Deus ex machina: Eschatologies of automation in 17th century Lullism and present-day post-scarcity utopias

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(Abstract: 16th and 17th century combinatorial universal science and 20th/21st century predictions of post-scarcity economies yielded prophecies and political eschatologies, most radically in the poetics of poet Quirinus Kuhlmann and present-day movements such as *Zeitgeist* and accelerationism. Both turn speculative theories into political agendas and belief systems, and technology into eschatology. )

# Lullism, Singularity, Accelerationism

Llull’s ars was syncretic in its time.[[1]](#footnote-2) By the end of the 17th century, it mutated into speculations and utopias, many of which could be called “science fiction” in the literal sense of these words. The intellectual movement of Lullism involved prominent philosophers and scientists, from the French polymath Marin Mersenne to Gottfried Wilhelm Leibniz, as well as mystics and poets.[[2]](#footnote-3) This movement continued and extended the original *ars* by marrying it with tendencies of its own time: universal science, automation, technological and speculative project entrepreneurship.

In 1674, the poet, self-styled polymath and mystical prophet Quirinus Kuhlmann envisioned to widen the *ars* of Llull (for whom he had written a poetic eulogy in 1670) and its subsequent extensions by 17th century Lullists[[3]](#footnote-4) into 19 combinatorial systems that cover the domains of poetics, rhetoric and composition, didactics, philology, politics, history, law, cosmology and theology: an “Ars Apophthegmatica”, “Ars Tragica”, “Ars Comica”, “Ars magna Poëtica, Versificatoria, Rythmica [sic]”, “Ars magna eloquentiae”, “Ars magna sciendi”, “Ars magna scribendi”, “Ars magna linguas discendi”, “Ars magna Commentandi”, “Ars magna Critices”, “Ars magna seu Harmonia adagiorum omnium Populorum”, “Ars magna Historiae Specialis Hominis”, “Homo Microcosmus”, “Homo Deus”, “Homo diabolus”, “Resurrectio”, “Illustres seculi hujus Centumviri”, “Ars magna Antiquitatis”, “Tacitus Politicus”.[[4]](#footnote-5)

The *ars magna scribendi* is envisioned by Kuhlmann as a system that mechanically writes all books of the world - every existing as well as every future one - by generating every possible letter combination. Kuhlmann writes that this system is “of such perfection that no mortal being will be able to publish a book that our Ars scribendi wouldn’t already contain”.[[5]](#footnote-6) It thus “grasps everything that all people can grasp and, through combinatorial permutation, teaches everything that can be taught”.[[6]](#footnote-7)

Such baroque Lullist visions were parodied, half a century later, by Jonathan Swift in a chapter of *Gulliver’s Travels*. The Grand Academy of Lagado runs a Lullist machine in the form of a “frame” that mechanically shuffles letter combinations so that “the most ignorant Person at a reasonable Charge, and with a little bodily Labour, may write Books in Philosophy, Poetry, Politicks, Law, Mathematicks and Theology, without the least Assistance from Genius or Study”.[[7]](#footnote-8) Lullism also provided the model for Jorge Luis Borges’ 20th century fantastic short story of *The Library of Babel*, a total library containing books with every possible letter combination whose structure can only be grasped through “combinatorial analysis”.[[8]](#footnote-9)

The automated “artes” and machine-generated knowledge imagined by Kuhlmann and other Lullists have striking parallels with today’s automation and artificial intelligence visions.[[9]](#footnote-10) With all necessary caution in the comparison of two different historical eras, it seems fair to say that the techno-epistemological breakthrough envisioned by Kuhlmann is analogous to the so-called “Technological Singularity”, the eclipse of human intelligence through computers envisioned by today’s most optimistic artificial intelligence advocates. The Singularity discourse, most prominently represented by engineer Ray Kurzweil and Google’s *Singularity University*, conversely bears traits of evangelical, apocalyptic Christianity that was Kuhlmann’s religion and gospel. Kuhlmann ended his life as a wandering prophet and self-styled “son of the son of God” who was burned for religious heresy. Kurzweil advocated his technological Singularity hypothesis in a book with the telling eschatological title *The Singularity Is Near: When Humans Transcend Biology*.[[10]](#footnote-11) The Singularity movement has often been likened to an evangelical cult both by religion scholars and in news media.[[11]](#footnote-12)

While the Singularity movement remains closely tied to the “Californian Ideology” of Silicon Valley and its Internet corporations,[[12]](#footnote-13) it has relatives in left-wing counterculture and political activism that advocates “total automation” as way out of wage work and capitalism. (Both the Singularity movement and contemporary “Post-Work” movements were influenced by the same 1960s counter-culture; this will be discussed later.) For Alex Williams and Nick Srnicek, who became known as the authors of the 2013 *#ACCELERATE MANIFESTO for an Accelerationist Politics*, “[t]he newest wave of automation is creating the possibility for huge swathes of boring and demeaning work to be permanently eliminated”.[[13]](#footnote-14) This hypothesis leads to the central thesis of their book *Inventing the Future: Postcapitalism and a World Without Work*:

