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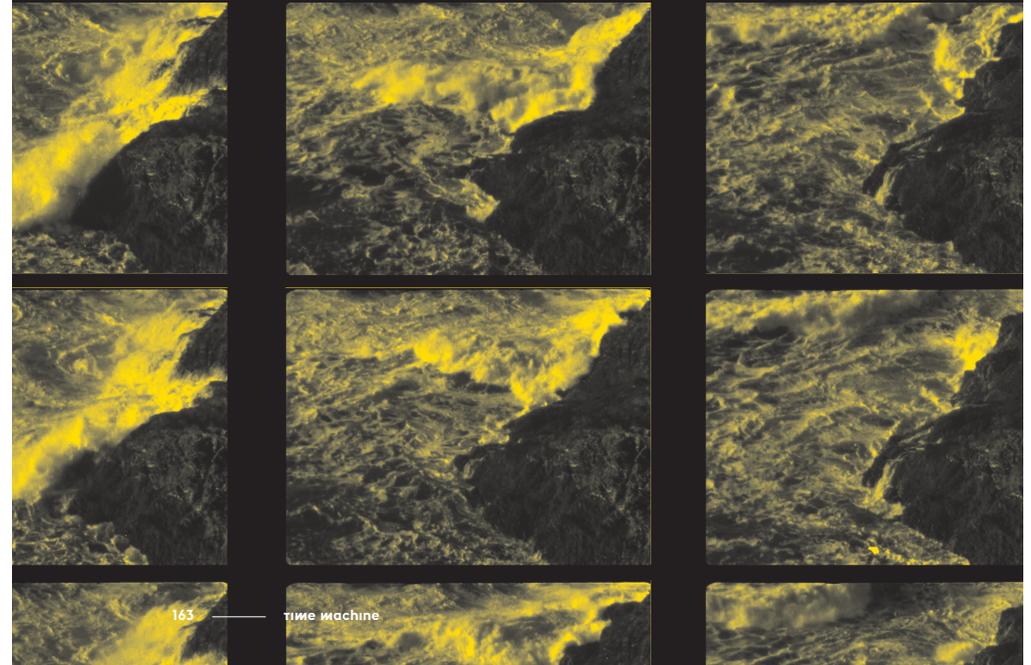
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THE MASTER OF TIME : JEAN EPSTEIN'S NONHUMAN TIME AXIS MANIPULATION

Noam M. Elcott



1. INTRODUCTION

“In the universe, as represented by the cinematograph, space-time relations constitute the essential factor of a reality whose substance only exists through the faculty of being localized, however uncertainly, in space-time.”¹

Jean Epstein, *The Intelligence of a Machine*, 1946

“Kelly *et al.* have now detected four images [appearing in our sky within weeks of each other in November 2014] of the same distant supernova with the sharp eye of a space telescope. The supernova shines brightly from the arm of a spiral galaxy that lies far beyond another galaxy between it and us. This intervening galaxy is massive enough to bend the light from the supernova and its host galaxy into multiple images. This behavior relies on the curvature of spacetime and will provide insight into the luminous and dark matter in the lensing galaxy.”²

Science, 2015

“In this respect, media analysis is not simply about communications, devices, and codes but also about media-events. These are events in a particular, double sense: the events are communicated through media, but the very act of communication simultaneously communicates the specific event-character of media *themselves*.”³

Joseph Vogl, “Becoming-media: Galileo’s Telescope,” 2007

The cinematograph—“the machine for thinking time”⁴—reveals a universe constituted by time. This is the stunning proposition of Jean Epstein’s final two masterpieces: a philosophical treatise provocatively titled *The Intelligence of a Machine* (1946) and a short film with the arcane title *Le Tempestaire* (1947). Everything and nothing in Epstein’s earlier career paved the way for this decisive turn to time axis manipulation as the lynchpin of cinema and reality. Epstein (1897-1953) was among the first and most notable film theorists (to use an anachronistic term) and a wide-ranging and important filmmaker working in silent and sound, fiction and documentary, avant-garde and commercial cinema from the early 1920s to his death.⁵ At the start of his career, his writing and filmmaking were indissociably tied to *photogénie*, an elusive concept that links reality, the film

- 1 Jean Epstein, *The Intelligence of a Machine*, trans. Christophe Wall-Romana (Minneapolis, MN: Univocal, 2014), 97. Thanks to Antonio Somaini and Christophe Wall-Romana for their close readings of this essay in draft.
- 2 Patrick L. Kelly et al., “Multiple images of a highly magnified supernova formed by an early-type cluster galaxy lens,” *Science* 347, no. 6226 (2015): 1123.
- 3 Joseph Vogl, “Becoming-media: Galileo’s Telescope,” *Grey Room* 29 (2007): 16.
- 4 Epstein, *The Intelligence of a Machine*, 18, translation modified; *Écrits sur le cinéma*, 2 vols., vol. 1: 1921-1947 (Paris: Seghers, 1974), 282.
- 5 The best monograph on Epstein in English, and perhaps any language, is Christophe Wall-Romana, *Jean Epstein: Corporeal Cinema and Film Philosophy* (Manchester: Manchester University Press, 2013).

image, and the spectator in their cinematic uniqueness.⁶ By the end of his career, he expanded that concept to include sound (*phonogénie*) and, more fundamentally, attempted to expand his scope to the Einsteinian space-time fabric of reality and its potential revelation through cinema.

Epstein would have been fascinated by the multiple images of the same supernova, detected by Kelly et al. (see second epigraph), that appeared repeatedly in different parts of our sky in November 2014 (forming an “Einstein cross”) and again in 2015. Importantly, the images detected by Kelly et al. are not some type of cosmic optical illusion. They testify in the starkest possible terms to the fact that the universe is suffused with multiple temporalities and that no single “now” unifies cosmic time.⁷ What’s more, because of the speed associated with the expansion of the universe, two months from the point of view of the supernova corresponds to nearly six months on Earth: “it’s going on in slow motion.”⁸ An observable universe of multiple and variable temporalities is the direct inheritance of Einstein’s theory of relativity. Similarly, gravity waves recently observed by LIGO—that is, disturbances in the curvature of space-time—were predicted by Einstein in 1916 on the basis of his general theory of relativity. By the 1940s, Einstein’s image of a universe comprising multiple and variable temporalities was disseminated widely enough that an engaged Einstein-devotee like Epstein could grasp it. (More generic references to Einstein and space-time were rampant within avant-garde circles from 1920s onward.) What Epstein (and the scientific community) lacked were actual images of a universe where time was multiple and variable. This lack was Epstein’s opportunity.

Scientists like Kelly use the term “lens” to describe the cluster galaxy that resolves multiple images of a distant supernova. Lenses, stars, multiplied images, slow motion—such a universe is not only Einsteinian but also Epsteinian. Already in the opening credits of *Six et demi, onze* (1927), a film named after a format for photographic prints, Epstein included “the sun” and “the lens” along with the lead (human) actors. But only late in his career, in the years after World War II, did Epstein fully actualize his lifelong fascination with the relationship between cinema, reality, and time—what we might call, after Friedrich Kittler, time axis manipulation.⁹ The cinematograph—modernity’s audiovisual medium par excellence for time axis manipulation—constituted for Epstein a reality whose attributes are epiphenomena of the variability of time: “A time variation is enough to cause the unknown that we call reality to become continuous or

- 6 On *photogénie*, see especially Christophe Wall-Romana, “Epstein’s *Photogénie* as Corporeal Vision: Inner Sensation, Queer Embodiment, and Ethics,” in *Jean Epstein: Critical Essays and New Translations*, ed. Sarah Keller and Jason N. Paul (Amsterdam: Amsterdam University Press, 2012), 51-71.
- 7 See, for example, Carlo Rovelli, *The Order of Time* (New York: Penguin, 2018).
- 8 Patrick Kelly, quoted in Dennis Overbye, “Astronomers Watch a Supernova and See Reruns,” *The New York Times*, 5 March 2015.
- 9 See Friedrich Kittler, “Real Time Analysis, Time Axis Manipulation,” trans. Geoffrey Winthrop-Young, *Cultural Politics* 13, no. 1 (2017): 1-18; Sybille Krämer, “The Cultural Techniques of Time Axis Manipulation: On Friedrich Kittler’s Conception of Media,” *Theory, Culture & Society* 23, no. 7-8 (2006): 93-109. See also the essay by Emmanuel Alloa in this volume.



