1   Guy Debord, *Die Gesellschaft des Spektakels*, übers. v. Jean-Jacques Raspaud, Berlin: Edition Tiamat, 1996, S. 27.
2   David Joselit, „Über Aggregatoren", übers. v. Gaby Gehlen, in: *Kunstgeschichtlichkeit. Historizität und Anachromie in der Gegenwartskunst*, hg. v. Eva Kernbauer, Paderborn: Fink, 2015, S. 115 – 127, S. 124.
3   David Joselit, „Über Aggregatoren", 2015, S. 125.
4   „Astro Lamps Stockists Manual", http://frink.machighway.com/~edwardcr/keepbub-bling/crestworthastrostockistsmanual.html (abgerufen am 3.5.2023).
5   Ebd.
6   Anselm Franke, Diedrich Diederichsen, *The Whole Earth*, Berlin: Haus der Kulturen der Welt, 2013.
7   „Astro Lamps Stockits Manual".
8   Sigmund Freud, *Das Unbehagen in der Kultur. Und andere theoretische Schriften*, Frankfurt: Fischer, 2009, S. 31.
9   „The Last Gift Steve Jobs Gave To Family And Friends Was A Book About Self Realization", https://www.businessinsider.com/steve-jobs-gave-yoganandas-book-as-a-giftat-his-memorial-2013-9 (abgerufen am 3.5.2023).
10   Jean-François Lyotard, „Was ist postmodern?", in: *Postmoderne und Dekonstruktion*, hg. v. Peter Engelmann, Stuttgart: Reclam, 1993, S. 45.
11   David Joselit, „Über Aggregatoren", 2015, S. 115.
12   Ebd.
13   David Joselit, „Über Aggregatoren", 2015, S. 116.
14   David Joselit, „Über Aggregatoren", 2015, S. 123.

Lava Lamps and the Monetization of Chaos
Stephen Zepke

Wall of Entropy is the largest work in Lazar Lyutakov's exhibition *1 Million Random Numbers*, its tall shelves holding one hundred carefully arranged lava lamps. The work is modeled on a very similar set up at the offices of Cloudflare that was created in 2017 to generate random numbers sold for use in online encryption. This system is based on the one invented by Landon Noll and two colleagues at Silicon Graphics in 1996, which contained six lamps and was named *Lavarand*. The lamps were photographed every second and the pixels converted into a string of bits; these were processed through a hash function to amplify variation, and then used to seed a heavy-duty pseudo-random generator, the resulting strings being sold to support internet security. Noll's invention along with its expanded version at Cloudflare is the main aesthetic and conceptual reference for Lyutakov's exhibition, providing its fundamental confrontation of the lava lamp's blissed-out psychedelic vision of the 60s with the scientific and commercial frame that at once supports and confines it. *1 Million Random Numbers* iterates this collision endlessly, repeating its juxtapositions of the soft and the hard, counterculture and science, the aesthetic and the conceptual, and finally the chaotic and its monetization by big business. This series of confrontations, or perhaps, better said, combinations, elaborate the even more fundamental interface of nature and culture, and provide the specific shapes to societies and their historical development. As we shall see, *Wall of Entropy* embodies a contemporary version of this ancient relationship.

The necessity of chaos to digital security, and the difficulty of producing it artificially, is a problem dating back to the beginnings of digital technology itself. It was realized early that computers could not generate truly random numbers, which had to be imported from the outside where real chaos animates the world around us. Lava lamps were perfect for this, because they generate wildly divergent patterns, making their future unpredictable and their past impossible to recreate. Invented by the founder of Mathmos Ltd. Edward Craven Walker in 1963, the lava lamp soon became a seemingly ubiquitous symbol of the sixties' counterculture. Its globular, psychedelic shapes, at once hedonistic and chaotic, celebrated good times, freedom, and a new future liberated from the repressive "mass society" of the Cold War and its obedient "one-dimensional man," as Herbert Marcuse described it.[1] The lava lamp being a kind of shorthand for the counterculture explains its role in the rapidly growing world of the internet and digital business in the nineties, which had developed much of the utopian tech ambitions of the counterculture into the futuristic visions of Silicon Valley. Both sought to build a world of autonomous but cooperating communities, using DIY technology and privileging creativity and innovation. From 1968 to 1972 Stewart Brand and others published the countercultural bible of this approach, *The Whole Earth Catalog*, where you could buy everything you needed to run your commune, from leather pants to computers.[2] The *Catalog* also provided a platform where you could discuss your experiences, exchange information and get advice from a network of fellow travelers. This was the beginning of the utopian tech dream: new tech = new world = new life. Many of those involved in *The Whole Earth Catalog* went on to be part of The Homebrew Computer Club that met between 1975 and 1986, a group of DIY tech hobbyists focused on creating home computers, which they wanted to make available to everyone. This group included Steve Jobs and Steve Wosniak, and championed networked computers as the technical condition of possibility for a user-led revolution freeing us from oppressive government. This mixture of a desire for social freedom, neoliberalism, and tech-utopianism led to the internet, and the so-called California ideology, which remains the dominant philosophy of Silicon Valley.