“Many of the classic demands of the left – for less work, for an end to scarcity, for economic democracy, for the production of socially useful goods, and for the liberation of humanity – are materially more achievable than at any other point in history.”[[14]](#footnote-15)

The book however lacks a genuine investigation or proofs of its sweeping technological claims and conducts no in-depth analysis of the actual possibilities and limitations of current technology. Instead, it wraps up with the dogma that “[f]ull automation is something that can and should be achieved, regardless of whether it is yet being carried out”.[[15]](#footnote-16)

It is outside the scope of this essay to scrutinize the feasibility of Kuhlmann’s, Kurzweil’s and Williams’/Srnicek’s technological utopias and eschatologies. It must suffice here to summarize their success: Kuhlmann’s attempts to automate his own permutational poetry with a “permutation wheel” only succeeded on paper, not in reality.[[16]](#footnote-17) Kurzweil’s *Singularity* is founded on greatly simplified notions of intelligence and cognition (and therefore not shared by the artificial intelligence scientific community at large) while the much-reported recent breakthroughs in artificial intelligence concern only one field and application of A.I., pattern recognition through “deep learning” neural network processing of large data sets. Finally, that hopes of obsoleting work through automation ignore the massive ecological footprint and massive amount of maintenance labor that is necessary to keep systems running: from materials and energy supply for running robots and computer networks, periodical necessary renewal of fiber optics to the massive amount of work necessary for software maintenance. This does not even consider the complexities of providing housing, food and health for a growing world population in times of shrinking natural resources. All techno-utopian visions willfully ignore the real-life *crapularity* (as opposed to the Singularity) of systems malfunctioning, being riddled with construction flaws, being hacked and getting “wildly out of control”;[[17]](#footnote-18) serious issues of today’s computer technology which have not been solved but worsened the more complex the designs and networks of hardware and software have become.

Leaving these issues aside, the same leitmotifs reappear in the different historical periods and discourses from utopian Lullism to utopian accelerationism: automation and computation as forces that are expected to revolutionize knowledge, cognition and labor; and the creation of new classes of project developers, from the polymaths, project makers and prophets of the 17th century to startup companies, artists, activists, writers and techno evangelists in the 20th and 21st century.

# Revisiting the *ars* of Ramon Llull

Llull’s *ars* was a system for generating and modifying statements based on formal-combinatorial rules, with single letters as placeholders for concepts. Since the *ars* seemingly provides a formalized way of generating valid statements from existing valid statements, it has been interpreted as a proto-computer and a precursor to the formal-logical reasoning of analytic philosophy. Close observation, however, shows that the latter is not the case, since unwanted statements like “Goodness is the opposite of Truth” or “God is equivalent to impermanence” can be created with its figures and tables.[[18]](#footnote-19) Umberto Eco therefore concludes that Llull’s art cannot “really be considered a logical instrument at all” but “is, in reality, a sort of dialectical thesaurus, a mnemonic aid for finding out an array of standard arguments able to demonstrate an already known truth”.[[19]](#footnote-20) Alternatively, it could be called a poetics: a science based on creation (*poeisis*) instead of observation (like in modern empirical science), and a system in which science and mysticism as well as science and art were not yet differentiated from each other.

Llull’s book *Tree of Science* (*Arbor Scientiae*), published nine years before the *Ars Magna* in 1296, proposed the integration of sciences into one comprehensive system that provided a common foundation for each of them.[[20]](#footnote-21) Its model and way of structuring knowledge conformed to medieval scholastic science and Aristotle’s categories (which also formed the grammatical model for the statements generated through the *ars*). Eco observes that “the art became a means of treating the entire range of knowledge, drawing suggestions from the numerous medieval encyclopedias, and anticipating the encyclopedic dreams of the Renaissance and the baroque. All this knowledge, however, needed to be ordered hierarchically”.[[21]](#footnote-22) The *Tree of Science* and the *ars* thus not only laid the groundwork for a new type of encyclopedia, but - as philosopher Wilhelm Schmidt-Biggemann points out - for encyclopedism as philosophy.[[22]](#footnote-23) Yet for Eco, Llull’s original ars is still limited to functioning as “a rhetorical instrument […] designed to demonstrate what was already known, and lock it for ever in the steely cage of the system of trees”.[[23]](#footnote-24)