discontinuous, inert or alive, brute matter or flesh endowed with instinct or an intelligent soul, determined or random...”¹⁰

Scholars have generally treated Epstein's thought as an integral whole. And there is no question that certain key features persist throughout his decades of writing and filmmaking. But I believe what matters most are the ruptures. In terms of the practice and theory of time axis manipulation, Epstein's career can be divided into three unequal parts, with notable overlaps and gaps. In the first phase of his career as a writer and filmmaker, roughly 1921-1927, Epstein explored a panoply of cinematic techniques, above all the close-up, and theorized the term with which he remains most closely associated: *photogénie*. During this time, he produced many of his most famous and best-received works—commercial and avant-garde—without the utilization of slow motion or time-lapse: not least *Cœur fidèle* (1923), *Le Double amour* (1925), *Six et demi, onze* (1927), *La Glace à trois faces* (1927). By the mid-1920s, Epstein began to theorize time axis manipulation. In 1928, he initiated his systematic use and theorization of slow motion and, to a far lesser extent, time-lapse, with the film *The Fall of the House of Usher* and the essay “The Soul in Slow Motion.” This second period extended into the mid-1930s and includes essential films like *Finis Terrae* (1929). Notably the introduction of sound did not immediately change Epstein's practice or theory of time axis manipulation.¹¹ Toward the end of the period, hints of Epstein's ultimate philosophy of cinema and time are manifest in essays like “*Photogénie* and the Imponderable” (1935) and “The Intelligence of a Machine” (1935), an essay not to be confused with the later book. The final period was inaugurated with his most important text on cinema and time, *The Intelligence of a Machine* (1946), and continued, predominantly in writing, to the end of his life. The exemplary film from this period—and among the most powerful and poetic meditations on cinema and time—is *Le Tempestaire* (1947).

For a discussion of cinema and time axis manipulation, therefore, there are really but two periods, divided by World War II. First, from roughly the mid-1920s (when he begins to write about slow motion and time-lapse) through the mid-1930s, during which time slow motion figured regularly in his films, especially those over which he exerted maximum control. And a second period, inaugurated by *The Intelligence of a Machine* and *Le Tempestaire*, which was left inconclusive at the end of Epstein's life.¹² The central claim of this essay is that Epstein's philosophy and films betray a subtle yet fundamental shift between these two periods.

¹⁰ Epstein, *The Intelligence of a Machine*, 89.

¹¹ Almost immediately after the introduction of sound cinema, Epstein contemplated a sonic art (*art sonore*) able to integrate sound into time axis manipulation; but he would not be able to act on this urge—or theorize it properly—until after World War II. See *Écrits sur le cinéma*, 1: 1921-47, 227-28.

¹² Ludovic Cortade also postulates two stages in Epstein's exploration of slow motion, before and after 1928; whereas this essay argues for a rupture around World War II, Cortade treats slow motion in Epstein's writings largely as an undivided whole. See Ludovic Cortade, “The ‘Microscope of Time’: Slow Motion in Jean Epstein's Writings,” in *Jean Epstein: Critical Essays and New Translations*, ed. Sarah Keller and Jason N. Paul (Amsterdam: Amsterdam University Press, 2012), 161-76.

The first was dominated by a humanist animism, the second by the possibility of posthuman or nonhuman imaging.¹³ The two periods cannot be entirely disentangled. But it is precisely the differences that make Epstein's theory and practice of time axis manipulation a touchstone for thinking cinema and time in the twentieth century and today.

2. 1922: PASTEUR, BERGSON, EINSTEIN, EPSTEIN

“The cinematograph is also an experimental apparatus [*dispositif*] that constructs, that is to say, thinks an image of the universe whose reality is predetermined by the structure of its form-giving mechanism.”¹⁴ This is among Epstein's most astonishing claims, issued toward the end of a life deeply immersed in the practice and philosophy of cinema. If Epstein could not write these words until after World War II, the seed for his theory of cinema—a philosophy through cinema—was planted at the start of his career. Already in 1922, the fundamental parameters in which Epstein developed his films and theories were in place: on the one hand, the essential mediating role played by optical and other technologies in our apprehension of reality and, on the other hand, the central and contested role of time in the constitution of that reality. The first parameter was announced in the first shots of his first film, *Pasteur* (1922). The second parameter made headlines in 1922 but took the better part of Epstein's life to explore and develop. We will tackle each in turn.

By 1922, Epstein had already worked as an assistant director to Louis Delluc on *Le Tonnerre* (1921) and as the general assistant to Abel Gance for his epoch-making film *La Roue* (1923). His breakthrough, however, was largely a product of chance: the offices of Éditions de la Sirène, where he worked as a secretary, were adjacent to those of Jean Benoit-Lévy, among the pioneers of French documentary film. On behalf of the ministry of agriculture, Benoit-Lévy commissioned Epstein to direct a docudrama commemorating the centenary of the birth of Louis Pasteur. Little in the commission could have appealed to Epstein: the script was didactic, the narrative hagiographic, and directorial control scant. (Nothing in *Pasteur* prepares us for the breakthroughs of *Cœur Fidèle*, 1923, for example.) Nonetheless he managed to leave his mark. One might have expected an official docudrama commemorating the centenary of the birth of Pasteur to commence with an image of the great scientist. Instead, the first image after the opening credits depicts microscopes (from the collection of

¹³ This essay adopts the term “nonhuman” largely out of respect for Epstein's use of “*inhumaine*,” such as “The inhuman share in a robot's philosophy.” Epstein, *The Intelligence of a Machine*, 99; *Écrits sur le cinéma*, 1: 1921-47, 330. But the “inhuman” is a decidedly marginal term for Epstein. Despite recent claims to a “nonhuman turn,” little as yet distinguishes the potpourri of philosophies and attitudes associated with the “nonhuman” from those previously (and still) associated with the posthuman. Both have opened up new terrain in the humanities and yet simultaneously tend to suffer from a parochialism diagnosed by Lorraine Daston: “Only from a parochial human point of view does it make any sense to divide up all that exists into our species on one side and everything else, from microbes to pulsars, on the other.” Lorraine Daston, *Against Nature* (Cambridge, MA: MIT Press, 2019), 58. Epstein's goals and terminology could easily be subsumed beneath the posthuman or nonhuman. But his aims are at once grander and better focused: he seeks a metaphysics born of cinematic time and he dubs this effort the intelligence of a machine—an intelligence understood precisely as distinct from the human and its “post” and “non” variants.

¹⁴ Epstein, *The Intelligence of a Machine*, 104, translation modified; *Écrits sur le cinéma*, 1: 1921-47, 333.



the ministry of agriculture), followed by another microscope, and another title card, and yet more microscopes, and more title cards. The title cards announce Pasteur as a “citizen of the entire world,” “genius,” and “benefactor of humanity.” This is docudrama boilerplate penned by others. The images, however, introduce an abiding concern of Epstein’s: our sense and comprehension of the universe cannot be disentangled from the devices with which we perceive it. Without Pasteur, no vaccines, says a docudramatist. Epstein, the media philosopher, takes a different tack: “Without the microscope, for instance, there would probably not have been any microbes or microbial theories: no pasteurization or glory for Pasteur. There again, lenses provide—that is, they produce—images, select them in order to make them visible within the invisible, separate them from what will remain unknowable, suddenly raise them from non-appearance and non-being to the rank of perceptible realities.”¹⁵

Epstein’s is not a history of great men, but of media: “Copernicus, Galileo, Kepler, Newton and Laplace were trained to rethink the world according to the images their astronomical telescopes delivered to them from the sky, in the same way that Spallanzani, Claude Bernard, and Pasteur were led to build or rebuild anatomy, physiology, and pathology in accordance with magnifying glasses and microscopes.”¹⁶ Telescopes, magnifying glasses, and microscopes are, for Epstein, not merely optical or even epistemological devices. They are media in the recursive sense offered by Joseph Vogl in so much as “everything they store and mediate is stored and mediated under conditions that are created by the media themselves and that ultimately comprise those media.”¹⁷ In his first film, Epstein’s official brief was to recount the life of Pasteur. To the extent possible, he recounted instead the “media-event” of the microscope.

