

Closed Worlds

James Clerk Maxwell’s seminal 1867 letter on the second law of thermodynamics stated that all systems will tend to a lower energy state and thus increase in entropy. An annotation by William Thomson (aka Lord Kelvin) speculated that a way to test such a law would be to simply “reverse the motion of every particle in the universe”. Maxwell enthusiastically took up this idea and developed it to its logical conclusion: “The raindrops will collect themselves on the ground and fly up to the clouds... and men will see their friends passing from the grave to the cradle.” Maxwell admitted, with no apparent irony, that “the possibility of executing the experiment is doubtful”.¹

The many closed systems that comprise Lydia Kallipoliti’s exhibition *Closed Worlds* and book *The Architecture of Closed Worlds*, were each conceived as tests that sought to outwit entropy through the scrupulous bookkeeping of total energy-in versus energy-out— income versus expenditure—within a sealed off and thus finite system. This necessarily required the guarantee that no energy (or matter) would leak in or out of the hermetic bubbles of submarines, space capsules and bio-shelters, to

name a few. Like King Canute facing the tide, this family of resource regenerating systems was, amongst other things, an exercise in the defiance of entropy itself.

In Kallipoliti’s treatment, this defiance is unpacked: each closed system is analysed in terms of its own feedback loops in which ingestion and excretion become the defining parameters. In this way, each of these autonomous and essentially *interior-only* architectures are to all intents and purposes defined as *alive*; living bodies in which other bodies may live. Both Maxwell and, some sixty years later, modern physicist Erwin Schrödinger were transfixed by the ability of living organisms to apparently outwit entropy; to self-repair and to reproduce without degrading into the equivalent of genetic white noise. Schrödinger even developed the idea of Negative Entropy to explain how “in a world in which everything else was mere grist for the relentless forces of dissipation” a living organism seems to be able to “drink orderliness” from its environment.² Only this could account for the inexplicable permanence of the gene. Note both bookkeeping (the negative entry) and digestion (drinking) are present in his thinking.

Maxwell similarly had asked, how it could be that while all else rusts and decays, atoms “continue to this day as they were created, perfect in number and measure and weight?”³ His explanatory solution famously involved an imaginary closed world with a very tiny body living in it, a “very observant and neat fingered” demon who is able to sort and separate low from high entropy molecules, while sitting at a trap door between two chambers, one for the hot (low entropy) molecules and one for the cold (high entropy).⁴ As the hot chamber gets hotter and the cold chamber colder, entropy is (apparently) put into reverse. Maxwell’s demon living in his closed system, is the imaginary leap that was to answer the question of how living matter resists entropic decay into a uniformly warm gaseous soup by the cooking of the statistical books with his molecule-sifting fingers. As the second law of thermodynamics has only a statistical certainty, cherry-picking the efforts of probability can set up its apparent violation, which, in truth, constitutes only a statistical violation. As the designers of closed worlds understood, it’s all about where you put the perimeter fence to these insides with no outside.

There is much artful cherry-picking at work in the designs and claims of the closed worlds here. Ever since the Garden of Eden, the perfected closed system, like the perpetual motion machine, has been a holy grail. And, ever since Eden, closed systems have failed, have leaked or suffered, as Kallipoliti explains: “loss, derailment and the production of new substances and atmospheres”. Although the history of closed systems is a history of failure, it is also a history of hopefulness in the face of the impossible – Canute may have been a fool but he was also an optimist, was he not?

Today the genealogy of architectures of “voluntary containment” has acquired new forms of resonance. We are more aware than ever that our environment is a closed system as our waste comes back to bite us. We have seen how tailored news feeds produce political bubbles—political closed worlds—to alarming effect. Both make clear that there is no easy escape from the realities of consumption or social conflict: there is no ‘outside’ to which they can be banished and then forgotten. We are all on the inside together.

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1. Letter from Maxwell to J.W. Strutt, 6 December 1870, quoted in R.J. Strutt, *John Williams Strutt, Third Baron Rayleigh* (London: E. Arnold, 1924), 47.
2. Erwin Schrödinger, *What is Life?* (Cambridge: Cambridge University Press, 1992), 77.
3. James Clerk Maxwell, *The Scientific Papers of James Clerk Maxwell, Volume II* (New York: Dover Editions, 2003), 377.
4. Maxwell’s demon as described in a now seminal letter to P. G. Tait in one of physics’ more exquisite explanatory models. See C.G. Knott, *The Life and Scientific Work of Peter Guthrie Tait* (Cambridge: Cambridge University Press, 1911), 213-214.