# Lullist encyclopedism in the 17th century

In 16th and 17th century Lullism, the *ars* - now often referred to as *ars combinatoria* - had evolved beyond a tool for the creation of statements into an all-comprehensive epistemological instrument. It was meant to integrate all sciences and include exoteric as well as esoteric knowledge. Paolo Rossi, author of one of the preeminent histories of Renaissance Lullism, calls it an “interest in the cabala and hieroglyphic writing, artificial and universal languages, the search for the primary constitutive principles of all possible knowledge, the art of memory and a preoccupation with logic understood as a ‘key’ to the hidden secrets of reality”. For Rossi, “all these themes were connected to the revival of Lullism in the Renaissance.”[[24]](#footnote-25) With occult science still being part of the scientific canon, even the hermetic combinatory memory system of the alchemist and Rosicrucian Robert Fludd belongs to its discourse and history.[[25]](#footnote-26)

The promise of Lullist combinatorics thus was to organize all existing knowledge and to create - or even automatically generate and decode - hidden and new knowledge in its computations. This way, the Lullist *ars* became a poetics of knowledge in the most comprehensive sense. With its mystical precursors in Llull himself followed, in the 16th century, by Giordano Bruno, Pico della Mirandola and Cornelius Agrippa,[[26]](#footnote-27) it subsequently branched out into, among others, musicology (such as in Marin Mersenne’s *Harmonie universelle* and the system for formalized and automated music composition in Athanasius Kircher’s *Musurgia universalis*),[[27]](#footnote-28) permutational poetry,[[28]](#footnote-29) linguistics (such as in lexical combination wheel of German poet Georg Philipp Harsdörffer and the universal language project of John Wilkins in the Royal Society),[[29]](#footnote-30) didactics of language[[30]](#footnote-31) and mathematics (with the construction of mechanical calculation machines such as the *cistula* of the Jesuit Caspar Schott.[[31]](#footnote-32) In all these disciplines, Lullists used combinatorial computation of predefined sets of elements (such as musical notes, letters, words and numbers) as an encyclopedic device. The aim was to exhaust the possibilities of permutation and combination and thus create complete generative systems for a language’s lexicon or musical composition. In practice, however, none of these systems lived up to this ambition.

With Johann Heinrich Alsted’s *Encyclopaedia* from 1630, 17th century Lullism produced a classical printed encyclopedia. Rossi characterizes it as a project of a “new ‘system’ of the sciences, which would unify the principles of all the disciplines in a single corpus”.[[32]](#footnote-33) Schmidt-Biggemann, who overlooked the its modern reprint, describes Alsted’s work as a life-long and increasingly complex endeavor of “establishing universal science on Lullist grounds”.[[33]](#footnote-34)

The “construction of total encyclopaedias and ordered classifications” in 17th century Lullism served, to use Rossi’s words, the objective of creating “true ‘mirrors’ of cosmic harmony”.[[34]](#footnote-35) Next to an Aristotelian-scholastic paradigm of systems of categories, Lullism was therfore indebted to Pythagorean and Neoplatonist thinking that conceived of the world as corresponding macro- and microcosmic spheres, a cosmology of *as above so below*. Alsted’s encyclopedia and all other Lullist systems were structured accordingly.

Before Diderot’s and d’Alembert’s encyclopedia in the 18th century, the organization of encyclopedias according to alphabet - and thus in an arbitrary order instead of systematic taxonomies and classifications of knowledge - had not existed. Diderot’s and d’Alembert’s revolution marked the victory of enlightenment empiricism and the defeat of universal knowledge systems based on holistic cosmologies. Through the new science, poetics, mysticism and the occult were ultimately pushed out of the canon. The end of comprehensive cosmologies and taxonomies of knowledge meant the end of the assumption of an overcoupling harmonic structure of the world.

The problem that Lullist encyclopedism addressed in the 17th century, on the historical threshold between medieval and modern science, was however different from the issue that Llull’s *ars* had addressed in its own time. 17th century Lullism was not so much concerned with universal *truth* (which is why Eco sees the *ars* as an “instrument to convert the infidels” with their own, kabbalistic devices, after “Lull had devoted years to the study of the doctrines of the Jews and Arabs”),[[35]](#footnote-36) but rather with universal *knowledge*. This reflects the growing difficulty of keeping a grip on human knowledge as one whole, systematizing, relating and ordering it. Most of its practitioners were therefore polymaths, such as Mersenne, Kircher, Alsted and Kuhlmann who fought a last battle for their concept of science.

At the end of the 17th century, the difficulties of encyclopedic Lullism of living up to its grand promises become obvious. In Quirinus Kuhlmann’s works, the *ars* is a practical composition device for his poetry - including a sonnet whose words can be permuted - in his prose, a speculative horizon of a total art and science. But the two never merged. To phrase it in contemporary terminology, there was a constant promise of a combinatorial “Singularity” in 17th century, but it remained the promise of a start-up endeavor that failed to live up to its expectations.

