

**TRYING TO
FACE THE
STORM AGAIN**



Pontus Hultén during the installation of the work *Fakir in 3/4 Time* (1968) by Lucy Jackson Young (artist) and Niels O. Young (engineer) in the exhibition *The Machine*, The Museum of Modern Art, New York, 1968

Trying to Face the Storm Again.
Pontus Hultén's *The Machine* as Seen at the End
of the Mechanical Age

Lars Bang Larsen

With more than “200 works of art and related objects” *The Machine* opened on 27 November, 1968, at New York’s Museum of Modern Art (MoMA), where Pontus Hultén had realised it with the assistance of curator Jennifer Licht and her assistant Jean-Edith Weiffenbach.¹ During 1969, Hultén’s New York guest appearance was followed by *The Machine*’s tour to the University of St. Thomas, in Houston, and the San Francisco Museum of Modern Art in what was as a major overseas manifestation of art histories and curatorial strategies that had been developed at Stockholm’s Moderna Museet during his directorship.

MoMA director René d’Harnoncourt had initiated talks with Hultén in 1965 with an American version of *Movement in Art*, the seminal group show that Hultén co-curated with Jean Tinguely and Daniel Spoerri at Moderna Museet in 1961, in mind.² Even though Tinguely and other proponents of kinetic art also figured prominently in *The Machine*, MoMA ended up getting an entirely different package – namely, an early curatorial engagement with the relation between art and technology in the context of Western modernity, a history onto which *The Machine* took a long view *as seen at the end of the mechanical age*, the exhibition’s subtitle announced.

Although one in this might pick up an echo of Walter Benjamin’s famous essay “The Work of Art in the Age of Mechanical Reproduction” (1935), Hultén doesn’t reference Benjamin (even if themes of speed and reproducibility are central to *The Machine* too); perhaps because he was concerned with “comments on technology by artists of the Western world” rather than with the effects of industrialism’s image technologies on the work of art.³ Hultén’s exhibition can perhaps be compared with Benjamin’s angel of history, from his equally famous essay “Theses on the Philosophy of History” (1940), with its face that was “turned towards the past”: this because *The Machine*, by pointing to a historical rupture in which the industrial machine is no longer a given, while at the same time placing its emphasis on machine technology rather than on what comes after, “fixedly contemplat[es]” the past it is moving away from, its

back turned to the future that “the storm of progress” is propelling it into.⁴ Thus the exhibition proclaimed the new but mainly offered the old, and its attachment to a mechanical paradigm seems to have refused it access to discourse formations in its own era. Also other exhibitions at the time, such as Harald Szeemann’s *Junggesellenmaschinen/Les machines célibataires* (1975), searched for a breakthrough to postmodernism through machinic imaginaries.

This essay is based on consultations with the Pontus Hultén archive at Moderna Museet that contains materials related to the making of the show at MoMA, the exhibition catalogue, and its tour.⁵ The many ambitious loans of artworks and artefacts that *The Machine* required, and Hultén’s long distance work from Stockholm during the preparation of the show, generated much correspondence, large portions of which is also available alongside the theoretical and art historical literature that Hultén consulted. In terms of both visual documentation and critical reception, it is the New York version of the show that is most comprehensively represented in Hultén’s archive at Moderna Museet, and that has informed the following discussion of *The Machine* through aspects of its exhibition history.

“This show is doomed!” – The making of *The Machine*

[T]echnology today is undergoing a critical transition. We are surrounded by the outward manifestations of the culmination of the mechanical age. Yet, at the same time, the mechanical machine – which can most easily be defined as an imitation of our muscles – is losing its dominating position among the tools of mankind; while electronic and chemical devices – which imitate the processes of the brain and the nervous system – are becoming increasingly important.⁶

Calling up a vast thematic domain, *The Machine* eschewed a formalist art history for a focus on mechanical mobility and image making that included feats of engineering alongside artworks. In the exhibition catalogue, a semiotic system reflected this interdisciplinarity: a spiralling arrow for “art”, a light bulb for “invention”, a small oldfashioned camera for “camera”, a small vehicle for “car”, thus distinguishing between artefacts while underscoring the juxtaposition – or near-levelling? – of artworks and machines. Specifically, the technical organisation of human movement and gaze was represented by an array of vehicles and various photographic



Exhibition catalogue for *The Machine as Seen at the End of the Mechanical Age*, 1968

apparatuses, including outlandish 19th-century patents such as Étienne-Jules Marey's "camera gun".

Correspondence between Stockholm and New York speaks of the exhibition's troubled genesis. Often provisional replies to loan requests that Jennifer Licht forwarded to Hultén are annotated with her comments, "Doesn't look good", "Reluctance to lend", or even, "This show is doomed!"⁷ In spite of adversity, *The Machine* ended up spanning half a millennium's worth of cultural production with spectacular loans. On the side of art history, the show's avant-garde spine included works by artists such as El Lissitzky, Hannah Höch, Umberto Boccioni, Max Ernst, Francis Picabia and Marcel Duchamp, while production from the grey zone between art and engineering included items as diverse as Leonardo's drawings for flying apparatuses, Lyonel Feininger's toy prototypes for miniature locomotives, Christopher Polhem's *Letters from Mechanical Alphabet*, and cartoons from the 19th and 20th centuries (Winsor McCay, Rube Goldberg and others). Contemporary art production was represented by variations on Pop Art and Hyperrealism (such as James Rosenquist and Claes Oldenburg), Nouveau Réalisme (César) and kinetic sculpture (Jean Tinguely, Takis, Hans Haacke), while Nam June Paik and the duo Marian Zazeela and La Monte Young represented post-Fluxus experimentation.

