

Creative Coding & Creative Computing Frameworks

Week 8: Theories and Histories: APIs 2

What is information anyway?

N. Katherine Hayles, *How We Became Post-Human: Virtual Bodies in Cybernetics, Literature and Informatics* (The University of Chicago Press, 1999)

To continue our enquiry into APIs, today we are focusing on one book, because it can draw together some of the strands from previous weeks and will complement other reading you are doing or have been set – as well as your coding exercises.

This text offers important historical background and framing, not only to understand theories of 'information' but around the notion of 'embodiment', and 'embodied theories of computing' – concepts which are frequently mentioned in the CCI.

We conclude on the powerful claims she makes for narrative as a mode of critical enquiry and knowledge production.

Image: N. Katherine Hayles, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature and Informatics* (1999)



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The stakes of information

How We Became Posthuman responds to debates on consciousness that were occurring at the time of publication (the late 1990s).

These prompted Hayles to argue that, together with 'intelligence' and 'information', it was beset with ideological and philosophical baggage which should be unpacked.

The book is a journey into the historical origins of ideas which Hayles deemed perplexing and illogical; her attempt to find out why they had such a strong hold, socially and culturally.

Although it is over two decades old now, the celebration of 'AI', machine learning and big data has only intensified, making her questions and conclusions as urgent as ever.

Image: Ai-Da, the 'humanoid robot' created by Aiden Meller, who gave evidence to the House of Lords on 11th October 2022 as part of the 'A Creative Future' enquiry, which examines potential future challenges to the creative industries in an era of AI and rapid technological change

Hans Moravec

M·I·N·D CHILDREN

*The Future of Robot and
Human Intelligence*



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Theories of mind and 'intelligence'

Hayles' use of the term 'posthuman' is a provocation – as its meaning is ambivalent, two-sided.