The parallel between 17th century and 21st century techno-scientific enterprises is less metaphoric than one might think. Most Lullist science was developed outside traditional universities in the upcoming ‘academies’, which were self-organized, non-institutional communities of scholars in that time. On top of that, Lullism played a role in 17th century project making. Project makers, such as the German Johann Joachim Becher (but also Gottfried Wilhelm Leibniz), were independent entrepreneurs and self-made men who went from court to court to pitch and, in the best case, execute speculative development projects, including making gold out of sand, the enlargement of rivers, the creation of new economic systems, or - in the case of Becher’s *Werkhaus* project in Vienna - what can be called a straight-forward forerunner of today’s Fab Labs and Maker Spaces. (Becher founded it with the promise of fighting unemployment in economically depressed Vienna.) Their ways of working greatly resembled those of contemporary technology start-up companies. Project makers would pitch a disruptive techno-economical innovation to be developed, collect venture capital (in the 17th century: from aristocrats) and execute of the project with a team, risking either failure or success. In such projects, the larger horizon of universal science and knowledge systems worked in similar ways as today’s horizon of artificial intelligence “Singularity” increases investor faith in such speculative technologies as crypto currencies and self-riding cars.

Becher’s projects included, according to Quirinus Kuhlmann, combinatorial machine translation through a contraption consisting of 50,000 dice with glued-on Latin and German words.[[36]](#footnote-37) Such inventions were in tune with 17th century Lullist use of combinatorial systems for the acceleration of learning which, in Rossi’s words “could transform an ignorant and unlettered youth into a wise man (whose abilities to understand and to act would be far greater than those who had been trained in traditional logic and philosophy) in an extraordinarily brief time (authors vary in their estimates between a month and two years)”.[[37]](#footnote-38) Lullists such as the poet Georg Philipp Harsdörffer and the educationalist Johann Justus Winkelmann, who wrote under the anagrammatic pseudonym Stanislaus Mink von Weinsheun, saw word combinatorics as a way of teaching the composition of poetry to anyone.[[38]](#footnote-39) Their systems anticipate today’s artificial intelligence applications such as the automated “assistants” in audiovisual editing software and Google’s *Clips* camera launched in 2018 that takes unattended photographs and automatically selects the bests ones based on machine learning of good photographic composition.

In the 1670s, Kuhlmann ended up in an argument with Athansius Kircher who, referring to his design of a “box” (“cista”) for automatic musical composition, claimed that any child could learn writing poetry by combinatorial means. Kuhlmann didn’t dispute the technical feasibility, but argued that this would merely yield versification, not real poetry,[[39]](#footnote-40) thus insisting on a metaphysical practice of Llulls *ars*. Nevertheless, its application had increasingly narrowed down to language and writing, not just in Kuhlmann’s and Kircher’s examples, but also in the British Royal Society where John Wilkins published his Lullist *Philosophical Language*.[[40]](#footnote-41) For Schmidt-Biggemann, this is a design issue of Llull’s *ars* as such, since it had been “developed as a universal language to convert the infidels”, on the basis of a combinatorics of topics universalia that “were all linguistically constituted”.[[41]](#footnote-42)

This way, 17th century Lullism was caught in a tension between mere technical applications of its combinatorial art - including the entrepreneurship of project making -, its speculative aspirations towards universal knowledge creation and, last not least, what Schmidt-Biggemann calls its hidden yet powerful “concept for participating in the divine truth”.[[42]](#footnote-43)

Computation, in other words, was eschatological. At least for apocalyptic mystics like Kuhlmann, it was part of an end game that was both epistemological and spiritual. The completion of a project like his *ars magna scribendi* (where, to quote it again, *no mortal being will be able to publish a book that our Ars scribendi wouldn’t already contain*)[[43]](#footnote-44) would have meant the end of literature and philosophy, and of intellectual labor at large.

# Automation and leisure society in the 20th and 21st century

In his later career, Kuhlmann shifted the grounds of his eschatology from the arts and sciences to millenarist prophecy, and to salvation through a reign of God on earth. In his 1957 monography *The Pursuit of the Millennium*, Norman Cohn reconstructs the history of European millenarist movements and their partial “anarcho-communism” in the late Middle Ages.[[44]](#footnote-45) Although his book emphasizes the religious militancy of the millenarist Free Spirit tradition and its historical origins in the crusades (and what could retrospectively be called Christian-European jihadism in the Middle East), it inspired post-war countercultural movements including the situationists. Guy Debord refers to Cohn in *The Society of Spectacle* but rejects his critique, since for Debord, “millenarianism, revolutionary class struggle speaking the language of religion for the last time, was already a modern revolutionary tendency”.[[45]](#footnote-46) Pop culture historian Greil Marcus later used Cohn’s book to construct an analogy between the millenarist Anabaptist John van Leiden, Sex Pistols singer John Lydon and French situationism.[[46]](#footnote-47)

Situationist utopias, however, were materialist. They were centered around the liberation of everyday life through play and intrinsically liked with the expectation of a leisure society. This expectation was founded on earlier economic and sociological theories. It conversely informed Situationist-inspired, countercultural and left-wing anti-labor positions from the 1970s to today. All these theories and positions refer to automation and its predicted obsoletion of work.