In his catalogue essay Hultén dramatises the machine as a Janus-faced trope that encompasses both human ingenuity and folly.⁸ Novelists and wayward thinkers ranging from Mary Shelley and Samuel Butler to Julien Offroy de La Mettrie and Jules Verne offered unexpected, literary perspectives, while quotes from Marx and social historians allowed Hultén to flesh out the social dimension of the exhibition theme. In his *Art Bulletin* review of *The Machine*, William A. Camfield emphasises Hultén's "social commentary" à propos of the photograph *Nigeria* (1960) by Ed van der Elsken that depicts "a Nigerian tending an awesome, antiquated apparatus" (as Camfield writes): in his caption to the photograph Hultén notes that "the mechanical age seems linked to the age of colonialism ... both were based on the instinct for exploitation" and Camfield comments that such "moving and illuminating ... remarks are hardly the standard fare of scholarly, historical exhibitions."⁹

Such perspectives can be said to modify the Eurocentrism of *The Machine*, as did its inclusion of Russian constructivism at a time when the recovery of the historical avant-gardes was still tainted

by the Cold War. The anti-communist Documenta, for instance, made no concessions to Eastern European avant-gardes before its sixth iteration in 1977; and a few months before the opening of *The Machine*, Documenta 4 in 1968 was nicknamed “Documenta Americana” for its preponderance of British and North American Pop artists. By contrast, at Moderna Museet earlier that same year, Hultén had presented the first exhibition outside of Russia on the work of Vladimir Tatlin. Tatlin was also a key player in Hultén’s art-and-engineering genealogy in *The Machine*, where the copy of Tatlin’s model for his *Monument to the Third International* (1919–20), built in 1968 by Ulf Linde and Per Olof Ultvedt for the Moderna Museet exhibition, graced MoMA’s sculpture garden.

Similar to other curatorial efforts on art and technology in the years to come, such as Los Angeles County Museum of Art’s (LACMA) Art and Technology Program (1967–71), gender was a non-issue made invisible in a patriarchal framework.¹⁰ Implicitly, and therefore essentially, technology was a male domain: if *The Machine* feminised machines such as racing cars, technologies of gendered reproductive labour were absent. In Hultén’s dramatisation of a Hegelian struggle between human and machine about servitude and mastery, kitchen machines would probably have connoted a domestic domain out of step with the exhibition’s heroic narrative. It seems relevant to raise the point, though, seeing how the televised “Kitchen Debate” between Soviet President Nikita Khrushchev and American Vice President Richard Nixon in 1959 had made the kitchen a battleground of bloc techno-politics. Besides, a gender sensitive perspective might have introduced other hermeneutical vectors on the machine than the projectile ones of speed and vision.

The exhibition’s retrospective character was counterintuitive for announcing a new era and instead engaging with the one that had passed. As Öyvind Fahlström wrote in his review of the show for *Dagens Nyheter*: “If you wanted to allude to technology’s accelerating reformation of the world ... you would probably point primarily to the computer and what it achieves, automation, thinking machines, robots. Military technology and space technology and their art-like uselessness and singular focus on quality.”¹¹ On the note of accelerationism, Hultén’s subtitle “the end of the mechanical age” not only echoes Benjamin but also Marshall McLuhan’s epochal claims of the end of the “Gutenberg Galaxy” – the modern



From the exhibition *The Machine*,
The Museum of Modern Art, New York, 1968



world of the printed word, a hypothesis that he popularised in his seminal anti-book *The Medium is the Massage*, from 1967.¹² It is hard to imagine that Hultén was unaware of McLuhan's very influential and popular writing, and you might get the impression that he took McLuhan fleetingly into account, while ultimately being unwilling – or simply omitting – to integrate his thinking.

McLuhan displaced mechanical apparatus to communicative ambience, and employed his expanded, performative notion of media – “all media work us over completely” – to claim that “any understanding of social and cultural change is impossible without a knowledge of the way media work as environments.”¹³ We can speculate that McLuhan's privileged terms of media and ambience would have complicated the homology mechanical apparatus/art object that organised the curatorial syntax of *The Machine* and its social and aesthetic commentary. Hultén's focus on the machine also distanced him from another dominant take on technology at the time – namely, the way Martin Heidegger in his post-war writing was concerned with the metaphysical essence of technology as a rationale and an attitude towards the world.¹⁴

McLuhan took issue with the linearity of progress with his famous notion of a tribal “global village” as a “simultaneous happening” in which “electric circularity has overthrown the regime of ‘time’ and ‘space’”.¹⁵ For Hultén, on the other hand, progress was (still) a matter of a sort of race against technology in which art played an essential role in humanizing the former. But the split that had caused destructive progress could be healed in an integration of art with (other) forms of *tekhné* in an aesthetic wholeness of knowledges and practices – and hence of society – that according to Hultén had existed in ancient Greece prior to disciplinarity. Thus, to Hultén, in ancient Greece “there was no more opposition between nature and the application of natural laws in technics than there was between technics and art”.¹⁶ This imagined reunification had the added purpose of removing art from its pedestal where it has been “respectfully venerated, and consequently quite misunderstood” in the abandonment of “the humanist standpoint [in favour of] a sophistical defence of property”.¹⁷ Thus Hultén argues:

Clearly, if we believe in either life or art, we must assume complete [human] domination over machines, to subject them to our will, and direct them so that they may serve life in the most efficient way

– taking as our criterion the totality of human life on this planet.

In planning for such a world, and in helping to bring it into being, artists are more important than politicians, and even than technicians. But, of course, it is not artists in whom we ordinarily most place our confidence.¹⁸

Hultén also cites overproduction and industrialisation’s “reckless exploitation of the earth’s natural resources”.¹⁹ Not only the period vocabulary in which “nature” is seen as a question of resources, and not as a planetary life support system, but also Hultén’s rearranging of signifiers of art, nature, and technology in favour of a new naturalness or transparency of art and technology, reveal why nature disappears in *The Machine*. Today we have the theoretical tools to call out such an anthropo- and logocentrism that erases nature in the sublation of art and technology under enlightened human agency – a rationalising impulse crowned by Hultén’s techno-optimism in which artists are needed to keep history from being rudderless: an attempt at bending the storm of progress to morality through art, as it were. As Amelia Jones notes, the connection between art and humanism is a complacent one.²⁰ In Hultén’s case, this complacency comes down to his conviction about the separability between human and machine that issues the promise that modernity can have it both ways: a world of harmonious technological efficiency *and* aesthetic presence.