Exhibition Credits

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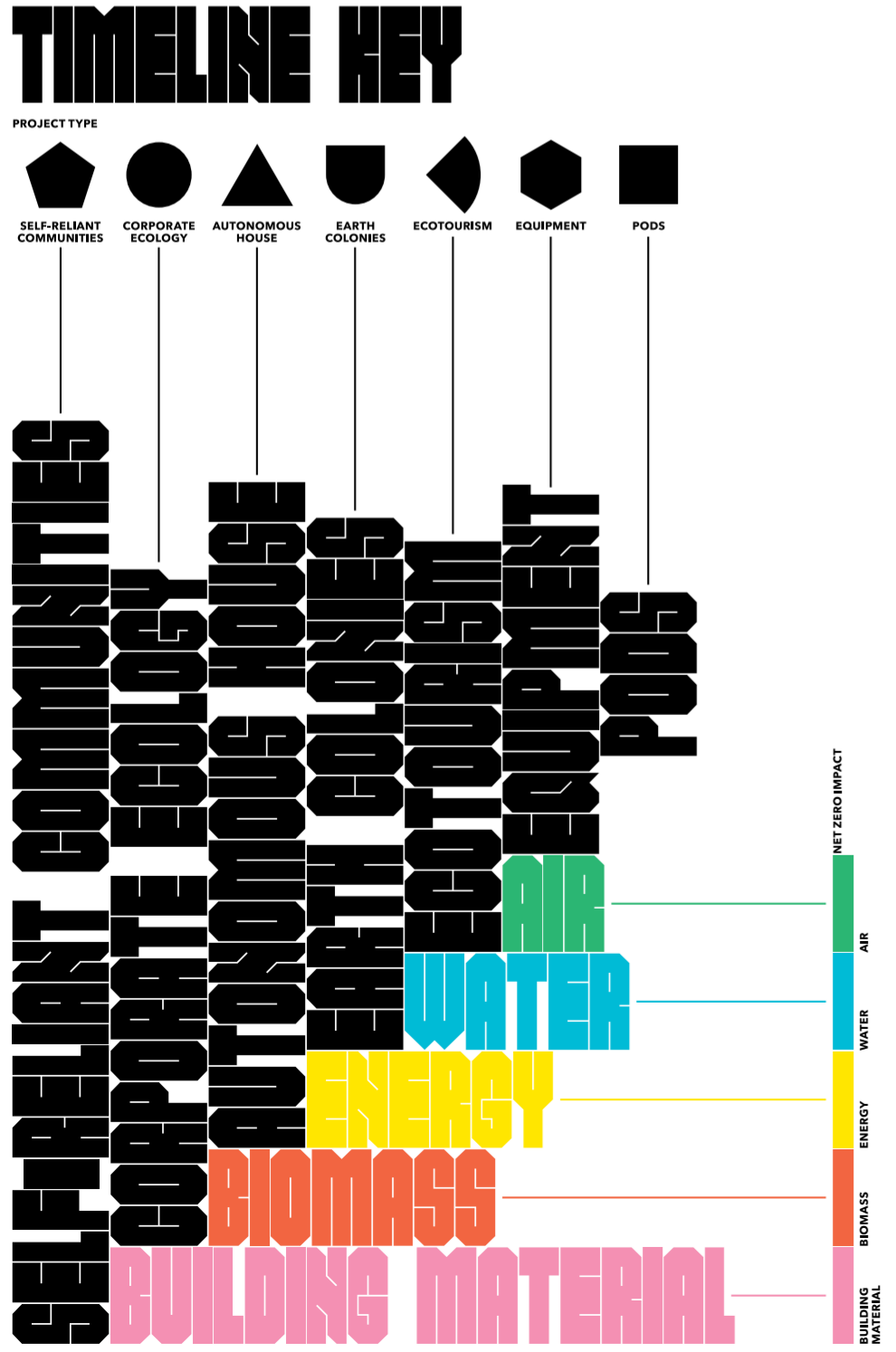
Biospheres Documentary Video Editing
Daniel Ruan

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UTS Program Partner
UTS School of Architecture

Closed Worlds Book
Lydia Kallipoliti, *The Architecture of Closed Worlds, Or, What is the Power of Shit* (Zurich: Lars Müller Publishers in collaboration with the Storefront for Art and Architecture, 2018).