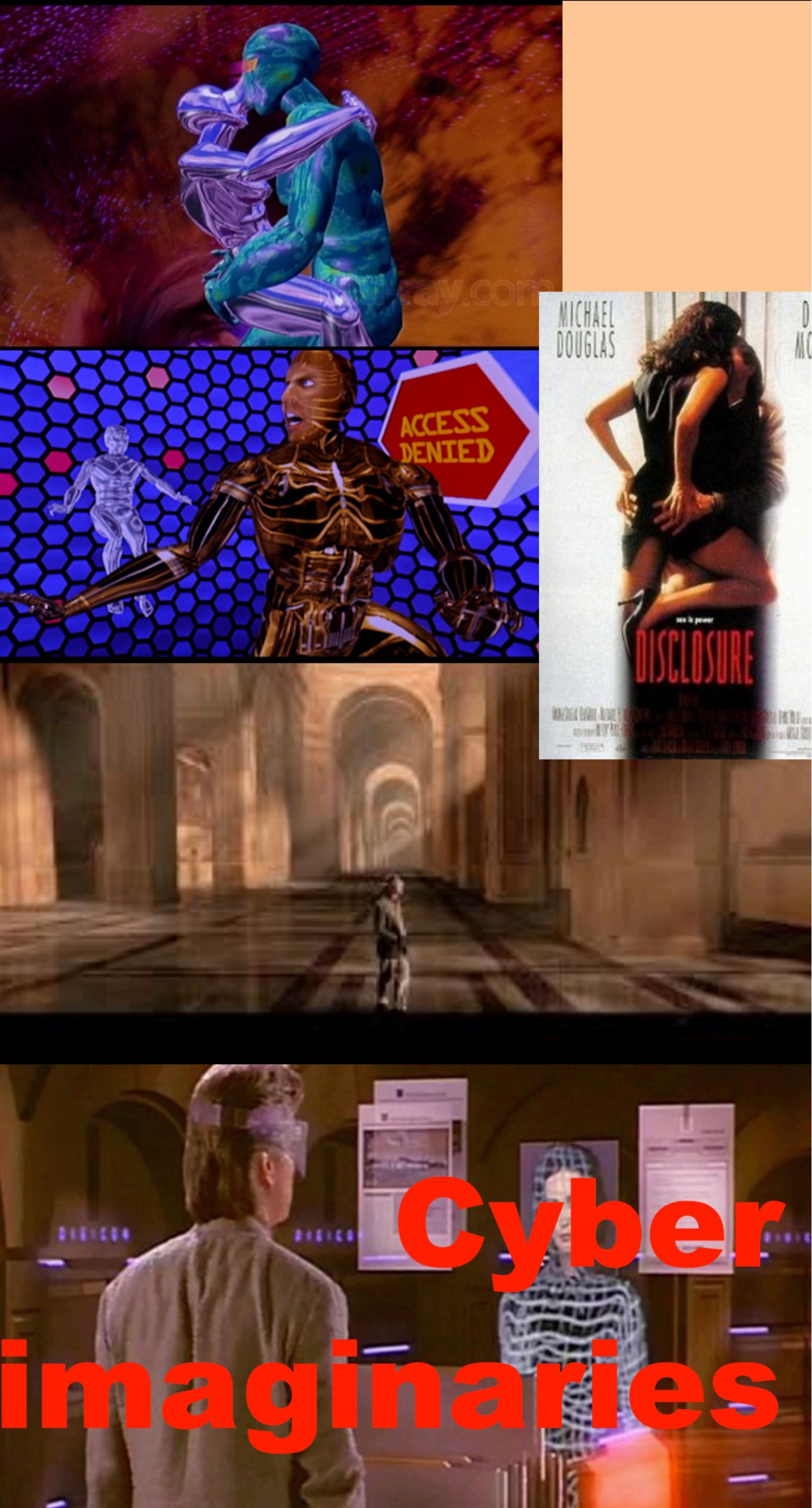
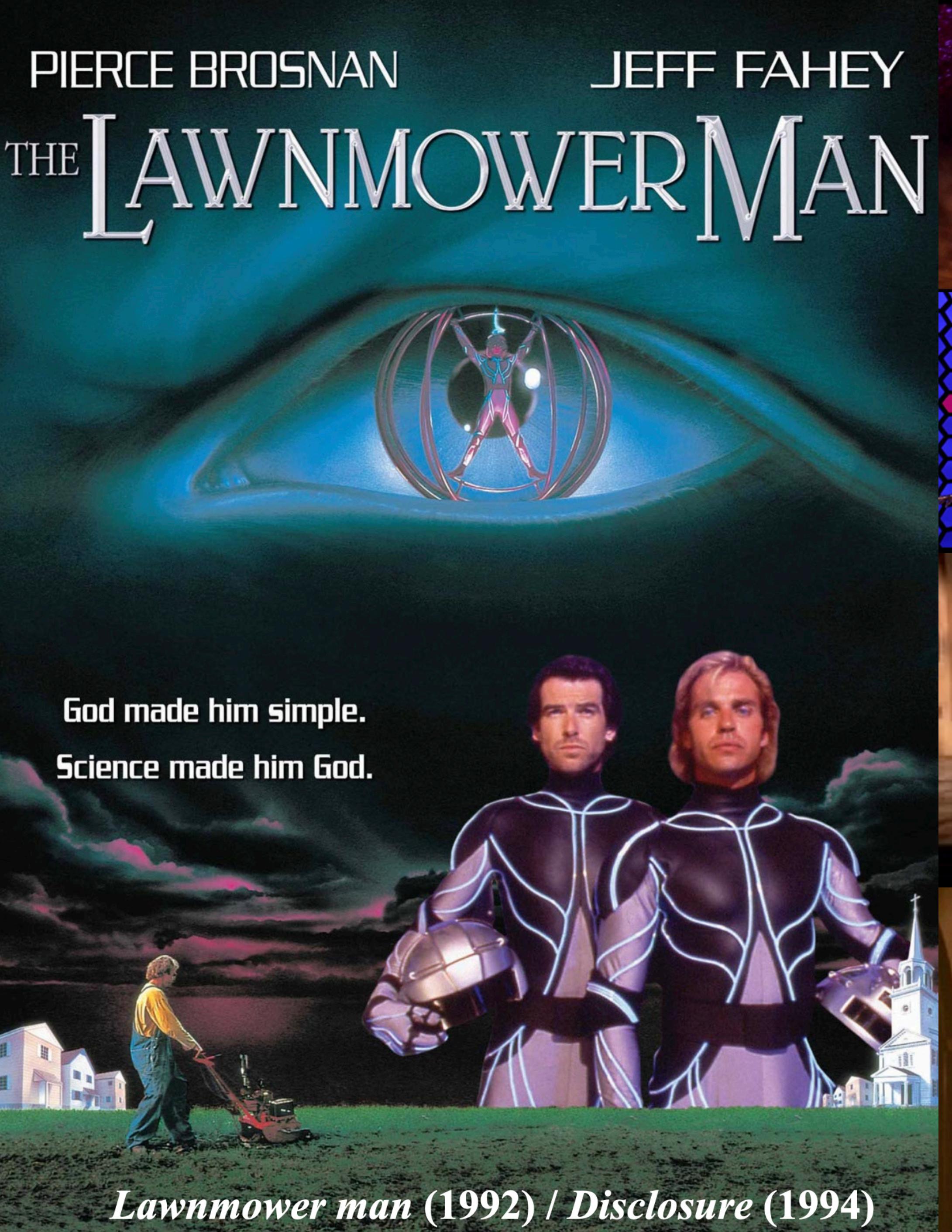
Some used it to describe a going-beyond, or making-better, of the human (e.g. Hans Moravec, a roboticist and author of *Mind Children*, who is her main target).