From another point of view, nature as a blind spot in *The Machine* is reflected in John Canaday’s *New York Times* review of the exhibition.²¹ In the show’s juxtaposition between art and machine, the machine betters art: in this way Canaday suggests that no modern painting or sculpture can compete in beauty with the machines that inspired artists to either revolt against them or to unite with them (a view that resonates in the “machine-age formalism” propagated by, for instance, Fernand Léger and his claim that the machine had an inherent beauty because of its lack of aesthetic intentionality).²² One implication of how art can be beaten at its own game by the machine is that the human-made replaces nature as the aesthetic ground and measure of that which within a traditional aesthetic is to be imitated – a recipe (Hultén’s intentions to the contrary) for the conceptual obliteration of nature.

This rhetoric is familiar from *Experiments in Art and Technology* (E.A.T.), the New York-based non-profit organisation founded

cc: Pontus Hultén
Miss Dudley

February 28, 1968

Mr. Frederick S. Wight
Director
The Art Galleries
University of California
at Los Angeles
405 Hilgard Avenue
Los Angeles, California 90024

Dear Mr. Wight:

For a major exhibition we are preparing called THE MACHINE we are trying to track a painting by Charles Sheeler, Suspended Power, 1939. I see from the catalogue that you included this work in an exhibition of Sheeler's work in 1954 and at that time it was in the collection of the S. Morgan Smith Company, York, Pennsylvania. We have tried to get in touch with this company but they no longer seem to be in existence, and I wonder if you could give me any more information or if you have any knowledge of the present whereabouts of the painting. It is a matter of some urgency for us to find the picture and I should be most grateful if you could reply to this letter at the earliest opportunity.

With thanks for any help you are able to give us,

Yours sincerely,

Jennifer Light
Assistant Curator

this show is closed

Letter from the assistant curator Jennifer Light to Frederick S. Wight, director of the Art Galleries, University of California

in 1966 by engineers Billy Klüver and Fred Waldhauer with artists Robert Rauschenberg and Robert Whitman. The pre-eminent art-technology initiative in the United States at the time, E.A.T. was created with the agenda to promote collaborations between artists and engineers outside of the art museums and the art market.²³ A section of *The Machine* included eight new commissions as the result of a competition “for engineers and artists” organised between MoMA and E.A.T. (simultaneously with *The Machine*, 150 works submitted to the E.A.T. competition were shown at the Brooklyn Museum under the title *Some More Beginnings* and the direction of Klüver). Hultén’s close connection with E.A.T. president Klüver was a significant “New York connection” and the organisation was included in the exhibitions *Utopia and Visions 1871–1981* (1971) and *New York Collection for Stockholm* (1973) during Moderna Museet’s formative years.²⁴ The section of the exhibition co-organised with E.A.T., though, remained something of a sideshow to the main event at MoMA. Reviews reveal scant interest in it, and the only digital work in *The Machine* – to be found in the E.A.T. section – was characterised by Öyvind Fahlström as “naive”.²⁵ If *The Machine* pulled its punches in relation to the cybernetic age to follow the end of the mechanical one, that same autumn curator Jasia Reichardt opened *Cybernetic Serendipity* at London’s Institute of Contemporary Arts, an exhibition that differed markedly from *The Machine* by putting artistic speculation with thinking machines centre stage.²⁶

E.A.T.’s vision for the artist-engineer alliance resonates in a tendency among avant-garde artists during the New York Dada period to privilege the engineer over the artist. As Amelia Jones notes, Duchamp, the anti-art genius, “liked to proclaim that he considered himself an engineer rather than an artist”.²⁷ Hultén’s inclusion of cars and other machines can be called a Duchampian curatorial gesture, yet devoid of Dada’s exposure of “the absurdity” of distinctions between industrial and aesthetic. Jones again:

The avant-garde’s valuation of the engineer or everyday worker also functioned to privilege the untutored eye, which intuited a kind of machine-age beauty that overtrained artists could no longer see (the “freshness” attributed to the engineer’s or laborer’s eye is thus akin to the freshness of the so-called primitive, who is not overschooled in bourgeois habits and thus supposedly has a purer, less adulterated capacity to appreciate true beauty).²⁸