Effectively, leisure society theory date back to John Maynard Keynes, the preeminent 20th century economist whose model of counter-cyclical state intervention was widely adopted after the Great Recession of the 1930s and whose macroeconomics remains the best-known counter-model to laissez-faire capitalism today. As early as in 1930, Keynes predicted that automation would first create “technological unemployment” but eventually lead to an “age of leisure” with a 15 hour work week. Thus, he wrote, “the economic problem may be solved […] within one hundred years” and “is not – if we look into the future – the permanent problem of the human race”.[[47]](#footnote-48)

In French academia after the Second World War, leisure became an major object of social and cultural studies. Sociologist Henri Lefebvre, in whose seminars Guy Debord participated, described leisure as a critique of everyday life. Existing in a dialectical relation with the everyday, leisure “cannot be separated from work” yet provides space for the development of individuality outside productive labor.[[48]](#footnote-49) For Lefebvre, “work, leisure, family life and private life make up a whole which we can call a ‘global structure’ or ‘totality’”. This totality, however is not fixed in time but “historical, shifting, transitory”.[[49]](#footnote-50) The Situationist project might accordingly be described as an attempt to revolutionize the totality by replacing work and other traditional structures with play - for example, through its “unitary urbanism” that re-imagined cities through associative mappings and ludic explorations, and thus amounted to an antithesis to modernist functionalism.

Similar ideas existed in the Californian counterculture of the 1960s where “gurus Timothy Leary and Allan Watts maintained that nuclear disaster was the only scenario which would prevent a full-blown leisure society”.[[50]](#footnote-51) From the 1970s to 1990s, several prominent North American counter-cultural writers and theoreticians fused counter-cultural anarchism and Situationist theory. In his 1985 essay *The Abolition of Work*, Bob Black demanded that “No one should ever work”.[[51]](#footnote-52) Black calls work “the source of nearly all the misery in the world” and demands that “[i]n order to stop suffering, we have to stop working.” In line with the Situationist International, he positions play as “just the opposite” of work and advocates “work turned into play”: “Life will become a game, or rather many games, but not - as it is now - a zero/sum game”.[[52]](#footnote-53)

Quite evident in these quotes is the tragic turn (or as the Situationists would have called it: the “recuperation” or hijacking) of these ideas in the “Californian ideology” since the 1990s, to use a term coined by the British cultural theorists Richard Barbrook and Andy Cameron.[[53]](#footnote-54) Work turned into play has become the reality or even the norm in the “new economy” of Internet start-ups and other companies emulating their workplace model. This becomes visible in interior design details like foosball tables in offices, but more profoundly in the “gamification” of work processes (such as “code jams” and “hackathons”) and the blurring of office and home work, and of work and leisure - with the effect of never-ending work, cultural and psychological pressure to consider one’s wage work a “project” and personal fulfillment in the same way as artists have blurred the lines between their work and private life since the 1960s.

For Bob Black, automation was supposed to take care of the work that cannot be turned into play. Unlike Keynes in the 1930s and the French Situationists of the 1960s, he explicitly refers to computer technology, with its “possibility of cutting way down on the little work that remains by automating and cybernizing it”.[[54]](#footnote-55) Srnicek’s and Williams’ contemporary vision of *Inventing the Future* amounts to little more than an elaboration of what Black had sketched in the 1980s. Their criticism of the left-wing techno-skepticism and decentralized “folk politics” corresponds to Black’s endorsement of new technology, which in its time marked a decided antithesis against fellow American anarchist, post-Situationist and counter-cultural theoretician John Zerzan whose vision for a “freedom from work” was that of a primitivist society where modern technology has been given up and abundance is found in nature.