Introduced to the world the year Pasteur died, the cinematograph extended and superseded the microscope and telescope not least (but not only) because it introduced the element of time. What the telescope and microscope made possible for space, time-lapse and slow motion would enable for time: the deceleration of image and sound “makes the spreading of phenomena in duration possible; it constitutes a sort of microscope of time.”¹⁸ The magnifying glass and microscope—often with a nod to Pasteur—remained central tropes in Epstein’s theoretical writings.¹⁹ And a telltale magnifying glass appears throughout Epstein’s *The Fall of the House of Usher* (1928) as if to announce his introduction of slow motion as the magnification of time:

15 “Le Cinéma du diable,” in *Jean Epstein: Critical Essays and New Translations*, ed. Sarah Keller and Jason N. Paul (Amsterdam: Amsterdam University Press, 2012), 319–20. Compare media theorist Joseph Vogl’s analysis of Galileo’s telescope: “Galileo sees, newly perceptible in his telescope, not just sun, moon, and stars but the difference between the visible and the invisible. Telescopic vision becomes a second order of vision. [...] What the telescope thus brings into view is the difference between the visible and the invisible, and what it produces above all is invisibility, visible invisibility.” Vogl, “Becoming-media: Galileo’s Telescope,” 20–21, 22. Compare also Latour’s account of Pasteur, devoid alas of any sustained engagement with the microscope. Bruno Latour, *The Pasteurization of France*, trans. Alan Sheridan and John Law (Cambridge, MA: Harvard University Press, 1988).

16 Epstein, *The Intelligence of a Machine*, 64.

17 Vogl, “Becoming-media: Galileo’s Telescope,” 16. He continues: “This is what is meant by the well-known dictum that the medium is the message; or that media determine our situation; or that everything we learn and know, we learn and know through media.”

18 Epstein, “The Close-up of Sound,” 369.

19 For example, we can still hear echoes of Pasteur in an important essay from 1935: “The slices of the universe we examine under the microscope cannot lead us to suspect the immense series constituted by other forms of existence which are practically ubiquitous and infinite. One of the fundamental characteristics of cinematography is to make up for this deficiency to a degree, to prepare certain syntheses for us, to reconstruct a form of continuity whose extent and elasticity in space-time is beyond the bounds of our physiology.” “Photogénie and the Imponderable,” in *French Film Theory and Criticism: 1929–1939*, ed. Richard Abel (Princeton: Princeton University Press, 1988), 191.

“This film [*The Fall of the House of Usher*] best captures its tragic and mysterious atmosphere through the systematic use of a subtle slow motion and through the ratio of 1.5:1 or 2:1 that not only allows for a precise reading of gestures and expressions, like through a magnifying glass, but also automatically dramatizes, prolongs, and holds them in suspense as if waiting for something to happen.”²⁰

Two decades later, Epstein was still unpacking the ramifications of the media-event that constituted the microscope of time: how the cinema can present a universe whose temporalities were first made sensible by the cinema.

Time was not the centerpiece of Epstein’s early films or writings. But he could not have failed to take note of the infamous debate, in Paris on April 6, 1922, on the nature of time between two leading intellectuals and future Nobel laureates Albert Einstein and Henri Bergson. As Jimena Canales has demonstrated, the debate—widely perceived as a decisive victory for Einstein and ignominious defeat for Bergson—had facets and repercussions that cannot be tallied as simple victories or defeats: critics claimed, not without cause, that Bergson failed to grasp the complex physics of general relativity; defenders retorted, also with some justification, that Einstein refused to understand the nature of Bergson’s attack.²¹ By 1922, Bergson was past his philosophical prime but still among the most influential thinkers in Europe and beyond. More than anyone, he promulgated duration, an experience of time grasped through intuition rather than intellect, as the true reality, and attacked the spatialization of time in science and cinema (“the cinematographical mechanism of thought”).²² Einstein’s general theory of relativity had only recently been verified empirically with the much-heralded solar eclipse of May 29, 1919 during which scientists observed the gravitational deflection of starlight passing near the Sun. Suddenly, not only was the universe a four-dimensional space-time fabric, but one that stretched and compressed in relation to the mass of planets, stars, and other celestial bodies. Far from the true access point to reality, the human experience of duration was now but an illusion dependent on the individual’s frame of reference. According to Einstein’s 1905 special theory of relativity, a twin who voyaged from earth on a rocket traveling close to the speed of light would return home to find his twin had aged more than he. (Einstein’s initial thought experiment involved clocks, not people; atomic clocks eventually proved time

20 “Esprit de cinéma,” 351. This section translated by Audrey Brunetaux

21 See Jimena Canales, *The Physicist and the Philosopher* (Princeton: Princeton University Press, 2015).

22 See especially Henri Bergson, *Creative Evolution*, trans. Arthur Mitchell (New York: The Modern Library, 1944), 296ff.



dilation empirically.) Twins of different ages encapsulated the fundamental relativity of time—and the illusoriness of the human experience of time—and opened an insuperable gap between the physicist of space-time and the philosopher of duration. Einstein ensured the gap would never be bridged with his incendiary retort to Bergson: “*Il n’y a donc pas un temps des philosophes*. There is no time of philosophers.” More controversial still, Einstein insisted: “There remains only a psychological time that differs from the physicist’s.”²³

Epstein was neither a physicist nor a psychologist, but that did not necessarily diminish his attraction to Einstein’s relativity or the domains of science more broadly: “The majority of the islands of the new reality are difficult to access. Only shrewd physicists and audacious psychiatrists manage to get to them—and only by breaking in. Only cinema invites the general public in.”²⁴ Einstein’s theories long drew in Epstein. Already in *La Lyrosophie* (1922), he referenced the perihelion of Mercury, the first confirmation of Einstein’s general theory of relativity.²⁵ By the 1940s, relativity and a four-dimensional space-time continuum were pillars of Epstein’s thought.

Ultimately, Epstein adopted Einstein’s relativistic, four-dimensional, space-time continuum but rejected the latter’s dismissal of time as mere illusion—a selective interpretation that yielded gross inconsistencies in his philosophical writings. Among the most concrete: the nature of time as revealed by film run backward. The most instructive film for Epstein was one of Brownian motion—the random motion of particles suspended in a fluid, a phenomenon he was the first to explicate and which helped prove the discontinuous structure of matter—run forward and back:

“Imagine that one has filmed the Brownian movement of a particle and kept the images in the correct chronological order with respect to the neighboring images; only they forgot to note if the correct order went from A to Z, or, well, from Z to A. The shrewdest man in the world would not be able to find the arrow of time from that material.”²⁶

For Einstein, Brownian motion betrayed the true, reversible nature of time. He repeatedly argued that our sense of the “arrow of time” and of temporal irreversibility was but an illusion. Brownian motion films—which were no thought experiments but widely disseminated proofs of Einstein’s 1905 explanation of Brownian motion—indicated, for Einstein and many others, the true temporal nature of the universe. This was precisely the type of application Epstein dreamed for the cinematograph. But the result

- 23 See Canales, *The Physicist and the Philosopher*, 5.
 24 Epstein, “Le Cinéma du diable,” 326.
 25 *Écrits sur le cinéma*, 1: 1921-47, 19.
 26 Albert Einstein, quoted in Canales, *The Physicist and the Philosopher*, 287.

was exactly contrary to the one Epstein himself advanced: “It would seem, for instance, rather trivial to see billiard balls roll and hit each other in various directions. However, when the screen shows a billiard shot filmed in reverse, even if the cue hitting the ball is not shown, most movie-viewers, even if they know next to nothing of this game, will note, through minute details, a vicious uncanniness in the motion of the balls or experience a vague discomfort, an intimidation, an anxiety, whose source they cannot locate.”²⁷