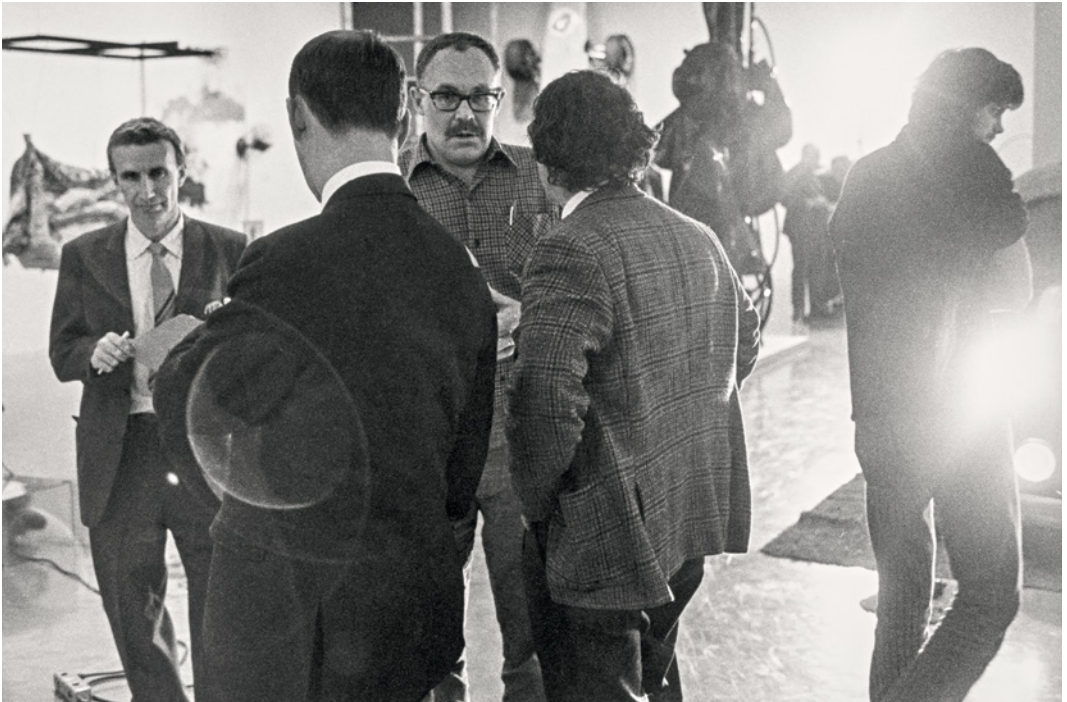
If *The Machine*, with works by Duchamp, Picabia and even Elsa Freytag von Loringhoven, can be seen as a curatorial response to the modern experience of the threatening aspects of urban industrialism and the social changes that accompanied it, the exhibition also came, via E.A.T., with a specific proposal for how to overcome estrangement and trauma through a marriage of artmaking and instrumental reason – an aesthetic functionalism, to call it that, that contrasts with the machine works of New York Dada as “extremely complex [and] incomplete negotiations of the violent challenges to the masculine subject in urban industrialism.”²⁹ That is, if echoes persisted from New York Dada in *The Machine*, Hultén now employed its ethos of techno-primitivism to rather different ends.

“A deeply personal exhibition” – The curatorial subject

The Machine was very positively, if also somewhat politely received. *The Village Voice*'s John Perrault noted circuitously that “the still tentative marriage between art and technology ... offers the possibility of the reasonable exploitation of intuition and the intuitional exploitation of reason.”³⁰ You don't get the feeling that the show hit a raw nerve, the way *Movement in Art* was “upsetting, depressing and immoral” as *Svenska Dagbladet* summarised *The Machine*'s predecessor at Moderna Museet.³¹

The conservative lining on *The Machine* seeped into its social context. Thus, before *The Village Voice* reviewed the show, Blaire Sabol had covered its opening in the paper's fashion column. Here a photograph shows art critic Jill Johnston in “Houston original cowboy outfit in pastel brocade”, while Factory star Ultra Violet “remained violently velveteed as usual”. Such sartorial aplomb stood out, though, as the “black tie invite brought ... the middle-aged man's return to normalcy” after the Summer of Love's exotic inspirations. On the side of women's fashion, too, it was a *retour à l'ordre* against bohemian excess: “there was no question that there was more bulk, hard steel and wire in the female display than in the machines, due to Seventh Avenue's bust-binding ideas”.³²

One of the big social events of *The Machine* was Hultén himself, whose persona graced the show in the manner of a great conductor or film director. Understandably, Swedish media were agog over the Moderna Museet director's guest appearance at MoMA, the most prestigious art institution in the Western World at the time.



Above: Pontus Hultén in the exhibition *The Machine*, New York, 1968.
Below: Marcel Duchamp, *The Large Glass* (1915–1923/1961) from the Moderna Museet collection in the same exhibition, 1968

Swedish journalists covered the exhibition as an unfolding event and followed Hultén around town, from a glamorous reception in his honour at the Consulate General of Sweden, with Andy Warhol, Robert Rauschenberg and other art world luminaries in attendance, to reports about the American reception of the show, including a walk-through of the exhibition and interview with its maker by Fahlström (again!) for the Swedish national broadcaster.³³ Also MoMA's *Members Newsletter* emphasised that "the character of the exhibition ... derives from the personality of the man who organized it".³⁴ Archival photographs illustrate the point: a casually dressed Hultén appears to have moved his office, or at least the telephone, into the galleries of MoMA, where he is also seen to be engaged in hands-on installation of works. There is even a media buzz that he is in line for "the powerful post of director of museum collections, a job now held by the distinguished Alfred Barr".³⁵

Written by Hultén, and with its colourful and wonderfully clunky metal cover design by Anders Österlin, the exhibition catalogue was an important part of *The Machine*. In June 1971 – more than two years after the opening of *The Machine*, and well after the tour was over – the catalogue was "the primary object" of William A. Camfield's *Art Bulletin* review of *The Machine*.³⁶ Here he dwells on the cover in "thin sheet metal, embossed with a scrawling script title, *The Machine*, and with a prosaic, polychrome design based on a photograph of the façade of the Museum of Modern Art".³⁷ With its air of a graphic novel or some sort of elegantly canned book, the cover evokes the industrial origins of Pop Art's visuality. An object of the mechanical age that conveys an image of the technological city's exhibitionary apparatus, the catalogue makes for a premonition of the Centre Pompidou, the museum of which Hultén would become founding director (1973–81) a few years later.

The critical afterlife of *The Machine* takes Hultén's project into the 1970s, where it can be compared with another modernist end game: Harald Szeemann's exhibition *Junggesellenmaschinen/Les machines célibataires* (Bachelor Machines), which toured to no less than nine West European venues between 1975 to 1977, including Malmö Konsthall in Sweden, where it was shown in the autumn of 1976. Like *The Machine*, *Les machines célibataires* was historically anchored, according to Szeemann precisely to the era between 1850 and 1925, and also awarded a central role to Duchamp.³⁸ Additionally, a personally voiced écriture was important to both "curauteurs" as we might call

them: Szeemann's endeavour, too, can be called "a deeply personal exhibition" as Fahlström characterised *The Machine*.³⁹