## Post-scarcity

What all these theories and manifests have in common with Keynes is their firm assumption that scarcity - the main issue with which economics traditionally deals - will soon cease to be a problem. This idea also stood at the beginning of the Free Software movement that created the GNU and Linux software. The *GNU Manifesto* by software developer and activist Richard Stallman appeared in 1985, the same year as Bob Black’s *Abolition of Work*, and took the middle ground between anarchist zero-work demands and Keynes’ 15-hour work week:

“In the long run, making programs free is a step toward the post-scarcity world, where nobody will have to work very hard just to make a living. People will be free to devote themselves to activities that are fun, such as programming, after spending the necessary ten hours a week on required tasks such as legislation, family counseling, robot repair and asteroid prospecting”.[[55]](#footnote-56)

Since then, this view has entered the mainstream, most prominently with the writer and political consultant Jeremy Rifkin who published a technocratic vision of the *End of Work* in 1995, later modified it into a prosumer *Zero Marginal Cost Society* where most goods and services will be follow an Internet model of free availability, and whose last coinage of the *Third Industrial Revolution* has been a major influence on, among others, Germany’s industry and energy politics of the 2010s.

The educationalist Michael A. Peters usefully summarizes post-scarcity as a discourse that spans science fiction, sociology and digital technologism.[[56]](#footnote-57) He points out that post-scarcity demands can be found both on the political left and the political right, with some being anti- and others pro-capitalist.[[57]](#footnote-58)

This blurriness between the left and the right, and between secular politics, political theology and outright cultism, is particularly evident in the *Zeitgeist Movement* which rose to prominence with the Occupy movement in 2011. Key activists and speakers of Occupy - among others, of Occupy New York, Blockupy Frankfurt and Occupy Amsterdam - were members of *Zeitgeist*. The movement was created through a series of suggestively edited feature films published on YouTube, *Zeitgeist: The Movie*, *Zeitgeist: Addendum* and *Zeitgeist: Moving Forward*, whose first installment presented a conspiracy theory and grand historical narrative from Christianity and institutional religion via 9/11 to the supposed elite control of the financial system and the media.[[58]](#footnote-59) Its creator, Peter Joseph (Peter Joseph Merola) later called the films “a performance piece”.[[59]](#footnote-60) Seeing “post-scarcity” as a present possibility, *Zeitgeist* advocates what it calls a “Resource-Based Economy” in which a central artificial intelligence computer program linked to sensors would globally allocate resources, and exercise economic governance based on computational objectivity.^[In its mission statement, *Zeitgeist* calls it “a new socioeconomic model based upon technically responsible Resource Management, Allocation and Distribution through what would be considered The Scientific Method of reasoning problems and finding optimized solutions.”[[60]](#footnote-61)

While the *Zeitgeist Movement* mostly identified as left-wing, it has been called an apolycalyptic Internet cult whose narrative makes use of anti-semitic tropes.[[61]](#footnote-62) With its techno-utopia, it reciprocally corresponded to the right-wing *Neoreaction* (“NRx”) movement that originated around the same time via the blog of the software developer Curtis Yarvin (a.k.a. Mencius Moldbug). Both *Zeitgeist* and *NRx* reacted to ongoing political crises, both originated in Internet subculture and home-brew political and economic theory, both reacted to an expected artificial intelligence “Singularity”, only with opposite conclusions: a global technocracy *All Watched Over by Machines of Loving Grace* (to quote poet Richard Brautigan and documentary filmmaker Adam Curtis) in the *Zeitgeist Movement* versus, in *NRx*, a right-extremist will to political power against machine rule, which eventually made *NRx* the elitist companion to the white-nationalist populist “Alt-Right” movement.

If one compares *Zeitgeist* to techno-eschatologies of the 17th century, then it could be said to combine the Lullist vision of formalized and automated total knowledge with macroeconomic project-making. In 17th century terminology, *Zeitgeist* thus pitches an “ars magna economica” whose practical design and implementation remains as sketchy as the Lullist *artes* that Kuhlmann and others had proposed. The idea of overcoming economic scarcity by technological and computational means is no less speculative and eschatological in the 21st century than the idea to exhaust knowledge by computational means was in the 17th century. Peters therefore is right to point out that

“both left-wing and right-wing conceptions of post-scarcity may be wrong. It is not clear that human beings, under any conceivable conditions, have unlimited time to make decisions. […] It is also not clear that time for the free play of the imagination has increased, could markedly increase or at least could ever be unlimited. Time is scarce, and it grows scarcer by the day as the tempo of life increases. As some things become freer (information notably), other things seem in fact to be less free and more governed by necessity”.[[62]](#footnote-63)

In the light of natural resource depletion, climate change and their implications for large parts of the world population, this is rather mildly phrased. The “Californian Ideology” seems to have been curiously embraced by various “post-scarcity” movements, including left-wing accelerationism. They believe industry promises of artificial intelligence and sustainable technology revolutions, without critical checks of their practicability, and without analyzing these promises as what they are, euphemistic investment sales pitches for unproven projects just like those made by project makers in the 17th century. Lullists back then and accelerationists today lack insight into crapularity as a reality underneath “Singularity” prophecies.