For Einstein, time as such does not exist. For Epstein, being is a byproduct of time: “A time variation is enough to cause the unknown that we call reality to become continuous or discontinuous, inert or alive, brute matter or flesh endowed with instinct or an intelligent soul, determined or random...”²⁸ Epstein desired a four-dimensional space-time continuum for which time would be the determinative feature—a combination Einstein could not offer. Einstein and relativity pervade *The Intelligence of a Machine*, a philosophical treatise nonetheless centered on a reality constituted by time. So Epstein returned to the terrain covered by Bergson—continuity and discontinuity, Zeno’s paradox, the unity of life, spatialized time, duration, spirit and matter, mineral/plant/animal/human, quality and quantity, etc.—only from a radically anti-Bergsonian perspective.²⁹ Where Bergson argued vociferously for the distinctions (at times absolute) between continuity and discontinuity, quality and quantity, time and space, cinematic time and true time (duration), etc., Epstein’s philosophy marshaled the time axis manipulation of the cinematograph to collapse those oppositions. Bergson’s position was almost entirely untenable for Epstein. No one vilified the cinematograph—above all as a “machine for thinking time”—more than Bergson. (Gilles Deleuze has so habituated us to a Bergsonian reading of cinema—one in which Epstein figures centrally and naturally—that we forget that, for figures like Epstein (and Bergson), Bergsonian cinema was a virulent contradiction.)³⁰ Even as Bergson goes entirely unnamed in *The Intelligence of a Machine*, his philosophy undergoes systematic negation in the hands of Epstein. And because of this systematic negation, no figure looms larger than Bergson.

For Epstein, the Einstein-Bergson debate of 1922 was a draw. Or rather, the winner of the great Einstein-Bergson debate was *Pasteur*, that is to say, the capacity of the cinematograph to construct and think an image of the universe whose reality is

- 27 Epstein, “Esprit de cinéma,” 374. This section translated by Christophe Wall-Romana.
 28 *The Intelligence of a Machine*, 89.
 29 Bergson distinguishes forcefully, albeit with nuance, between human, animal, and vegetable. See Bergson, *Creative Evolution*, 111ff. For a concise and thoughtful overview of current debates on divisions between human, animal, vegetable, and inanimate matter, see Mel Y. Chen, *Animacies: Biopolitics, Racial Mattering, and Queer Affect* (Durham: Duke University Press, 2012), 4-12.
 30 See especially Gilles Deleuze, *Cinema 1: The Movement-Image*, trans. Hugh Tomlinson and Barbara Habberjam (Minneapolis: University of Minnesota Press, 1986), 3, 23-24; *Cinema 2: The Time-Image*, trans. Hugh Tomlinson and Robert Galeta (Minneapolis: University of Minnesota Press, 1989), 36.



predetermined by the structure of its plasmatic mechanism—above all, time axis manipulation. It was a proposition that would have satisfied neither Einstein nor Bergson. But it yielded several of the most profound meditations on cinema, reality, and time in the twentieth century.

3. TIME AXIS MANIPULATION: FROM (HUMANIST) ANIMISM TO (NONHUMAN) IMAGING

Epstein did not practice or theorize time axis manipulation in a vacuum. Quite the contrary. Matthew Vollgraff has recently shown that scientific time-lapse films of vegetal movement helped spark a wave of animistic thinking among philosophers, artists, and scientists in the early twentieth century, one that rebounded into cinematic practice and discourse in the 1920s. “If animism was making a comeback anywhere during the 1920s,” argues Vollgraff, “it was in the cinema.”³¹ Epstein was symptomatic of that resurgence.

By the time Epstein introduced slow motion in *The Fall of the House of Usher*, time axis manipulation was a cinematic sensation that extended far beyond avant-garde circles. The peak of this efflorescence was the spectacularly successful 1926 film *Das Blumenwunder* (The Miracle of Flowers). Initiated as an advertisement for BASF fertilizer, the feature-length film showcased time-lapse sequences of plants growing and dying, framed by a meager narrative and interspersed with Expressionist dances, performed by the Berlin State Opera Ballet and its soloists, made to rhyme with the vegetal movements. The animistic impulse of the film was announced repeatedly in its title cards: “Flowers have life, just like you. [...] You do not see how they suffer and struggle because the rhythm of their movements follows a different tempo; nevertheless, in their blossoming and wilting, they feel just as you do.”³² Upon viewing *Das Blumenwunder* Fig. 1 → *Das Blumenwunder* (Max Reichmann, 1926), the philosopher Max Scheler gushed that he witnessed flowers “breathing, burgeoning and dying. The natural impression that plants possess no soul vanished altogether.”³³ Before the miracle of time-lapse cinematography, philosophers differed little from boys. Six years prior, the French author Colette recounted a screening of scientific footage at the Musée Galliera:

“A ‘fast motion’ documentary documented the germination of a bean [...] At the revelation of the intentional and intelligent movement of the plant, I saw children get up, imitate the extraordinary ascent of a plant climbing in a spiral, avoiding an obstacle, groping over its

31 Matthew Vollgraff, “Vegetal Gestures: Cinema and the Knowledge of Life in Weimar Germany,” *Grey Room* 72 (2018): 80. See also Inga Pollmann, *Cinematic Vitalism: Film Theory and the Question of Life* (Amsterdam: Amsterdam University Press, 2018).

32 Max Reichmann, dir., *Das Blumenwunder* (Germany: BASF AG and Unterrichtsfilm GmbH, 1926).

33 Scheler, quoted in Vollgraff, “Vegetal Gestures: Cinema and the Knowledge of Life in Weimar Germany,” 79.



trellis: 'It's looking for something! It's looking for something!' cried a little boy, profoundly affected. He dreamt of a plant that night, and so did I. These spectacles are never forgotten.”³⁴

They certainly were not forgotten by Epstein or his avant-garde film compatriot Germaine Dulac, who made the time-lapse germination of a grain of wheat a poetic refrain in her writings and films.³⁵ Like Dulac and many of their peers in film, science, and philosophy, Epstein observed time-lapse films of plants (and audience responses thereto) and converted to cinematic animism:

“In front of me, at Nancy, a room with three hundred people moaned when they saw a grain of wheat germinate on screen. Suddenly, the true visage of life and death, of a terrifying love, appeared, provoking these religious outcries. [...] One of the greatest powers of cinema is its animism.”³⁶

In his first phase of exploring time axis manipulation, Epstein was largely in thrall to this animistic impulse. “Without a doubt,” Epstein proclaimed in his 1935 essay “The Intelligence of a Machine,” “the most obvious character of cinematic intelligence is its animism. [...] Revealing the life of things, vegetating stones, animalizing plants, humanizing beasts.”³⁷ Epstein’s animism—his faith in cinema’s capacity to disclose the soul of things—was so strong that he never continued this train of thought to analyze the effect of time-lapse cinematography on human beings. (Would they become angelic or antlike?) Instead, when he trained his camera or pen on the human, above all the human face, he focused on slow motion. And it was here—in films like *The Fall of the House of Usher* and essays like “The Soul in Slow Motion”—that Epstein (in the 1920s) located the epiphanic quality of time axis manipulation. Filmed in slow motion, a face giving birth to expression “demonstrates the relativity of time. So it is true that seconds last for hours! The drama is placed outside ordinary time. A new, purely psychological perspective obtains. [...] The cinema will one day be the first to photograph the angel in man.”³⁸ This is animism shot through with humanism. Look! Life and souls are everywhere. To become visible, the souls of animals, plants, and humans required only the proper tempo, fortuitously furnished by cinematic time axis manipulation.

But lurking in the humanist animism was the threat of a radical displacement of the human. Like Scheler and many others, the Nietzschean philosopher Theodor Lessing

34 Sidonie-Gabrielle Colette, “The Cinema,” quoted in Janelle Blankenship, “Film-Symphonie vom Leben und Sterben der Blumen: Plant Rhythm and Time-Lapse Vision in *Das Blumenwunder*,” *Intermediality: History and Theory of the Arts, Literature and Technologies*, no. 16 (2010): 88.