However, if *The Machine*'s art history was trained on techno-humanism, Szeemann's show put desire over morality in no uncertain terms, bypassing the earnestness of the art and technology theme and instead focusing on the angst-ridden limits and perverse supplements of a mechanised modernity. Intellectually adventurous, Szeemann's proposition provided a post-Freudian exegesis of the machine as a modern myth of obsession and sublimation with a roster of contemporary thinkers, including Michel de Certeau, Jean-François Lyotard and Michel Serres, who accompanied the viewer to roam the garden paths of artistic idiosyncrasy and post-structuralist critiques of modernity.⁴⁰ Hultén and Szeemann quote the same passage from Michel Carrouges's Duchamp study *Les Machines célibataires* (1954) for their respective catalogue texts, however it was clearly Szeemann who made the most of Carrouges's diagnosis of the bachelor machine as an "a fantastic image that transforms love into a mechanics of death".⁴¹ If Hultén's announcement of the end of the mechanical age hinged on his tactful loyalty to "the humanist standpoint", Szeemann explicitly set the libidinal economy of his bachelor machines to work on the doomed metaphysics of the modern era.⁴² Amplifying his curatorial concept of "individual mythologies" from Documenta 5 in 1972, Szeemann insisted that his exhibition theme was premised on its being an "eminently political ... mythology" including his own role in its work on historical limits: "The exhibition organiser ... chooses an epoch that has to be overcome for there to be a continuation (for him? For others as well?)".⁴³ Allegedly capable of being at once individualistic, mytho-visualising and political, Szeemann's exhibition was no doubt as excessive, self-centred and otherwise repressive as the Western modernity he undertook to deconstruct. It might be said that his raw and experimental curatorial stance didn't commit the institutional sin of taming the avant-garde. It did, however, flagrantly turn woman into its historical casualty. As Caroline Jones writes: "Crucial to the ideology of the bachelor machine was the existential fiction of its autonomy as a male generator of forms and activities (no females reproducing here)."⁴⁴

With certain telling overlaps and very different aims and methods, Hultén and Szeemann searched for an exit from the modern era through the encounter between art and machine. Szeemann



Jean Tinguely, *Méta-Matic No 17* (1959) from the Moderna Museet collection, in the exhibition *The Machine*, The Museum of Modern Art, New York, 1968

managed to penetrate (priapic pun intended) an opening between eras and *épistémès* by interrupting positivistic and ameliorative ideas of technology, but his exhibition was a dark and decadent option rather than a promise for the future. As for *The Machine*, Hultén's show was also attuned to the historical avant-garde's play with machinic imaginary, yet devoid of irony and ultimately blocking the passage out of the modern with modernistic promises issued by its humanistic *Weltanschauung*.

In his "Theses on the Philosophy of History" Walter Benjamin mentions the unbeatable, mechanical chess-playing Turk, a sham automaton at the 18th-century Viennese court whose alleged perfection was ultimately owed to the fact that someone operated it from the inside. In Benjamin's famous analogy, Marxism could only explain history if it, like the chess-robot impostor, draws upon hidden powers – in the case of dialectical materialism, those of theology. Maybe Hultén's exhibition had a ghost in its inner workings, too, by investing art with a similar theological affordance. The exhibition's vision could only be redeemed by the appearance of some metaphysical entity that is external to history – a "messianic time", to use Benjamin's concept, or the aesthetic means with which a meaningful union of art and technology could be restored in Hultén's *grand récit*.⁴⁵

Postscript

Today it takes a leap of the imagination to think of "art" and "technology" as separate entities. It was with this in mind that I curated the group show *Mud Muses – A Rant About Technology* at Moderna Museet in 2019–20. The exhibition proposed that the (historyladen, if not downright anachronistic) art and technology formula in a deliberately untimely fashion might be relevant for analysing technology as a "realized condition" in the present.⁴⁶ As I wrote, the exhibition encompassed:

a longer timespan than that defined by the rise of the Internet and the present hegemony of digital mediation ... providing the opportunity to assess historical change and to consider directions that will shape our future.⁴⁷

The exhibition owed its title to Robert Rauschenberg's eccentric installation *Mud Muse* (1968–71) and science-fiction writer Ursula

K. Le Guin's 2004 essay "A Rant About 'Technology'". Rauschenberg's work (NMSK 2174) in the Moderna Museet collection consists of a large, minimalist vat of glass and steel, in which plopping sounds, created by compressed air, pass through valves at its bottom to make little geysers erupt in thousands of pounds of synthetic mud made from a recipe of glycerin and finely ground volcanic ash. Through the LACMA's Art and Technology Program, Rauschenberg collaborated with personnel from the industrial conglomerate Teledyne Inc., an aerospace-oriented industry with commercial and military clients. It was Teledyne that, in 1973, donated the work through E.A.T. to Moderna Museet, where it arrived in a group of other North American acquisitions and donations. The project was negatively received by some local artists and activists with accusations of "technocratic emptiness", cultural imperialism and symbolic endorsement of the US military-industrial complex at the height of the Vietnam War.⁴⁸

"Technology is the active human interface with the material world", according to Le Guin's definition of technology that is not only more value-neutral and non-deterministic than many, but also anthropocentric, and very broad.⁴⁹ With this, Le Guin takes the concept beyond objects of substance – machines such as "a computer or a jet bomber" – and undoes its providential essence of being always and only modern. Instead, as an object for sci-fi thinking, technology is uprooted from the rationality of the present and rendered movable in historical times and spaces.

Through contributions from, among others, Mumbai's Vision Exchange Workshop (1969–74) and the contemporary Johannesburg collective CUSS Group, *Mud Muses* set out to challenge "the geopolitics of a North Atlantic axis that has dominated histories of technology and art – including some of those told at Moderna Museet" (to quote myself again).⁵⁰ Philosopher Yuk Hui's post-colonial analysis of cosmotechnics engaged with, among other contributions, cosmograms by the Amerindian shamans Armando, Paulino and Antônio Marubo, while a feminist perspective took aim at "undaddyding" the techno-patriarchy.⁵¹ Thus in an attempt to eschew boosterism and techno-fix ideologies, the exhibition invited a range of artistic approaches from the last half-century to explore – or even explode – the concept of technology with a multitude of concerns, from the vantage point of a 21st-century art institution expected to perform in a digitised experience economy.

