker-Co's jar as a projection for ideas of recirculation too. In this context, the primitive hut in the jar is not only a sample of an endangered nature, but is also be a reengineered piece nature; a regenerative machine, like a giant stomach. It is connected to its feeder with umbilical cords that neither can nor should be cut. The house, along with its dweller, becomes a singular digestive device of physiological substances that construct a new ecosystemic model; all substances, fluids and humeurs are



Cover of Architectural Design (AD) on 'Autonomous Houses' (January, 1976). The cover was drawn in ink by Clifford Harper,

Mike Moore's diagram based on Graham Caine's original diagram of cyclical inter-dependencies for the Ecological House in 1972.



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ingested and excreted in a continuous process of material conversion with the help of hidden machinery.

This set of recirculatory machines is, nevertheless, no more robust than a fragile stomach and its unstable operation to efficiently convert input to output and leave no leftovers. What remains a paradox is the manner in which this questionable model of total circular regeneration, imbued with the vitalism of a digestive stomach, has prevailed as the mainstream model of what we now call a sustainable, net-zero habitat in opposition to energy loss. Perhaps what is mostly substantial about these closed world models is not their reflection of a lurking anxiety for the future of habitation, but how truly unsustainable they are. In this light, the jar and the house could be viewed not as solutions but as involuntary images of loss, or as an open call to evolve our practice of habitation out of utter necessity for survival. At the same time, it is critical to question to what degree resource conservation strategies are sustainable forms of practice, and also recognize how impossible ideas become institutionalized through a series of bureaucratic mechanisms and are eventually labeled as 'eco-friendly', or even worse, 'green'.

Originating from the space program and later migrating to countercultural groups experimenting with autonomous living, closed living systems reflect our inability to mentally or physically cope with the vastness of the earth as a system, seemingly finite and contained, yet ultimately infinite. In the case of closed systems, the delineation of borders - the jar, the fence - is at the same time a highly restrictive but also resourceful model of creative production. In other words, the closed system speaks to the invention that might take place within the conceptual perimeter of a circle. The internal circulation and recirculation of matter and ideas within a defined radius and circumference was indeed a theme with various cultural reflections from the 60s and 70s, beginning with the enclosed, finite earth, migrating from the enclosed spacecraft to our perception of domesticity as a selfreliant ecosystem.

In many respects, closed worlds depict how the whole earth icon emerged as an idealized representation of collective faith and imagination. While studying the earth as an object with contained resources, nature was sampled, systematized and replicated through technological mediation. What became important in this process was the function of the system's parts and its subcomponents, tentatively assembled together. Closed worlds disclose a struggle to reconcile the utopian ideal of replicating the earth in its totality with the visceral and raw and material reality of 'stuff' unexpectedly generated from feedback loops. Somewhere between the idealization of the earth as a whole - as a complete and interconnected system - and the messy and fuzzy leftovers of human physiology lies an unexplored history of architecture dissolving into a reconstruction of natural systems.

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  In: Marie-Ange Brayer and Beatrice Simonot (eds.), Archilab's Earth Buildings. Radical Experiments in Earth Architecture (London: Thames & Hudson, 2003), pp. 21.
- 2 See Pamela Popeson, 'Stück Natur: The Microenvironment-in-a-Jar Siren'. At: www.moma.org/ explore/inside\_out/2011/02/07/ stuck-natur-the-microenvironmentin-a-jar-siren (accessed October 14, 2015).
- 3 Marc Antoine Laugier, *Essai Sur l'Architecture* (Paris: Chez Duchesne, 1753).
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- 5 Many thanks to Arjen Oosterman, Editor-in-Chief of Volume magazine, for his helpful comments in distilling this argument.
- Reyner Banham (Illustrations by Francois Dallegret),
  'A Home is not a House', *Art in America*, Vol. 53, 1965, pp. 70–79. The same article was republished by *Clip-Kit* in a reduced version and finally by *Architectural Design* in the January issue of 1969, pp. 45–49.
- 7 Paul N. Edwards, The Closed World: Computers and the Politics of Discourse in Cold War America (Cambridge, MA: MIT Press, 1997), pp. 12, 310.
- 8 For a full account of the image of the earth and its impact on visual culture, see Volker M. Welker, 'From Disc to Sphere', *Cabinet*, 40, 2010–2011, pp. 19–25; and Simon Sadler, 'An Architecture of the Whole', *Journal of Architectural Education*, 61, no. 4, 2008, pp. 108–129. For the history of the first earth image, see Denis Cosgrove, 'Contested Global Visions: One World, Whole Earth, and the Apollo Space Photographs', *Annals of the Association of American Geographers*, 84, no. 2, 1994, pp. 270–294; and Robert Poole, *Earthrise: How Man First Saw the Earth*, (New Haven CT: Yale University Press, 2008).
- 9 Buckminster R. Fuller, Operating Manual for Spaceship Earth (Carbondale: Southern Illinois University Press, 1969).
- 10 Clifford Harper was an anarchist underground illustrator from London who drew an ink-series of utopian vision posters for Undercurrents magazine, a British publication on alternative technologies and energy renewal running from 1972 to 1984. Harper's early drawing style was popularized in Undercurrents' anthology, Radical Technology, published in 1974 and edited by Peter Harper and Godfrey Boyle. His highly detailed and skilled illustrations, showcasing scenes of post-revolutionary selfsufficient and autonomous communities, became common on the kitchen walls of radical communes and squats during the 1970s.
- Martin Spring and Haig Beck, 'Cooperative Autonomies'. In: Architectural Design, Vol. XLVI, 1976. See also: Peter Harper, Godfrey Boyle and Undercurrents (eds.), Radical Technology (New York: Pantheon Books, 1976).
- 12 Leo Marx, The machine in the Garden; Technology and the Pastoral Ideal in America (New York: Oxford University Press, 1964), pp. 6.
- 13 Peter Harper, Godfrey Boyle, and the editors of Undercurrents (eds.), Radical Technology (New York: Pantheon Books, 1976).