This trajectory leading from the counterculture to Silicon Valley is often seen as an instrumentalization of the youth movements of the sixties by the culture industry and digital capitalism, a tale of selling out and defeat, and in some cases enormous personal profit. From this point of view *Wall of Entropy* illustrates an extractive industry, the capture and exploitation of the chaotic and revolutionary energy of the sixties. But from the late nineties, revisionist histories started to tell a different story. Important elements of the counterculture, these historians claimed, were not a radical break with the fifties but in fact continued to develop aspects of the interdisciplinary research into cybernetics and systems theory undertaken in U.S. labs in the last years of the war under the auspices of the military. This work was to be crucial for countercultural thinkers like Buckminster Fuller (Stewart Brand's teacher),

Marshall McLuhan, and Timothy Leary. Similarly, although on a parallel track, these ideas also gave rise to new forms of business management emerging in the late fifties, which encouraged more horizontal organizations and fostered creativity, in order to connect management goals to the growing desire for individual self-actualization. Also adding to the zeitgeist was the rise of the advertising industry, whose emphasis on the youth market and hip-consumption predated many of the themes of the sixties' counterculture, not least people's disgust for conformity consumerism. The widespread desire for a deeper level of existential satisfaction led to an acceleration of lifestyle experimentation, catered for and advertised by corporate America. Coke – it's the real thing. All these developments sought alternatives to the dull rigidity of the fifties, making hip counterculture an important ally of business, a kind of R&D department feeding information back to corporations, which then mass-marketed non-conformity and individualism. As a result, while the counterculture was obviously instrumentalized by big business, this relationship was not entirely cynical, because many aspects of the revolution had already been anticipated by radical shifts in corporate culture. As Thomas Frank writes, "the counterculture may be more accurately understood as a stage in the development of the values of the American middle class, a colourful instalment in the twentieth century drama of consumer subjectivity."[3] From here it is a short step to the early nineties, whose emerging theories of a digital network draws from both the neoliberalism of sixties management theory and the revolutionary ambitions of the counterculture, and their combination in the autonomous commune movement in particular.

That the internet was a logical development of countercultural values and aesthetics might, in hindsight, seem depressing, but not because it suggests that every attempt at autonomy will inevitably be subsumed (although it will), but rather because it shows how a desire for liberation and autonomy does not belong to the counterculture by right. The commune movement in particular segued nicely with the rise of neoliberal politics in the eighties and nineties, and their dreams of a free market unregulated by government interests. Influenced by how individuals such as Stewart Brand linked the counterculture and the California ideology, this version of *1 Million Random Numbers* would posit the lamps and their frames as equals, both inspired by dreams of freedom from government regulation. On the other hand, however, the counterculture as a marketing exercise run by hip executives is not the only version of this story. At the very end of the twentieth century, Luc Boltanski and Eve Chiapello argued in *The New Spirit of Capitalism* that the rise of neoliberalism was a *response* to the challenge of the French countercultural movement (or as they put it, *artistic critique*), allowing capitalism to reshape itself in its image.[4] As a result, management and labor were restructured more horizontally, giving workers a degree of self-management, and the opportunity to contribute ideas to the production process. This gave workers a greater sense of personal fulfillment by encouraging their creativity and personal freedom, or in business-speak, innovation and flexibility. This shift emerges

along with digital technology, and is most notably enabled by the growing importance of immaterial labor associated with the internet. With this view the counterculture's desire for authenticity and freedom inspires a reaction in corporate organization, which must respond to maintain its workers' commitment. While this posits the energy of countercultural creativity as the prior and active force, rather than as an outgrowth of corporate innovation, there is a darker version of this story as well. This sees the counterculture–digital capitalism relationship and its mass-production of chaos as a commodity as functionalized entropy, and so as the inevitable outcome of late-capitalism's univocity, as this is enabled and embodied in the digital network. On this view, digi-tech captures nature's chaos at its point of emergence, commodifying and controlling creativity itself with no way back. Game over.[5]

Although Lyutakov's *1 Million Random Numbers* can be read as a succinct abbreviation of these rather pessimistic historical and political narratives, the exhibition does not feel like a lament because it offers too much enjoyment. While this may just be the vapid pleasure of contemporary consumption, I see it as a celebration of a chaotic and rebellious element that no longer produces a counterculture, but can never be entirely commodified or captured. In the eighties Antonio Negri and Michael Hardt suggested that this energy was found in the digital multitudes and the swarm intelligence that both supports and constantly subverts cognitive capitalism.[6] While their hopes for a new digital International have not come to pass, their affirmation of the creative force of living labour that challenges capitalism's hegemony, while also fueling its constant movement remains relevant. Today, this struggle finds its means in digital technology, which offers a bio-political ability to monetize our most intimate thoughts and desires, and to control our most rebellious instincts, not by repressing any of them, but by amplifying their flow and turning them straight into commodities. The question *1 Million Random Numbers* asks, then, is whether the constant emergence of chaos in the lamps can ever exceed the limits of its scientific and corporate frame, to create something in its own terms, something that perhaps we once thought of as *art*? Or is revolution today doomed to be nothing more than a cliche, a rather simple ornament?

1   Herbert Marcuse, *One-Dimensional Man: Studies in the Ideology of Advanced Industrial Society*. Boston: Beacon Press, 1964.
2   For more on this fascinating story, see Fred Turner, *From Counterculture to Cyberculture*, Stewart Brand, *the Whole Earth Network, and the Rise of Digital Utopianism*. Chicago and London: The University of Chicago Press, 2006.
3   Thomas Frank, *The Conquest of Cool, Business Culture, Counterculture, and the Rise of Hip Consumerism*. Chicago and London: The University of Chicago Press, 1997, p. 29.
4   Luc Boltanski and Eve Chiapello, *The New Spirit of Capitalism*. Translated by G. Elliot. London and New York: Verso, 2005.
5   Maurizio Lazzarato gives a suitably dark account of this in Videophilosophy: *The Perception of Time in Post-Fordism*. Edited and translated by J. Hetrick. New York: Columbia University Press, 2019.
6   This idea is explored across the trilogy *Empire, Multitude, and Commonwealth*, but for our purposes is most clearly articulated in Antonio Negri, Michael Hardt, *Multitude, War and Democracy in the Age of Empire*. New York: The Penguin Press, 2004.