35 See Germaine Dulac, *Germaine Dulac Writings on Cinema (1919-1937)*, trans. Scott Hammen (Paris: Paris expérimental, 2018).

36 Epstein, “The Cinema Seen from Etna” (1925), translated by Stuart Liebman, in Epstein, “Le Cinématographe vu de l’Etna,” 288-89.

37 *Écrits sur le cinéma*, 1: 1921-1947, 244.

38 “The Spirit of Slow Motion,” *Afterimage*, no. 10 (1981): 35. Tom Milne’s English translation misconstrues the French title “L’âme au ralenti.”



marveled at *Das Blumenwunder*, and at the capacity of modern technology to change the pace of life's flow and transform living flowers into expressive shapes with animal or human expressions. Rather than see humanist souls made visible through time axis manipulation, Lessing recognized a potential decentering of the human experience of time. "Since nature works with unlimited timeframes," Lessing concluded, the "human optic of time may well be just one great illusion."³⁹ Epstein, too, recognized an inhuman tinge to the superabundance of animism revealed by time axis manipulation: "Slow motion and fast motion reveal a world where the kingdoms of nature know no boundaries. Everything is alive. [...] An amazing animism is restored to the world. [...] we are surrounded by inhuman living things."⁴⁰ Epstein never abandoned his faith in the unity of life revealed through slow motion and time-lapse.⁴¹ But the inhuman—what we today call the posthuman or nonhuman—gained a definitive advantage over the animistic in his late work. And unlike his earlier animism, Epstein's nonhumanism cannot be easily pinned down.⁴²

For most of the 1920s, Epstein was fully integrated into the European intelligentsia. Over the course of the 1930s, as he spent extended stretches on the remote islands of Brittany, he became a progressively more solitary figure. Forced to go into hiding during World War II (he was a gay Jew from Poland), he emerged in the immediate postwar period nearly alone. Even as he stayed abreast of recent developments in film and philosophy—he corresponded, for example, with Maurice Merleau-Ponty—essential works like *The Intelligence of a Machine* and *Le Tempestaire* do not belong to an established movement or tendency in the manner of his 1920s cinematic animism. Indeed, if Epstein's late 1920s and early 1930s animism is best explained by developments of the prior decades, his late 1940s and early 1950s work first comes into focus from the perspective of the present.

Curiously, we are in the midst of yet another animistic revival across art, philosophy, and science. Even as concepts like "plant intelligence" and "plant neurobiology" remain too controversial to become textbook science, their potential promise has fueled public interest.⁴³ A century ago, scientists, artists, and the lay public turned to Charles Darwin's *The Power of Movement in Plants* (1880), Wilhelm Pfeffer's inaugural time-lapse cinematic studies of plant movement (1898–1900), and the highly influential works of the Hungarian-born German naturalist Raoul Francé, including *Das Leben der Pflanze* (The Life of the Plant, 1906–1921).⁴⁴ Today,

- 39 Theodor Lessing, *Blumen* [1927], cited in Vollgraff, "Vegetal Gestures: Cinema and the Knowledge of Life in Weimar Germany," 76.
- 40 Epstein, "Photogénie and the Imponderable," 189–90.
- 41 See, for example, *The Intelligence of a Machine*, 3.
- 42 On nonhuman imaging and vision today, see Joanna Zylińska, *Nonhuman Photography* (Cambridge, MA: MIT Press, 2017).
- 43 For a popular overview of the state of the field in 2013, see Michael Pollan, "The Intelligent Plant," *The New Yorker* (2013).
- 44 See Vollgraff, "Vegetal Gestures: Cinema and the Knowledge of Life in Weimar Germany." On Francé and his influence on the avant-garde, see Oliver Botar, "László Moholy-Nagy's New Vision and the Aestheticization of Scientific Photography in Weimar Germany," *Science in Context* 17, no. 4 (2004): 525–56.

evangelists for plant intelligence like Stefano Mancuso, a plant physiologist at the University of Florence, pen controversial articles and give popular TED Talks, and often rely on the same time-lapse cinematography that spawned the first wave of fascination. More profoundly, philosophers have begun to rethink metaphysics from the perspective of plants. Exemplary is Emanuele Coccia's *The Life of Plants*, which begins from the premises that plants literally created the atmosphere we associate with planet earth; that they represent nearly all the biomass on the planet; and that they are virtually the only lifeform that can turn non-life (sun) into life. For a planetary metaphysics, he argues, humans are ancillary to the story of plants, who are our (largely untapped) teachers.⁴⁵

Like Epstein generations earlier, scientists and artist today are also pushing beyond time-lapse cinematography to study, for example, the sounds of plants. In reference to visual and audio time axis manipulation, Epstein boldly proclaimed: "We can already see, we will soon hear the grass grow."⁴⁶ Artist Adrienne Adar has made good on that promise in a contemporary installation at the Brooklyn Botanic Garden in New York, "Sonic Succulents: Plant Sounds and Vibrations," which, as reported by the venerable *New York Times*, combines animism, technology, and humanism in accordance with a recipe familiar from *Das Blumenwunder*:

"On a quiet night, farmers say they can hear corn grow. But for most others, the constant sounds plants make are inaudible without technology like Ms. Adar's to bring them to life. By allowing visitors to interact with audible plants, she hopes to evoke a new perception of these photosynthesizing organisms: not as inanimate objects for humans to control, but as living co-inhabitants, just as important to this planet as we are."⁴⁷

To be sure, one hears echoes of *Das Blumenwunder* not only in the words of artists, but also in those of scientists. In reference to an article he co-authored in the *Annals of Botany*, Frantisek Baluška, professor at the Institute for Cellular and Molecular Botany at the University of Bonn, averred that "Plants are not just robotic, stimulus-response devices. They're living organisms which have their own problems, maybe something like with humans feeling pain or joy."⁴⁸

In the popular presses and in more rarified circles, the idea of plant intelligence appears controversial, but not threatening. And for good reason. No grandmaster has ever lost a game of chess to *mimosa pudica*, the so-

- 45 Emanuele Coccia, *The Life of Plants*, trans. Dylan J. Montanari (Cambridge, UK: Polity, 2019).
- 46 Epstein, "The Slow Motion of Sound," 382. Translated by Franck Le Gac.
- 47 JoAnna Klein, "You Can Talk to Plants. Maybe You Should Listen," *The New York Times*, 11 June 2019.
- 48 Baluška quoted in "Sedate a Plant, and It Seems to Lose Consciousness. Is It Conscious?," *The New York Times*, 2 February 2018. See also Baluška, et al., "Anaesthetics stop diverse plant organ movements, affect endocytic vesicle recycling and ROS homeostasis, and block action potentials in Venus flytraps," in *Annals of Botany* 122 (2018): 747–56.



called “sensitive plant.” No occupied people has worried that pollen in the air, directed by nonhuman intelligence, might accidentally drop a bomb on a local hospital. And no fungal rhizome ever imaged a dataset whose veracity could not be independently verified by human observation. Computers and artificial intelligence (AI) have dramatically and fundamentally altered the relationship between humans and nonhuman intelligences. Epstein’s *The Intelligence of a Machine* is among the first artefacts of that reckoning.⁴⁹

“No, the thinking machine is not exactly a utopia any longer; the cinematograph, like the computing machine, represents its first implementation, already working far better than a rough model.”⁵⁰ Even as Epstein was undoubtedly aware of computing machines, he could not—and did not—foresee the future development of computers and AI. *The Intelligence of a Machine* is not a work of prophecy. Indeed, by the late 1940s at least two trajectories were ascendant, the first of which Epstein was almost entirely ignorant. In a 1991 book aptly titled *War in the Age of Intelligent Machines*, Manuel De Landa correctly observed that “even if Artificial Intelligence is not at present sufficiently sophisticated to create true ‘killer robots,’ when synthetic intelligence does make its appearance on the planet, there will already be a predatory role awaiting it.”⁵¹ This was by design. The origins of computing and AI, as Peter Galison has persuasively argued, cannot be disentangled from a World War II cybernetic vision that merged enemy pilots with their machinery (airplanes) to such a degree that their human-nonhuman status was blurred.⁵² In the histories charted by De Landa, Paul Virilio, Friedrich Kittler, and others, the relationship between technological media and human beings is characterized by distraction and destruction.⁵³

Epstein charted an entirely different but no less disquieting course.⁵⁴ For Epstein, the cinematograph extended and superseded the microscope and telescope not only because it introduced the registration and manipulation of time. That the cinematograph has extension *and* duration (space *and* time) yields “a synthesis in which a third category emerges almost automatically: causation.” Microscopes and telescopes enhance sight alone. They cannot think. By contrast, “the cinematograph stands out as a substitute and annex of the organ in which the faculty that coordinates perceptions is generally located—the brain—the alleged center of intelligence.”⁵⁵ The cinematograph thus belongs to the same category as the computing machine, even as it differs in a fundamental way:

“Today, computing machines calculate somewhat

49 Among the most recent and compelling artefacts of that reckoning is Hito Steyerl’s multi-media installation *This is the Future* (2019), which marshals, along with multifarious other elements, AI-generated time-lapse videos of plants.