It was also already in active use in literary and cultural theories of postmodernism, which problematised so-called 'meta-narratives' of history, as well as authorship (via subjectivity, positionality, intention and voice).

With the meaning of 'posthumanism' split open, Hayles can use it to tell the story of how and why, as she phrases it, 'information lost its body'.

Hayles' proposes we follow a distributed understanding of cognition, which challenges liberal philosophies of the subject and 'de-centres' the human. She also asks how the historical centring of human perception related to capitalism's modes of governance, control and resource allocation.

Image: Hans Moravec, *Mind Children: The Future of Robot and Human Intelligence* (1990)



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Whose posthumanism?

Hayles says Moravec's understanding of consciousness makes it a mere question of 'informational pattern', independent of its material substrate.

His 'posthumanism' is now more commonly described as 'transhumanism' as it claims human cognition can be improved upon using the prosthetics and amplifications of technology (intelligence becomes malleable and moveable, between devices / bodies, human and non-human).

Hayles' divergent understanding of intelligence must, she claims, be considered in a world where sensing and information-processing devices will proliferate.

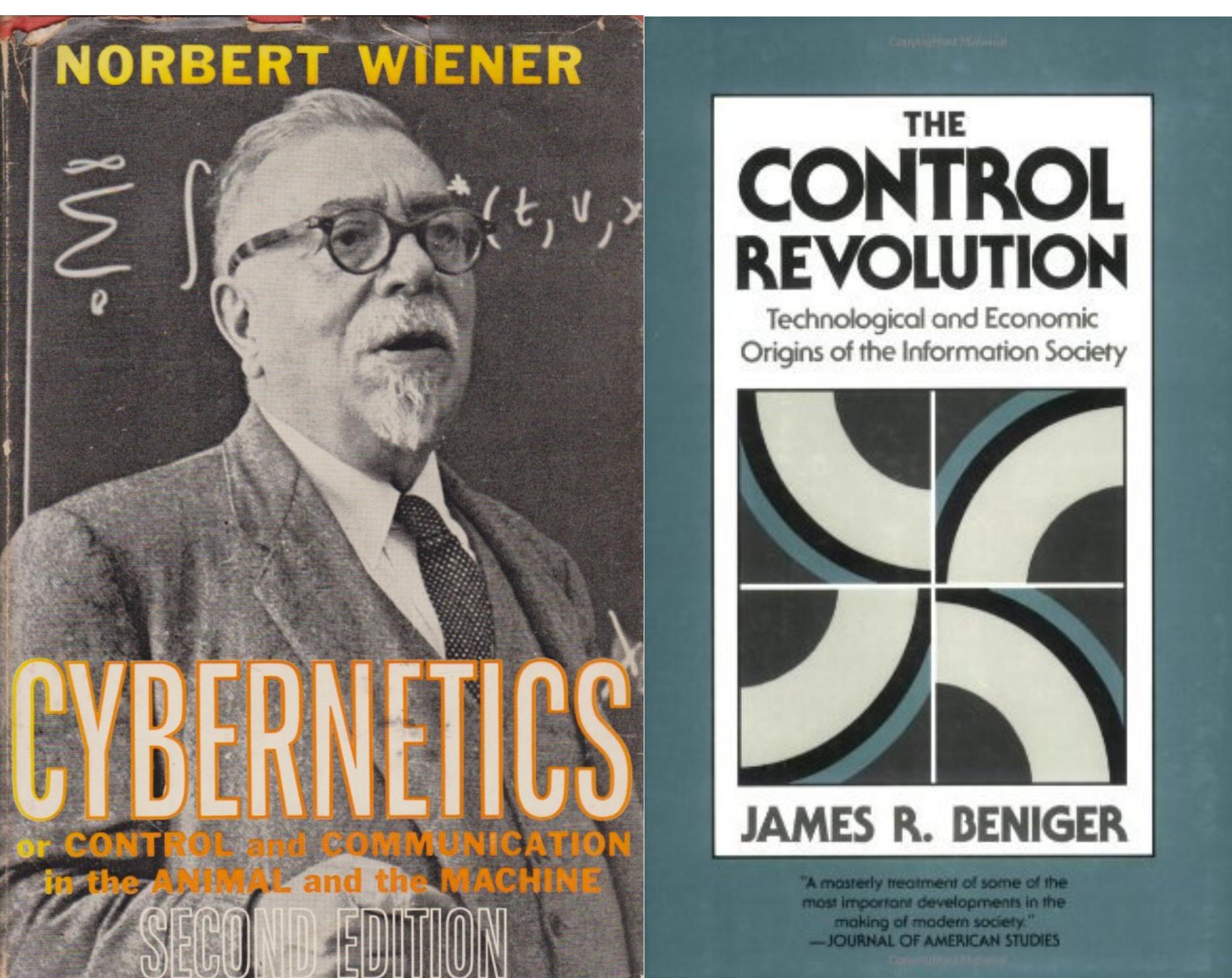
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Hayles focuses on the Macy conferences (1945-54), which were enormously influential in the development of theories of human behaviour (experts from cybernetics, psychiatry, anthropology and medicine shared their findings).