Today the question of technology has an almost ontological character, both from the point of view of how human life is technologically circumscribed and fundamentally enframed, and from the perspective of artificial intelligence that is in the process of making technology cognizant and sentient. Through its efforts towards “undaddyding” and decolonising technology, *Mud Muses* was critically tied to the legacy of Hultén and the art-and-technology framework of the 1960s – with hindsight, the exhibition prepared the ground for a rupture with the modern through its effort towards building historical accountability for the concept of technology, but its legacy-oriented starting point arguably prevented it from putting the Western world’s angel of history to rest, or at least turning its head in the right direction.

At a point when life itself on this planet is under threat, thus revealing the naïveté and anthropocentric limitations of Hultén’s vision of an *Aufhebung* of art and technology, a critical radicalisation – or *exacerbation* – of the premise of techno-ontology is called for. If technology is the fulcrum around which human culture reproduces itself as such, then what would happen if the nature/culture binary is flipped in favour of nature? In other words, what would be a post-cultural concept of technology? As Karen Barad suggests, “What if we were to understand culture as something nature does?”⁵² A reworking of the human/non-human and the nature/culture binaries (that also takes into account that nature is a “projection” and a “materialized fantasy” as Donna Haraway puts it) might free up a necessary critical and creative space for a contemporary interrogation of technology.⁵³

As for Hultén, his institutional thinking around the art-technology nexus was more radical than his curatorial work on *The Machine*. As Kim West points out, cybernetics was part and parcel of his and Moderna Museet’s attempt to reconfigure the exhibitionary apparatus itself.⁵⁴ When plans were made during the mid-1960s for Moderna Museet to be moved from its then (and present) location at Skeppsholmen to central Stockholm, Hultén and curator Pär Stolpe reimagined the modern museum of art as a blend between Tatlin’s tower and a sophisticated databank and transmission station. Hultén and Stolpe drew a concentric diagram that undid the isolationism of the modernist white cube, instead outlining the museum as a spherical institution. The outermost sphere “connects to the universe of everyday life, characterized by an accelerated concentration of information”; the second sphere represents workshops in which the “means of

production are available” for museum-goers; the third layer is home to presentations of the workshop productions in “different manifestations: visual arts, films, photo, dance, concerts”.⁵⁵ The core of the diagram, finally, is reserved for the memory of the processed information, the museum’s collection. Such a Moderna Museet would never be realised in Stockholm, but with Hultén’s appointment at the Centre Pompidou, his and Stolpe’s vision of an artificial mind or architectural machine opening up to the flows of the social field came closer to seeing the light of day, *mutatis mutandis*. But this is yet another point where the history of Hultén’s *The Machine as Seen at the End of the Mechanical Age* forks out into a different future.

1. Press release no. 123 for *The Machine*, 25 November, 1968. <https://www.moma.org/calendar/exhibitions/2776> (23 August, 2022). The exhibition was on until 9 February, 1969.
2. In 1965 d'Harnoncourt asked Hultén whether he “should like to organize an exhibition on kinetic art” and this also implies that *The Machine* was developed for a US context. See K. G. Pontus Hultén, “Foreword and Acknowledgments”, *The Machine as Seen at the End of the Mechanical Age* (exh. cat.), ed. K. G. Pontus Hultén, New York: The Museum of Modern Art, 1968, p. 3.
3. K. G. Pontus Hultén, *The Machine as Seen at the End of the Mechanical Age*, 1968, p. 3.
4. Walter Benjamin, “Theses on the Philosophy of History”, *Illuminations. Essays and Reflections*, ed. Hannah Arendt, London: Penguin Random House, 1955/2015, pp. 245–256.
5. Exhibitions, *The Machine* 1–7. MMA PHA 4.2.52–58.
6. K. G. Pontus Hultén, *The Machine as Seen at the End of the Mechanical Age*, 1968, p. 3.
7. Hand-written comment on copy of letter, regarding a request for help with locating “a painting by Charles Sheeler, *Suspended Power*, 1939”. Letter from Jennifer Licht to Frederick S. Wight, Director of The Art Galleries, University of California, 28 February, 1968. MMA PHA 4.2.55.
8. K. G. Pontus Hultén, “Introduction”, *The Machine as Seen at the End of the Mechanical Age* (exh. cat.), ed. K. G. Pontus Hultén, 1968, pp. 6–13.
9. William A. Camfield, review of *The Machine as Seen at the End of the Mechanical Age*, *The Art Bulletin*, vol. 53, issue 2, 1971, pp. 275–277. K. G. Pontus Hultén, *The Machine as Seen at the End of the Mechanical Age*, 1968, p. 175. Scholars such as Susan Buck-Morss have later agreed with this perspective, but rather from the inverse perspective of colonialism being a precondition for the mechanical age: “It is significant that all of this [the Haitian Revolution in 1791 and its repercussions in Europe] happened before the introduction of machine labor on a grand scale. By imagining modernity as synonymous with Europe, we have misunderstood how much modern capitalism was a product of the colonial system, which was in many ways ahead of European developments.” See Susan Buck-Morss, *Hegel, Haiti, and Universal History*, Pittsburgh: University of Pittsburgh Press, 2009, p. 100.
10. LACMA’s A&T Program, as it was nicknamed, included not a single woman on its list of sixty-three male artists.
11. Öyvind Fahlström, “En lustfylld maskindans”, *Dagens Nyheter* (Stockholm), 4 January, 1969. Fahlström also reviewed *Rörelsen i konsten* (Movement in Art), endorsing it as an exhibition that has “the nature of factory, nursery, laboratory, madhouse, greenhouse, fairground; anything but a museum.” Öyvind Fahlström, “Rörelsen i konsten – en förstummande upplevelse”, *Expressen* (Stockholm), 19 May, 1961.
12. Similarly, Norbert Wiener is quoted in Hultén’s catalogue essay, yet as Fahlström also notes, cybernetics – neither as a theory of systems, nor in terms of thinking machines – is not employed in *The Machine* beyond

being checked as a marker of contemporaneity. See Öyvind Fahlström, “En lustfylld maskindans”, *Dagens Nyheter*, 4 January, 1969.