50 Epstein, *The Intelligence of a Machine*, 65.

51 Manuel De Landa, *War in the Age of Intelligent Machines* (New York: Zone Books, 1991), 1.

52 Peter Galison, “The Ontology of the Enemy: Norbert Wiener and the Cybernetic Vision,” *Critical Inquiry* 21, no. 1 (1994): 228–66.

53 See especially Paul Virilio, *War and Cinema: The Logistics of Perception*, trans. Patrick Camiller (London: Verso, 1989); Friedrich Kittler, *Operation Valhalla: Friedrich Kittler on War and Media*, ed. Geoffrey Winthrop-Young, Ilinca Iiurascu, and Michael Wutz (Durham: Duke University Press, forthcoming).

54 Epstein wrote his late work in the shadow of World War II and the atomic bomb; he (almost?) never addressed the former and addressed the latter only in passing and almost exclusively in relation to physics.

55 Epstein, *The Intelligence of a Machine*, 65.

more correctly, but still in the very same style as humans: they were devised precisely for this activity, by imitating the process of human arithmetic. By contrast, the inventors of the cinematograph—who were numerous—never had the ambition of constructing a philosophizing machine in order to rethink the attributes and categories, the relations of space and time, or statistical and causal series, in the way humans do. [... the cinematograph created] the philosophy of a robot-brain that was neither intentionally nor strictly programmed to accomplish a work identical to that of the living organ.”⁵⁶

The shift away from the organic human is at once a subtle preservation and radical negation of his earlier cinematic animism. Whereas earlier the cinematograph revealed life, instinct, intelligence, and a soul in crystals, plants, and animals (in time-lapse) and humans (in slow motion)—in *The Intelligence of a Machine* and other late writings, the soul, like life itself, is just an epiphenomenon of time axis manipulation. It has no reality independent of time. In Epstein’s writings of the 1920s and ’30s the cinematograph demonstrated the increase in life and spirit effected by time acceleration—crystals became vegetal, plants gained the attributes of animals, etc.—just as the perturbances of the human soul were revealed in slow motion. Everywhere the cinematograph looked, life and spirit increased. Epstein retained this position in *The Intelligence of a Machine*, but he also introduced the converse: time deceleration increases death and matter. At progressively slower speeds, human beings are deprived of their spirituality; thought vanishes from the human gaze and becomes illegible on the face; soon the movements of the torso or neck rediscover the elasticity of the plant stem, the swaying of a forest, the beating of fins or wings, the spiral sense of vegetable growth; slowed down further still, “any living substance goes back to its fundamental viscosity and lets its deep colloidal nature rise to the surface.” Finally, in the absence of visible movement, “humans become statues, the living merges with the inert, the universe devolves into a desert of pure matter without any trace of spirituality.”⁵⁷ The freeze frame—understood by Epstein and numerous others as a sign of death—never appeared in Epstein’s films of the 1920s or ’30s.⁵⁸ *Le Tempestaire* opens with a series of freeze frames and it culminates “in a visual slow motion taken to the limit [such that] the eye stops perceiving the roughness of the sea, for instance, which appears as a solid, frozen surface.”⁵⁹

56 *Ibid.*, 100.

57 *Ibid.*, 27–29, direct quotations from 29.

58 The only exceptions of which I am aware are of historical photographs in documentary films, that is, photographs that appear as such and not as a petrification of living forms.

59 Epstein, “The Close-up of Sound” (late 1940s), translated by Franck Le Gac, in Epstein, “Esprit de cinéma,” 368.



If Marshall McLuhan famously theorized media as “the extensions of man” and Kittler viewed the technological differentiation of optics, acoustics, and writing in modern media as the technical a priori for the fabrication of “so-called Man,” then, for Epstein, the cinematograph produced “the inhuman share in a robot’s philosophy.”⁶⁰ McLuhan’s, in other words, is a humanist media theory with humans at its center; Kittler’s is an anti-humanist media theory, where “[so-called Man’s] essence escapes into apparatuses”;⁶¹ and Epstein’s is a nonhuman media theory in which “even essence”—human or otherwise—“is nothing but an attribute”: “The antiphilosophy of the cinematograph thus holds reality to be fundamentally unreal, that is, unsubstantial: all substance amounts to a sum of sufficiently large imaginary data. [...] reality does not exist as an essence: it is but an attribute that accompanies a certain degree of complexity, thickness, and density of thought laboring to formulate a more or less restricted zone of the space-time continuum.”⁶²

Epstein rejects so-called reality, reducing it to “a secondary phenomenon resulting from the multiplication of axes of reference.”⁶³ Epstein’s ambitions were Einsteinian, but his purview was decidedly Bergsonian. The cinematograph cannot produce images of black holes, detect gravitational waves, or impactfully register most of the distortions and disturbances in the curvature of space-time predicted by Einstein’s general theory of relativity—the very distortions and disturbances that inform Epstein’s philosophy of cinema. Epstein was neither a scientist nor a proper philosopher. He was a filmmaker who coaxed the cinematograph to register an image of reality not as essence but as an attribute that accompanies a certain degree of complexity, thickness, and density of thought laboring to formulate a more or less restricted zone of the space-time continuum. Such is the reality captured in *Le Tempestaire*. Fig. 2 → Jean Epstein, *Le Tempestaire* (1946)

4. LE TEMPESTAIRE: TEMPEST TAMER, MASTER OF TIME

Perhaps Epstein’s late work is best situated *after* humanist animism but *just shy* of nonhuman imaging, a harbinger of the moment famously anticipated by Michel Foucault: “As the archaeology of our thought easily shows, man is an invention of recent date. And one perhaps nearing its end. [If the arrangements of knowledge that enabled the appearance of the figure of man were to disappear,] then one can certainly wager that man would be erased, like a face

60 Marshall McLuhan, *Understanding Media: The Extensions of Man* (Cambridge, MA: MIT Press, 1994); Friedrich Kittler, *Gramophone, Film, Typewriter*, trans. Geoffrey Winthrop-Young and Michael Wutz (Stanford: Stanford University Press, 1999), 16; Epstein, *The Intelligence of a Machine*, 99.

61 Kittler, *Gramophone, Film, Typewriter*, 16.

62 Epstein, *The Intelligence of a Machine*, 98-9.

63 Ibid., 99.



drawn in sand at the edge of the sea.”⁶⁴ If these lines were ever made into a film, that film would be *Le Tempestaire*.

James Schneider has best observed that Epstein “continued to de-center the human to a greater and greater degree over the two decades of his maritime films.” In *Le Tempestaire*, Epstein reflected, humans are “no more than symbolic figures against a background of earth and sea.”⁶⁵ The erasure of the human in *Le Tempestaire* occurs under the aegis of time axis manipulation: literalized through slow, accelerated, and reverse motion, and figured by the tempest. As John Durham Peters reminds us, the etymological and cultural links between weather and time run deep.⁶⁶ *Kairos*, ancient Greek for a window of opportunity or good timing, also means weather. Like its Latin root *tempus*, the French *temps* means weather and time. Tempest and *tempête* similarly derive from *tempus*. A *tempestaire* is a tamer of tempests and a master of time. As every viewer of *Le Tempestaire* recognizes, the protagonist of the film is not a distressed young woman or an old man named Floch, armed with a crystal ball and clumsy hands, but the cinematograph, the machine for thinking time.