Closed Worlds is dedicated to the memory of Michael-Angel Kallipolitis (1982-2016), who lived in a closed world and left ours too soon on January 5, 2016.



Events

Curator’s keynote lecture
Thursday 16 May
5pm
CB04.03.320

Exhibition opening
Thursday 16 May
6 – 8pm

Curator-led tour
Monday 20 May
11am – 12pm

Audio-described tour
Tuesday 21 May
1 – 2pm

UTS Gallery
University of Technology Sydney
Level 4 (Building 6), 702 Harris St
Ultimo NSW 2007

Monday – Friday 12 – 6pm
Saturday 12 – 4pm

Book launch
Wednesday 22 May
6pm
The Architect’s Bookshop
499 Crown St Surry Hills

Golden Age Guest Screening: *The Man Who Fell to Earth*
Dir. Nicolas Roeg
Wednesday 5 June
8.30pm
Paramount House,
80 Commonwealth Street,
Surry Hills

Reading group
Tuesday 11 June
6 – 8pm

For information on Events
visit art.uts.edu.au

UTS ART Staff

Curator
Stella Rosa McDonald

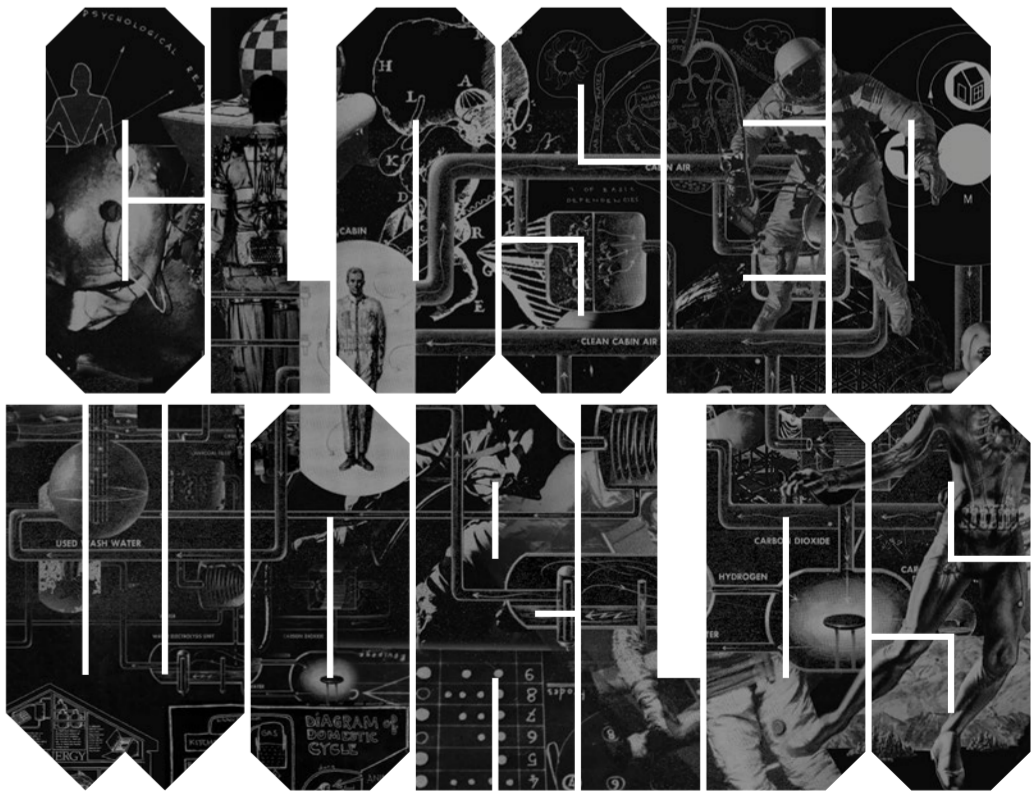
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Curated by
Lydia Kallipoliti

7 May –
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UTS Gallery