13. Marshall McLuhan and Quentin Fiore, *The Medium Is the Massage. An Inventory of Effects*, New York: Simon & Schuster, 1967, p. 26.

14. Closer both to New York City and the field of art, *The Machine* also took a different trajectory than the MIT’s pioneering interdisciplinary art programme at the Center for Advanced Visual Studies, founded in 1967 by the artist György Kepes, for whom the meeting with technology played out on “art’s civic scale” in the entanglement between urban and environmental milieus. See György Kepes, “Toward Civic Art”, *Leonardo*, vol. 4, no. 1, 1971, pp. 69–73.

15. Marshall McLuhan and Quentin Fiore, *The Medium Is the Massage. An Inventory of Effects*, 1967, pp. 16 and 63.

16. Pontus Hultén, “Introduction”, *The Machine as Seen at the End of the Mechanical Age*, 1968, p. 10.

17. *Ibid.*

18. *Ibid.*, p. 11.

19. *Ibid.*, p. 10.

20. Amelia Jones, *Irrational Modernism. A Neurasthenic History of New York Dada*, Cambridge, MA: The MIT Press, 2004.

21. John Canaday, “Art. Machines Fascinate”, *New York Times*, 28 November, 1968.

22. Amelia Jones, *Irrational Modernism. A Neurasthenic History of New York Dada*, 2004, p. 139.

23. The art historical authority of initiatives associated with E.A.T. is being renegotiated by critical readings such as Kim West’s when he juxtaposes the “oligarchic” ethos of E.A.T.’s Automation House with Hultén’s outline for a new Moderna Museet and its “radically democratic” vision derived partly from the Swedish post-war welfare state, partly from a Russian constructivist tradition. See Kim West, “Mud Muse, Mutatis Mutandis: Notes on Two Models of the Art-Technology Alliance”, *Mud Muses. A Rant About Technology*, ed. Lars Bang Larsen, Moderna Museet exhibition catalogue no. 407, Stockholm: Moderna Museet, 2019, pp. 71–87.

24. See Pontus Hultén, “The New York Connection”, *Teknologi för livet: Om Experiments in Art and Technology*, Paris: Schultz Förlag AB and Norrköping: Norrköpings Konstmuseum, 2004, pp. 143–147. Originally published in *Moderna Museet 1958–1983*, eds. Olle Granath and Monica Nieckels, Stockholm: Moderna Museet, 1983, pp. 54–57. For an interview with Billy Klüver see Marianne Hultman, “Our Man in New York. An Interview with Billy Klüver on his Collaboration with Moderna Museet”, *The History Book. On Moderna Museet 1958–2008*, eds. Anna Tellgren and Martin Sundberg, Stockholm: Moderna Museet and Göttingen: Steidl, 2008, pp. 233–256.

25. Öyvind Fahlström, “En lustfylld maskindans”, *Dagens Nyheter*, 4 January, 1969. The work in question was *Studies in Perception I* (1968), a computer-processed photographic print of a female nude submitted to the competition by Leon D. Harmon and Kenneth C. Knowlton.

26. The press release for *Cybernetic Serendipity* from 1 June, 1968, is to be found in the archive of *The Machine*, indicating that Hultén was aware of the London exhibition. The release, that includes a list of biweekly “Cybernetic Serendipity Lectures” describes the exhibition as including: “1. Computer generated graphics, computer animated film, computer composed and played music, computer verse and texts”; “2. Cybernetic devices as works of art, remote control robots, Cybernetic environments, and painting machines”; and “3. Demonstrations of how computers work, the history of Cybernetics, and daily film shows between 12–2 pm”. MMA PHA 4.2.55.

27. Amelia Jones, *Irrational Modernism. A Neurasthenic History of New York Dada*, 2004, p. 46.

28. *Ibid.*, pp. 137–139.

29. *Ibid.*, p. 125.

30. John Perrault, “art to make it new” [sic!], *The Village Voice*, 15 December, 1968.

31. Catharina Bauer, ”Konstnären och maskinen”, *Svenska Dagbladet* (Stockholm), 15 December, 1968.

32. Blaire Sabol, “Fashion Column”, *The Village Voice*, 5 December, 1968.

33. A *Svenska Dagbladet* report on 1 December, 1968, refers to the reception at the Consulate General of Sweden in New York; *Dagens Nyheter*, 6 December, 1968, mentions Fahlström’s interview with Hultén.

34. Helen M. Franc, “The Machine as Seen at the End of the Mechanical Age”, *Members Newsletter*, New York: The Museum of Modern Art, November–December, 1968.

35. See “Papa for MOMA”, *New York Times*, 8 January, 1968 (probably written by Grace Glueck).

36. William A. Camfield, review of *The Machine as Seen at the End of the Mechanical Age*, *The Art Bulletin*, vol. 53, issue 2, 1971, pp. 275–277. The rest of the publication’s design is credited to Hultén, Gösta Svensson and Anders Österlin’s collaborator, John Melin; the cover photograph was taken by MoMA curator Alicia Legg. Österlin and Melin created the catalogues for the *She – A Cathedral* and Andy Warhol exhibitions at Moderna Museet, among other graphic materials for the museum.

37. *Ibid.* Delightfully nerdy reviews of the catalogue were also published in professional journals for graphic designers, for instance in *Grafisk Faktorstidning* (Grafiska faktors- och tjänstemannaförbundet, Stockholm), no. 5, 1969, p. 66.

38. Where Szeemann quoted Duchamp’s *The Large Glass* for his title, Hultén also gave Duchamp a strong showing in *The Machine* with seven works, including Ulf Linde’s replica of *The Large Glass* (1915–23/1961) from the Moderna Museet collection, and *Nude Descending a Staircase* numbers 1 (1911) and 3 (1916) from the collections at the Philadelphia Museum of Art.