Despite their temporal proximity and strikingly similar content, scholars have not read *Le Tempestaire* and *The Intelligence of a Machine* as the pendant pair they undoubtedly are.⁶⁷ Epstein surely anticipated *Le Tempestaire* when he wrote: “the spectacle of the universe animated on screen invites us to conceive of a reality whose nature differs considerably from the one figuring in most classical philosophies.”⁶⁸ This is the cinema sought by Deleuze in John Rajchman’s perspicacious gloss: “*dispositifs* like the cinematic are [...] ways of disposing of our senses in such a way as to enable thinking, to make ideas possible,” especially in relation to time and space.⁶⁹ *Le Tempestaire* and *The Intelligence of a Machine*, each in its own manner, develop complementary theories and experiences of time axis manipulation.

Whereas nearly all other films manipulate time in the service of narrative and characters, the flimsy narrative and characters in *Le Tempestaire* serve time axis manipulation. The narrative is simple. A young woman interprets a door ajar as an evil sign. She worries for her fiancé, who leaves on a fishing expedition. She consults the lighthouse radio operators and then a tempestaire named Floch, who blows into his crystal ball to slow, stop, and reverse the waves and calm the winds and waters. The man returns. Floch drops the crystal ball. The reunited couple walks along the coast, overlooking the calm seas. This summary—a reasonable

64 Michel Foucault, *The Order of Things* (New York: Vintage Books, 1994), 387.

65 James Schneider, “Cinema Seen from the Seas: Epstein and the Oceanic,” in *Jean Epstein: Critical Essays and New Translations*, ed. Sarah Keller and Jason N. Paul (Amsterdam: Amsterdam University Press, 2012), 202. Epstein (1948) quoted on same page. On *Le Tempestaire*, see also Jacques Aumont, “Cinégénie, ou la machine à re-monter le temps,” in *Jean Epstein: cinéaste, poète, philosophe*, ed. Jacques Aumont (Paris: Cinémaèque française, 1998), 87-108; Philippe Dubois, “La tempête et la matière-temps, ou le sublime et le figural dans l’œuvre de Jean Epstein,” in *Jean Epstein: cinéaste, poète, philosophe*, 267-323; Wall-Romana, *Jean Epstein: Corporeal Cinema and Film Philosophy*, 149-55.

66 John Durham Peters, *The Marvelous Clouds: Toward a Philosophy of Elemental Media* (Chicago: University of Chicago Press, 2015), 243-44.

67 Epstein ridiculed the prospect of making a film after a theory; but, as Sarah Keller has argued, his films and theories regularly inform one another. This is especially pronounced in the practice and theory of audio time axis manipulation in and around *Le Tempestaire*. See Sarah Keller, “Introduction: Jean Epstein and the Revolt of Cinema,” in *Jean Epstein: Critical Essays and New Translations*, ed. Sarah Keller and Jason N. Paul (Amsterdam: Amsterdam University Press, 2012), 24.

68 Epstein, *The Intelligence of a Machine*, 103.

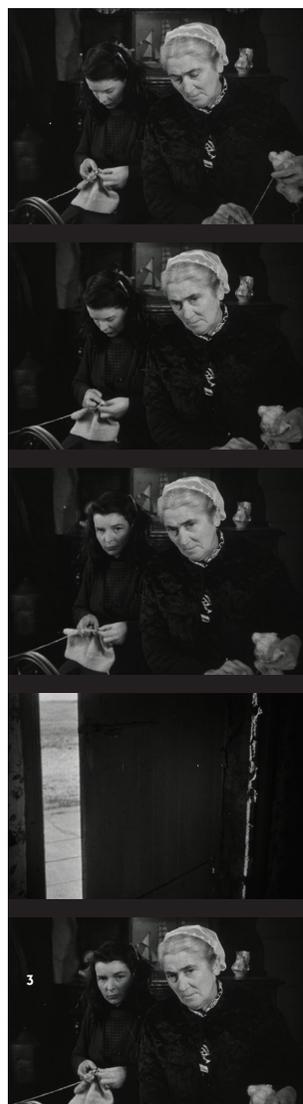
69 John Rajchman, “Deleuze’s Time, or How the Cinematic Changes Our Idea of Art,” in *Art and the Moving Image*, ed. Tanya Leighton (London: Tate, 2008), 326.



approximation of Epstein's screenplay—tells us nothing about *Le Tempestaire*. *The Intelligence of a Machine*, by contrast, anticipates nearly all of the film's essential qualities and ambitions without, however, giving them form.

Let us proceed then, reading *The Intelligence of a Machine* as we view *Le Tempestaire*. An interrogation of signs inaugurates both works. The first section of *The Intelligence of a Machine* is titled "Signs," and the first words spoken in *Le Tempestaire* are: "C'est un signe...un mauvais signe."⁷⁰ We are in humble quarters, two women—one old, one young—are spinning wool. Fig. 3 → Jean Epstein, *Le Tempestaire* (1946) The door, forced by the draft, appears to have opened of its own accord. This is the bad sign discerned by the anxious young woman. Her elderly counterpart replies: "One mustn't believe in signs. It's forbidden." The debate does not end there. The young woman confronts her fiancé, about to embark on a fishing expedition, with news of the bad sign. Undaunted, the man reassures her: "There are no signs. It's the wind." She retorts: "I am afraid of the wind." He departs and she is neither comforted nor convinced. In his absence, she will concede only half his semiotic argument: "It's the real wind and there was the bad sign." Reality or sign? *Le Tempestaire* and *The Intelligence of a Machine* arrive at the same answer. The film presents us with clouds racing across the sky, music of the spheres composed from the acceleration and deceleration of recordings of wind and waves (alongside the early electronic musical instrument called the ondes Martenot or ondes musicales, literally, "the musical waves"), and a seemingly infinite range of slow motion from absolute stasis through nearly imperceptible retardation. These are not manipulated signs of a more fundamental reality but, as we learned from *The Intelligence of a Machine*, the direct traces of a reality whose attributes are in flux. Visibly and audibly accelerated and decelerated, the wind is at once a sign and the reality of a universe subject to and constituted by time axis manipulation.

The first words spoken in the film revolve around signs, but the film does not begin with spoken words. The opening credits are superimposed on vertiginous pans that disorient and disarm the viewers in advance of the first shots of the film proper: a series of probable but uncertain stills. A small, nearly deserted port, at low tide. No movement. No signs of life. Even the water is perfectly still. The first two shots are conceivably stills. Not the third, in which the slightest breeze perturbs the branches. The next two shots deepen the uncertainty. Are we peering at a lifeless port or a frozen frame? Reality or sign? The succeeding shots offer partial resolution, even as they intensify our disquietude: three old men, embalmed



180 ——— The Master of Time: Jean Epstein's Nonhuman Time Axis Manipulation ——— Noam M. Elcott

by photography; a seascape, replete with the movement of the tide; a tranquil landscape; two women, old and young, frozen at a spinning wheel; the land and the sea with their requisite movements; the two women in palpable slow motion; the tide; the women; the door opening; the women slowly approaching full speed; the wash on the line; finally, the women at full speed and the words: "C'est un signe..." Whole treatises are necessary to unpack the opening minutes of *Le Tempestaire*. One of them is *The Intelligence of a Machine*. In the opening of *Le Tempestaire*, Epstein surely rehearses the origins of cinema and the progression from a still to a moving image. More acutely, he actualizes three theoretical claims made in *The Intelligence of a Machine*. First, "the transmutation of discontinuity into continuity: denied by Zeno [and Bergson], but accomplished by the cinematograph."⁷¹ Second, that humans are the only quantitative standard in the universe, one that is entirely arbitrary.⁷² Any objects in motion immobilized by the camera could have resolved the ambiguity of the opening shots. Epstein chose petrified images of humans to force us to recognize the vanity of our anthropocentric standard. And, lastly, to remind us that, in the absence of visible movement, humans become statues. (Phenomenologically, this appears to be the case only in the context of film; standalone photographs entirely lack the statuesque quality of freeze frames.) From the start, then, the viewer senses that "the soul, the mind, and instinct [are] functions and fictions of the time variable."⁷³