Post-scarcity movements might share the fate of Lullism and be studied in the future as metaphysics and eschatologies instead of what they acutally aspired to be. While the cornucopias they envisioned may not come to fruition, they nevertheless created an abundance of imagination and culture, from psychogeography to GNU software and pirate libraries. They will be enjoyed, just like 17th century Lullism, as poetry.

1. “Lull was quite explicit: he had borrowed his terms from the Arabs. Lull was searching for a set of elementary and primary notions that Christians held in common with the infidels. […] One is tempted to see in Lull’s series the ten Sefirot of the kabbala, but Platzeck observes (1953-4: 583) that a similar list of dignities is to be found in the Koran. Yates (1960) identified the thought of John Scot Erigene as a direct source, but Lull might have discovered analogous lists in various other medieval Neo-Platonic texts - the commentaries of pseudo-Dionysius, the Augustinian tradition, or the medieval doctrine of the transcendental properties of being” (Eco 1997, 66). [↑](#footnote-ref-2)
2. For extensive overviews and discussion, see (Rossi 2000), (Yates 2014) and (Schmidt-Biggemann 1983). I covered Lullist poetics in my own book (Cramer 2011) and reuse some of my findings here. [↑](#footnote-ref-3)
3. Kuhlmann credits, among others, the mathematician and musicologist Marin Mersenne, the Jesuit polymath Athanasius Kircher, the jurist and Lullist poet Thomas Lansius, the poets Daniel Schwenter and Georg Philipp Harsdörffer and but still finds their work insufficient (Kuhlmann 1673). [↑](#footnote-ref-4)
4. (Kuhlmann 1674, 15). [↑](#footnote-ref-5)
5. “tanta perfectione, ut nullus Mortalium librum edere posset, quem nostra Ars scribendi non comprehenderet”, (Kuhlmann 1674, 17). [↑](#footnote-ref-6)
6. “di große Bücherschreibungskunst / welche alles begreifet / was alle Menschen begreiffen / und durch einen gegeneinanderhaltungswechsel alles belehret / was belehret werden kont”, (Kuhlmann 1673, paragraph 27). [↑](#footnote-ref-7)
7. (Swift 1965, 182). [↑](#footnote-ref-8)
8. (Borges 1993, 467). [↑](#footnote-ref-9)
9. This parallel was suggested as early as in the 1990s and studied more comprehensively by (Rieger 1999). [↑](#footnote-ref-10)
10. (Kurzweil, 2005). [↑](#footnote-ref-11)
11. (Amarasingam 2008); (Cole-Turner 2012); (Proudfoot 2012); (Klinger 2017). [↑](#footnote-ref-12)
12. (Barbrook and Cameron 1996). [↑](#footnote-ref-13)
13. (Srnicek and Williams 2016, 2-3). [↑](#footnote-ref-14)
14. Ibid. [↑](#footnote-ref-15)
15. (Srnicek and Williams 2016), 112. [↑](#footnote-ref-16)
16. (Cramer 2011, 127-133). [↑](#footnote-ref-17)
17. Justin Pickard in (Raford, Sweeney, and Pickard 2011). [↑](#footnote-ref-18)
18. See (Cramer 2011, 54). [↑](#footnote-ref-19)
19. (Eco 1997, 63). [↑](#footnote-ref-20)
20. (Rossi 2000, 36-37). [↑](#footnote-ref-21)
21. (Eco 1997, 67). [↑](#footnote-ref-22)
22. “Der Begriff Enzyklopädie übernahm die Funktion des ganz weiten, wissenschaftskonstitutiven Philosophiebegriffs.” (Schmidt-Biggemann 1983, 132). [↑](#footnote-ref-23)
23. (Eco 1997, 69); a judgment shared by (Schmidt-Biggemann 1983, 185) who states that combinatorics was limited to invention, but wasn’t capable of judgement, which made the limitations of Lullism visible when it progressed towards representation of science (“Es konnte die Kombinatorik immer nur Invention sein , nie auch Judicium. Ohne eine Vorrangsbeschreibung des Judiciums, wie sie im Ramismus vorlag, war die Wissenschaftskonstitution nicht zu begründen. Deshalb war der Obergang von der kombinatorischen Invention zu einer Darstellung der Wissenschaften abrupt und unvermittelt, ein Bruch, der auch die Leistungsgrenzen des Lullismus indizierte.”) Schmidt-Biggemann sees the same deficiences in 17th century encyclopedic Lullism, such as in the *ars* of Athanasius Kircher (Schmidt-Biggemann 1983, 186). [↑](#footnote-ref-24)