More audaciously, with regards to our own orientation to films, art and fiction, she connects this 'scientific' setting with that of contemporary literatures which also shared in the cybernetic paradigm, **exploring their synergies and antagonisms as productive forces for the cultural historian.**

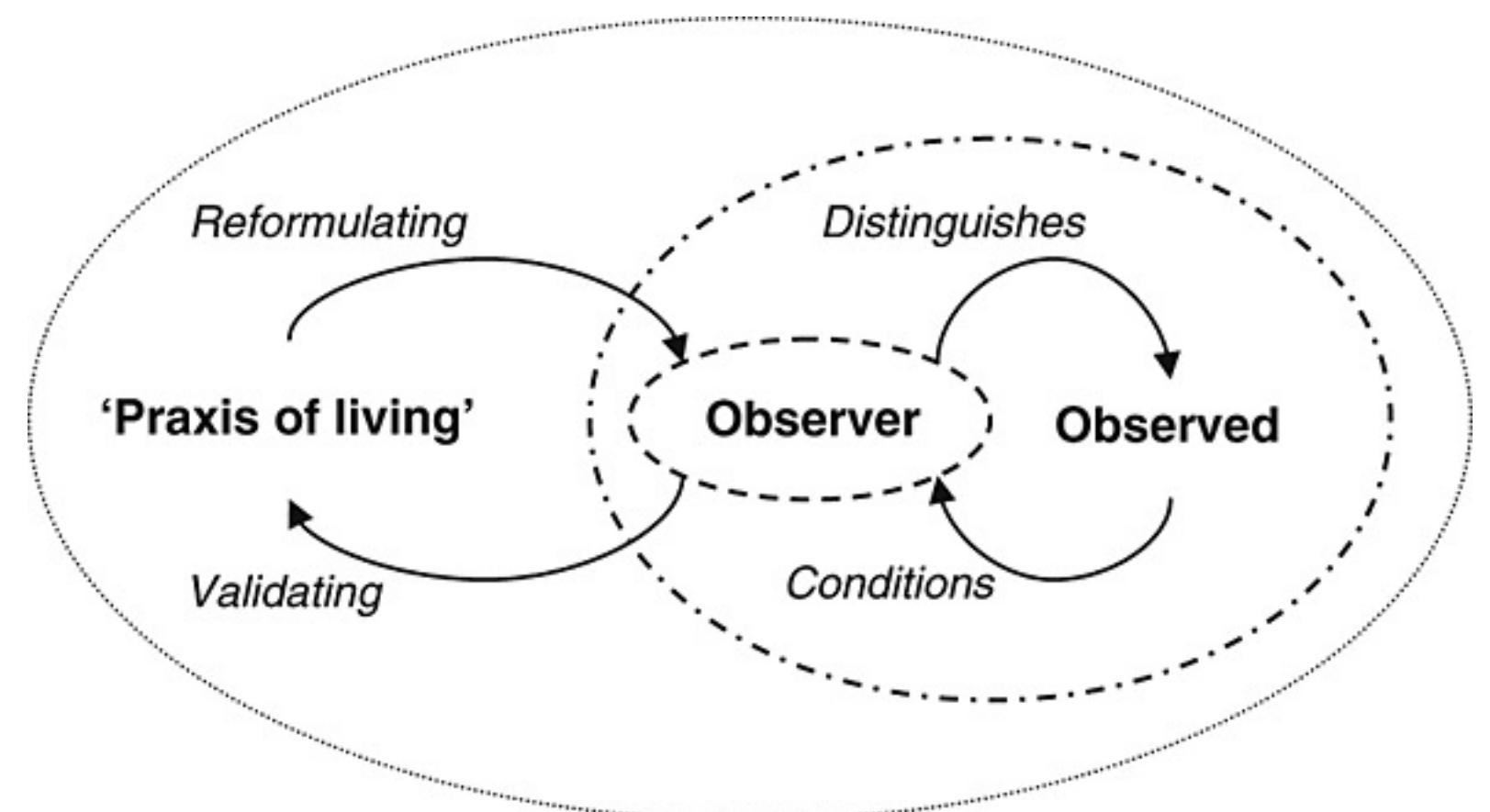
Hayles:

"As we have seen, one way to construct virtuality is the way that Moravec and Minsky do – as a metanarrative about the transformation of the human into a disembodied posthuman. I think we should be skeptical about this metanarrative. To contest it, I want to use the resources of narrative itself, particularly its resistance to various forms of abstraction and disembodiment. **With its chronological thrust, polymorphous digressions, located actions, and personified agents, narrative is a more embodied form of discourse than is analytically driven systems theory.** By turning the technological determinism of bodiless information, the cyborg, and the posthuman into narratives about the negotiations that took place between particular people at particular times and places, I hope to replace a teleology of disembodiment with historically contingent stories about contests between competing factions, contests whose outcomes were far from obvious."



Top image: Attendees of the 10th Macy conference (1953): T.C. Schneirla, Y. Bar-Hillel, Margaret Mead, Warren S. McCulloch, Jan Droogleever-Fortuyn, Yuen Ren Chao, W. Grey-Walter, Vahe E. Amassian (first row), Leonard J. Savage, Janet Freed Lynch, Gerhardt von Bonin, Lawrence S. Kubie, Lawrence K. Frank, Henry Quastler, Donald G. Marquis, Heinrich Kluver, F.S.C. Northrop (second row), Peggy Kubie, Henry Brosin, Gregory Bateson, Frank Fremont-Smith, John R. Bowman, G.E. Hutchinson, Hans Lukas Teuber, Julian H. Bigelow, Claude Shannon, Walter Pitts, Heinz von Foerster (third row).

Bottom image: Norbert Wiener, *Cybernetics, or Control and Communication in the Animal and the Machine* (1961, 1948), and James Beringer's later historical survey, *The Control Revolution: Technological and Economic Origins of the Information Society* (1986)