The middle section of the film advances the plot, tracks the tempest in long takes of waves crashing against the cliffs, and—in a manner even more complex than Epstein's *Finis Terrae* (1929) or certainly his United Nations promotional film *Les Feux de la mer* (1948)—imbricates modern and ancient media technologies through the lighthouse, the radio, and the promise of the tempestaire. The final third of the film once again strikes at the core of time variability as the reality revealed through cinematic time axis manipulation. As soon as Floch, the tempestaire, takes hold of his crystal ball, the film cuts to a quiet landscape disturbed by acceleration in both the visual and audio tracks: clouds gust across the sky, accompanied by high-pitched, blusterous sounds. In closeup, the darkness of the crystal ball begets an image of the rough waves slowed down, which dissolves to a full-screen image of a similar scene. Visual and audio recordings of waves and wind continue their deceleration toward death, matter, and silence. Throughout the scene, the camera regularly turns to the young woman, often in spatial and temporal closeups (slow motion); her anxieties and desires rendered perfectly legible by "the machine for the confession of souls."⁷⁴ As

181 ——— Time Machine

70 An original typed screenplay, with Epstein's handwritten notes, is reproduced in facsimile between pages 168 and 169 in Jean Epstein, *Écrits sur le cinéma*, 2 vols., vol. 2: 1947-1952 (Paris: Seghers, 1975). All quotations from the film below have been verified in the script.

71 *The Intelligence of a Machine*, 9 and passim.

72 *Ibid.*, 73-74.

73 *Ibid.*, 32-33.

74 *Ibid.*, 56-59.



the time signature slows to a crawl, the rough water begins to resemble the rocks on which it crashes. Suddenly, a series of quick—and progressively quicker—closeups of the crystal balls are interspersed into the long take of molten water. Each closeup is short—the shortest cannot be more than a few frames—but they contain images in slow motion. The result: bursts of slow-motion puncture the slow-motion long take in a layered temporality that induces a sense of speed through slowness. (By loose analogy, this sequence distorts time the way a dolly zoom—that is, the reverse tracking shot made famous in *Vertigo*—distorts space: everything and nothing changes.) That the crystal ball stands in for the cinematograph nearly goes without saying. Epstein said it exquisitely a year before he even shot the film: “Like the philosopher’s stone, the cinematograph holds the power of universal transmutations. Yet, this secret is extraordinarily simple: all its magic devolves from its capacity to vary temporal dimensions and orientations.”⁷⁵ A few more breaths from the tempestaire and the waves are set in reverse. Crucially, the sequence does not in the least resemble the Lumières’ *Demolition of a Wall* (1896) or the old avant-garde or burlesque films referenced by Epstein as proofs of an anti-logic in the universe. The reversed wave is so subtle Epstein has it retreat twice, lest we miss it the first time (see the miniature flipbook at the bottom right corner of the odd-numbers pages of this essay). The incessant pounding of the waves, like the cyclical tides linked to the moon, appears only weakly tied to the arrow of time. The tempestaire—tempest tamer and master of time—has untethered our perception of time from the steady march forward with which it is erroneously associated. Less an act of defamiliarization than of revelation, the cinematograph’s time axis manipulation makes sensible an otherwise inaccessible truth of the universe: the multiplicity and variability of time.

In this still-breathtaking sequence, Epstein has broken into an island of the new reality divulged by physics. But the film ends with the insights of an audacious psychiatrist. In near synchrony, the crystal ball slips from the hands of Floch (falling and shattering in slow motion) and we hear the fisherman ask with annoyance: “What are you doing here? I’ve been looking for you for an hour.” The reunited couple abandons the house of the tempestaire—who effectively vanishes from the story—and strolls along the edge of the cliffs, above a peaceful sea. Decidedly nothing adds up in this happy ending. The hour named by the fisherman seems at once unreasonably short—so much has happened since the woman took leave of her house—and impossibly long: less than ten minutes of film time have elapsed, many of them in slow motion. Fig. 4 ⇨

Jean Epstein, *Le Tempestaire* (1946) More to the point, the narrative

75 Ibid., 88.



is utterly disjointed. Why does Floch drop the crystal ball? Why is there no acknowledgement of the shattered glass? Why does the tempestaire vanish without a trace? A dream logic seems at play, though one woven into everyday reality so tightly as to be nearly indiscernible, like the disguised symbolism in the seemingly quotidian scenes painted by Jan van Eyck or Robert Campin. Once again, and for the final time, *The Intelligence of a Machine* provides a key, in a section entitled “A cause that is an end or an end that is a cause”:

“The sleeper knows, without knowing why, that it is requisite for him to hurry through the hardships and traffic dangers of an immense city. [After many travails...] he merely has to ring the bell. The ringing triggers his awakening to the sound of an alarm clock that went off a few seconds ago within the other reality to which he has returned. This gap—very small in waking time but very long in sleeping time—was necessary to allow the hearing stimulus to break through the thickness of sleep and reach consciousness. [...] the ringing of the alarm clock is at once the end and the cause.”⁷⁶

In *Le Tempestaire*, the crystal ball begins to slip just before we hear the sound of the sailor’s voice. But because it slips, falls, and shatters in slow motion, the sailor has time to ask “What are you doing here?” before the ball even hits the ground. If the woman has indeed dreamed the tempestaire, then it is the voice of her fiancé that triggers the fall of the ball that, technically, begins to slip before he even speaks. Is it his unconsciously observed presence at the door? The sound of his voice, initially unregistered by consciousness or cinematograph? Or, subtler still, an unconscious perception that the wind has died down—in the sailor’s precise words, *tombé*, fallen? The fallen winds catalyze the fall of the ball that controls the wind.⁷⁷ Psychology undoes cause and effect, and the cinematograph becomes “a machine for dreaming.”⁷⁸ This was old news already in the 1940s. It represents a rare humanist retreat for Epstein and paves the way all too well for the film’s hackneyed ending: two lovers walking together into the distance. For Epstein, however, the cinematograph was not only “a machine for dreaming,” but also and more importantly, a machine for thinking time. Epstein never failed to marvel at the face in closeup or the soul in slow motion; he never abandoned animism or the unity of life. But his enduring legacy lies in time axis manipulations in which humans are but “relative among relative measures—an absolute variable,”⁷⁹ a condition surmounted only through the intelligence of a machine.

76 Ibid., 51.

77 In Epstein’s screenplay, there is a rhyme between the direction and the sailor’s line: *La boule s’échappe de ses mains, tombe [...] “Le vent est tombé.”* At the risk of oversimplification, we might say that, at this moment, Epstein pivots from an external marvelous in line with the surrealism of Roger Caillois or Jean Painlevé, to an internal marvelous, more closely associated with Sigmund Freud or André Breton. On materialist mystics like Caillois, see Marina Warner, “The Writing of Stones,” *Cabinet*, no. 29 (2008). Epstein could be included in this expanded orbit of surrealism. Early in his career, in the stunningly-titled essay “Freud ou le nick-cartérianisme en psychologie” (1922), Epstein denounced Freud’s rationalization of the unconscious as a detective scenario of bourgeois sexuality. But in his late writings, such as *The Intelligence of a Machine* and even more so *Le Cinéma du diable* (1947), Epstein recognized Freud, along with the atomic bomb and cinema, as one of the great harbingers of the new order. See Epstein, “Freud ou le nick-cartérianisme en psychologie” (1922), in *Jean Epstein: cinéaste, poète, philosophe*, ed. Jacques Aumont (Paris: Cinémathèque française, 1998), 139–46; Epstein, “Le Cinéma du diable,” 324–25.

78 Epstein, *The Intelligence of a Machine*, 76, translation modified; *Écrits sur le cinéma*, 1: 1921–47, 315.

79 *The Intelligence of a Machine*, 74.