39. Öyvind Fahlström, “En lustfylld maskindans”, *Dagens Nyheter*, 4 January, 1969.

40. It can be added that in the line-up of contributors to Szeemann's catalogue, Gilles Deleuze and Félix Guattari's schizo-analysis of their 1972 *Anti-Oedipus*, where they elaborate the idea of the subconscious as a machine from a Freudo-Marxist point of view, is conspicuously absent. Also in the case of Szeemann's show, the exhibition catalogue plays a discursive role beyond that of documentation and interpretive aid. And Szeemann must have been aware of *The Machine*: a reproduction of Max Ernst's *Petite machine construite par lui-même...* (1919) on page 127 in the exhibition catalogue of *Jungesellenmaschinen / Les machines célibataires* (1975) is taken from the catalogue (p. 121) of Hultén's show. For interesting installation views from various touring venues of *Les machines célibataires*, see Harald Szeemann. *With by Through Because Towards Despite. Catalogue of All Exhibitions 1957–2005*, eds. Tobia Bezzola and Roman Kurzmeyer, Zürich: Edition Voldemeer and Vienna: Springer Verlag, 2007, pp. 392–405.

41. Michel Carrouges, "Mode d'emploi", *Jungesellenmaschinen / Les machines célibataires* (exh. cat.), eds. Harald Szeemann and Jean Clair, Venice: Alfieri, 1975, pp. 21–49. The passage by Carrouges quoted by both Hultén and Szeemann reads: "It would be childish to believe that the greatest geniuses of our time have amused themselves with illusory games and have wilfully disguised their thought. However bizarre their great games may seem, they have made apparent in fiery characters the major myth in which is written the fourfold tragedy of our age: the Gordian knot of the clash among mechanization, terror, eroticism, and religion or anti-religion. These are the portentous alarm signals that they are sending out to us, from the heights of their observatories erected atop high towers, at the heart of the modern tempest." See Pontus Hultén, *The Machine as Seen at the End of the Mechanical Age*, 1968, p. 6, and Harald Szeemann, *Jungesellenmaschinen / Les machines célibataires*, 1975, p. 7.

42. Pontus Hultén, *The Machine as Seen at the End of the Mechanical Age*, 1968, p. 10.

43. Harald Szeemann, *Jungesellenmaschinen / Les machines célibataires*, 1975, pp. 9 and 10.

44. Caroline A. Jones, *The Global Work of Art. World's Fairs, Biennials, and the Aesthetics of Experience*, Chicago: The University of Chicago Press, 2017, p. 190. The sexism of *Les machines célibataires* didn't pass unnoticed upon its showing at Malmö Konsthall. On its front page, "Malmö's fria kulturtidning" (Malmö's free cultural newspaper) *Den Hialöse* pronounced it "lecherous" (essentially, an old man's exhibition) and condemned what was understood to be its excessive strain on the Konsthall's municipal budget. See *Den Hialöse* (Malmö), October, 1976, unpaginated.

45. Walter Benjamin, "Theses on the Philosophy of History", *Illuminations. Essays and Reflections*, ed. Hannah Arendt, London: Penguin Random House, 1955/2015, pp. 245–256.

46. Lars Bang Larsen, "A Map of the Show: Coordinates in Time, Space, and Ideas", *Mud Muses. A Rant About Technology*, ed. Lars Bang Larsen,

Moderna Museet exhibition catalogue no. 407, Stockholm: Moderna Museet, 2019, p. 40.

47. Ibid.

48. See Marianne Hultman, “New York Collection for Stockholm”, *Teknologi för livet. Om Experiments in Art and Technology*, 2004, pp. 160–171, and *New York Collection for Stockholm*, ed. Björn Springfeldt, Moderna Museet exhibition catalogue no. 111, Stockholm: Moderna Museet, 1973. See also *The New York Collection for Stockholm: Final Report*, 12 August, 1974. MMA MA F1a:68.

49. Ursula K. Le Guin, “A Rant About ‘Technology’”, *Mud Muses. A Rant About Technology*, 2019, p. 24.

50. Lars Bang Larsen, “A Map of the Show: Coordinates in Time, Space, and Ideas”, *Mud Muses. A Rant About Technology*, 2019, p. 42.

51. Soda_Jerk’s video *Undaddy Mainframe* (2014) is their tribute to fellow Australian outfit VNS Matrix who coined the term *cyberfeminist* in their *Cyberfeminist Manifesto for the 21st Century* (1991). Other artists and collectives in the exhibition included: Ian Cheng, Vision Exchange Workshop with Nalini Malani and Akbar Padamsee, Branko Petrović, CUSS Group, Primer, Sidsel Meineche Hansen and Cultural Capital Cooperative, Charlotte Johannesson, Anna Lundh, The Otolith Group, Suzanne Treister, Lucy Siyao Liu, Nomedá and Gediminas Urbonas, Anna Sjö Dahl, and Jenna Sutela, alongside Kooperativ für Darstellungspolitik (exhibition architecture) and VARV VARV (graphic design).

52. Karen Barad, “Nature’s Queer Performativity”, *Kvinder, køn & forskning*, no. 1–2, 2012, pp. 25–53.

53. Donna J. Haraway, *Modest_Witness@Second_Millennium.Female-Man@_Meets_OncoMouse™. Feminism and Technoscience*, New York: Routledge, 1997, p. 34.

54. Kim West, *The Exhibitionary Complex. Exhibition, Apparatus, and Media from Kulturhuset to the Centre Pompidou, 1963–1977* (diss.), Södertörn Studies in Art History and Aesthetics 4, Huddinge: Södertörn University, 2017.

55. Ibid., p. 10. Quoted from Yann Pavié, “Vers le musée du futur. Entretien avec Pontus Hultén”, *Opus International*, no. 24–25, 1971, pp. 56–65. Translated from French to English by Kim West.