24. (Rossi 2000, 29). [↑](#footnote-ref-25)
25. (Rossi 2000), (Yates 2014). [↑](#footnote-ref-26)
26. (Rossi 2000, 31) (Schmidt-Biggemann 1983, 159). [↑](#footnote-ref-27)
27. (Mersenne 1975), (Kircher 1970). [↑](#footnote-ref-28)
28. (Cramer 2011, 55-155). [↑](#footnote-ref-29)
29. (Harsdörffer 1969), .(Wilkins 1668) [↑](#footnote-ref-30)
30. (Weinsheun 1657). [↑](#footnote-ref-31)
31. (Schott 1668). [↑](#footnote-ref-32)
32. (Rossi 2000, 130), (Alsted 1989), (Schmidt-Biggemann 1983, 102). [↑](#footnote-ref-33)
33. “Was er in der Clavis Lulliana begonnen hatte, steigerte Alsted in drei Traktaten zu einem Versuch, die Gesamtwissenschaft Iullistisch zu begründen”, (Schmidt-Biggemann 1983, 102). [↑](#footnote-ref-34)
34. (Rossi 2000, xv). [↑](#footnote-ref-35)
35. (Eco 1997, 66). [↑](#footnote-ref-36)
36. (Cramer 2011, 158). [↑](#footnote-ref-37)
37. (Rossi 2000, 44). [↑](#footnote-ref-38)
38. (Cramer 2011, 83), (Rieger 1999, 20), (Traninger 2001, 193). [↑](#footnote-ref-39)
39. (Cramer 2011, 286). [↑](#footnote-ref-40)
40. (Wilkins 1668). [↑](#footnote-ref-41)
41. “Es war die lullistische Kunst zunächst als Universalsprache für die Bekehrung der Heiden entwickelt worden, und ihre Grundlagen, die Argumentation mit topisch gefaßten Universalien und deren Kombination, waren allemal sprachlich konstituiert und als Sprachtheorie denkbar.” (Schmidt-Biggemann 1983, 176). [↑](#footnote-ref-42)
42. “Die Präsenz des Lullismus im 17. Jahrhundert lag nicht allein in der möglichen - oder unmöglichen - Anwendung von Kreisen oder Tafeln der lullistischen Kunst auf Magie und/oder Universalwissenschaft. Verborgen, aber deshalb wohl um so wirksamer, blieb die lullistische Kunst im Teilhabekonzept an der göttlichen Wahrheit.” (Schmidt-Biggemann 1983, 156). [↑](#footnote-ref-43)
43. (Kuhlmann 1674, 17), translated from Latin. [↑](#footnote-ref-44)
44. (Cohn 1970, 214). [↑](#footnote-ref-45)
45. (Debord 2000, 81). [↑](#footnote-ref-46)
46. (Marcus 1997). [↑](#footnote-ref-47)
47. (Keynes 2010). [↑](#footnote-ref-48)
48. (Lefebvre 2014, 29-30). [↑](#footnote-ref-49)
49. (Lefebvre 2014, 42). [↑](#footnote-ref-50)
50. (Clements 2016, 11), referring to (Kornbluth 1968, 137-138). [↑](#footnote-ref-51)
51. (Black 1986). [↑](#footnote-ref-52)
52. Ibid. [↑](#footnote-ref-53)
53. (Barbrook and Cameron 1996). [↑](#footnote-ref-54)
54. (Black 1986). [↑](#footnote-ref-55)
55. An in-depth discussion of Free Software and post-scarcity can be found in (Mansoux 2017, 8) who also quotes this passage, (Stallman 1985). [↑](#footnote-ref-56)
56. Discussed in more detail in (Mansoux 2017). Peters writes: “Post-scarcity as a concept has existed for a while, not only in science fiction to describe economic and political systems where goods are freely distributed according to egalitarian principles but also by sociologists such as Anthony Giddens to point to trends in advanced industrial societies, by scientists who emphasize the benefits of nanotechnology with an abundance of raw material and self-replicating technologies and by digital technologists who point to zero cost in reproducing and sharing mass copies or to the examples of open source, open access, open archiving and open publishing movements”, in: “Introduction: Knowledge Goods, the Primacy of Ideas and the Economics of Abundance,” in Creativity and the Global Knowledge Economy, ed. Simon Marginson Michael Peters and Peter Murphy (New York: Peter Lang, 2009), 11. [↑](#footnote-ref-57)
57. (Peters, Marginson, and Murphy 2009, 12). [↑](#footnote-ref-58)
58. (Joseph 2014, 2015a, 2015b) [↑](#footnote-ref-59)
59. (Usher 2017). [↑](#footnote-ref-60)
60. (Zeitgeist Movement 2017). [↑](#footnote-ref-61)
61. (Goldberg 2011) [↑](#footnote-ref-62)
62. (Peters, Marginson, and Murphy 2009, 12). [↑](#footnote-ref-63)