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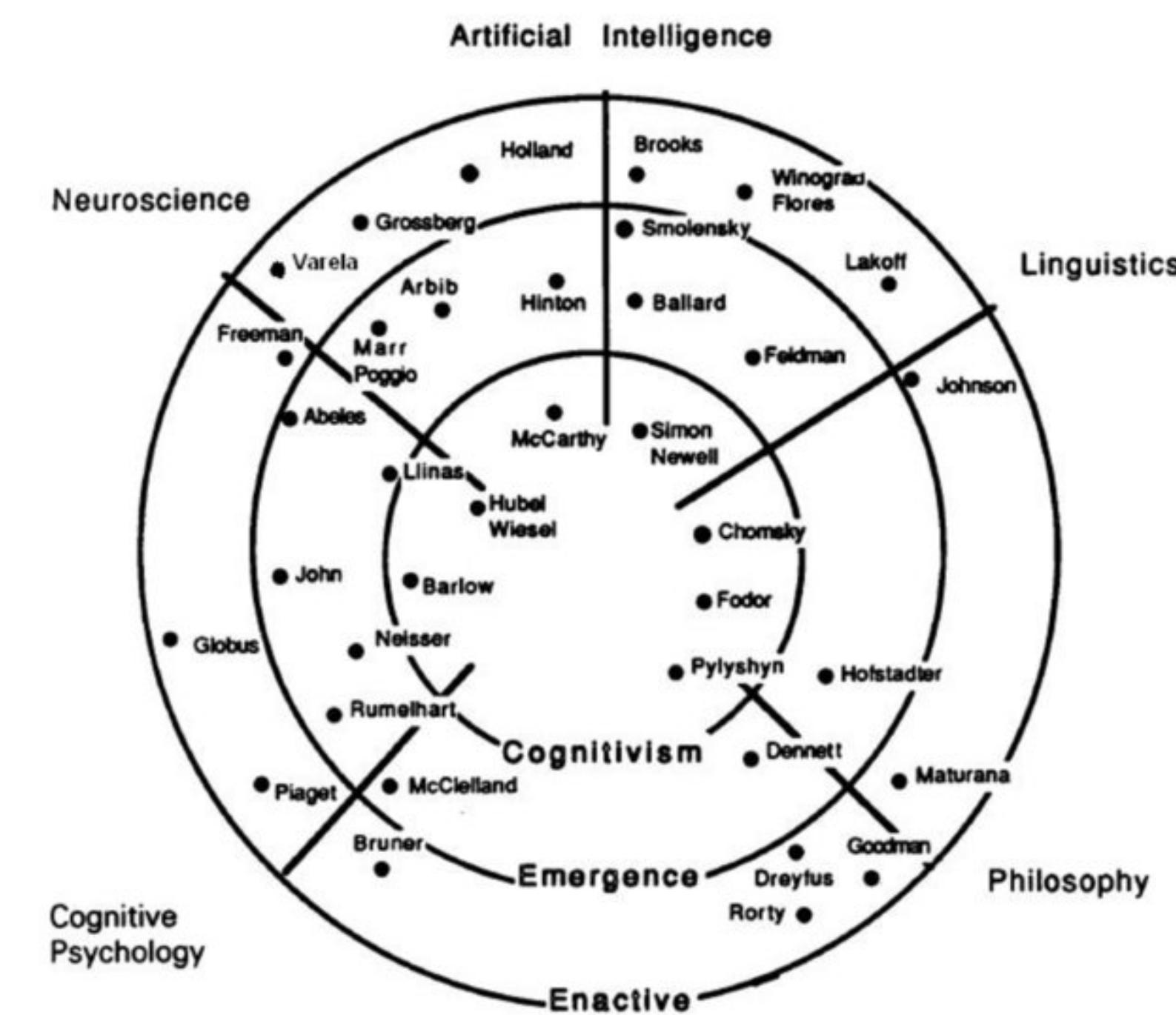
Hayles' three waves of cybernetics (towards informational pattern as measure)

1) The Macy conferences (1945-54): a preoccupation with homeostasis and the feedback loops of self-regulation. Move towards the comparison of human beings and machines as similar, or comparable, via the principle of information processing

2) Addressing the lacunae of the Macy conferences: especially around the questions of reflexivity, the observer, and the situatedness of perception (questions pursued by Gregory Bateson, Francisco Varela & Humberto Maturana). No assumptions are made with regards to the precise workings of perception, rather the focus is on the specificity of perception's role in replicating systems it forms part of

3) Understanding 'emergence' in the evolution of systems: How do the given characteristics of systems lend themselves to processes of emergence and change / how do systems, their participants and processes, evolve or generate new features?

Images: Diagrams relating to Francisca Varela's work on a reflexive theory of mind and perception



A Manifesto for Cyborgs: Science, Technology, and Socialist Feminism in the 1980s

by *Donna Haraway*

An Ironic Dream of a Common Language
for Women in the Integrated Circuit

THIS ESSAY is an effort to build an ironic political myth faithful to feminism, socialism, and materialism. Perhaps more faithful as blasphemy is faithful, than as reverent worship and identification. Blasphemy has always seemed to require taking things very seriously. I know no better stance to adopt from within the secular-religious, evangelical traditions of United States politics, including the politics of socialist-feminism. Blasphemy protects one from the moral majority within, while still insisting on the need for community. Blasphemy is not apostasy. Irony is about contradictions that do not resolve into larger wholes, even dialectically, about the tension of holding incompatible things together because both or all are necessary and true. Irony is about humor and serious play. It is also a rhetorical strategy and a political method, one I would like to see more honored within socialist feminism. At the center of my ironic faith, my blasphemy, is the image of the cyborg.

A cyborg is a cybernetic organism, a hybrid of machine and organism, a creature of social reality as well as a creature of fiction. Social reality is lived social relations, our most important political construction, a world-changing fiction. The international women's movements have constructed "women's experience," as well as uncovered or discovered this crucial collective object. This experience is a fiction and fact of the most crucial, political kind.

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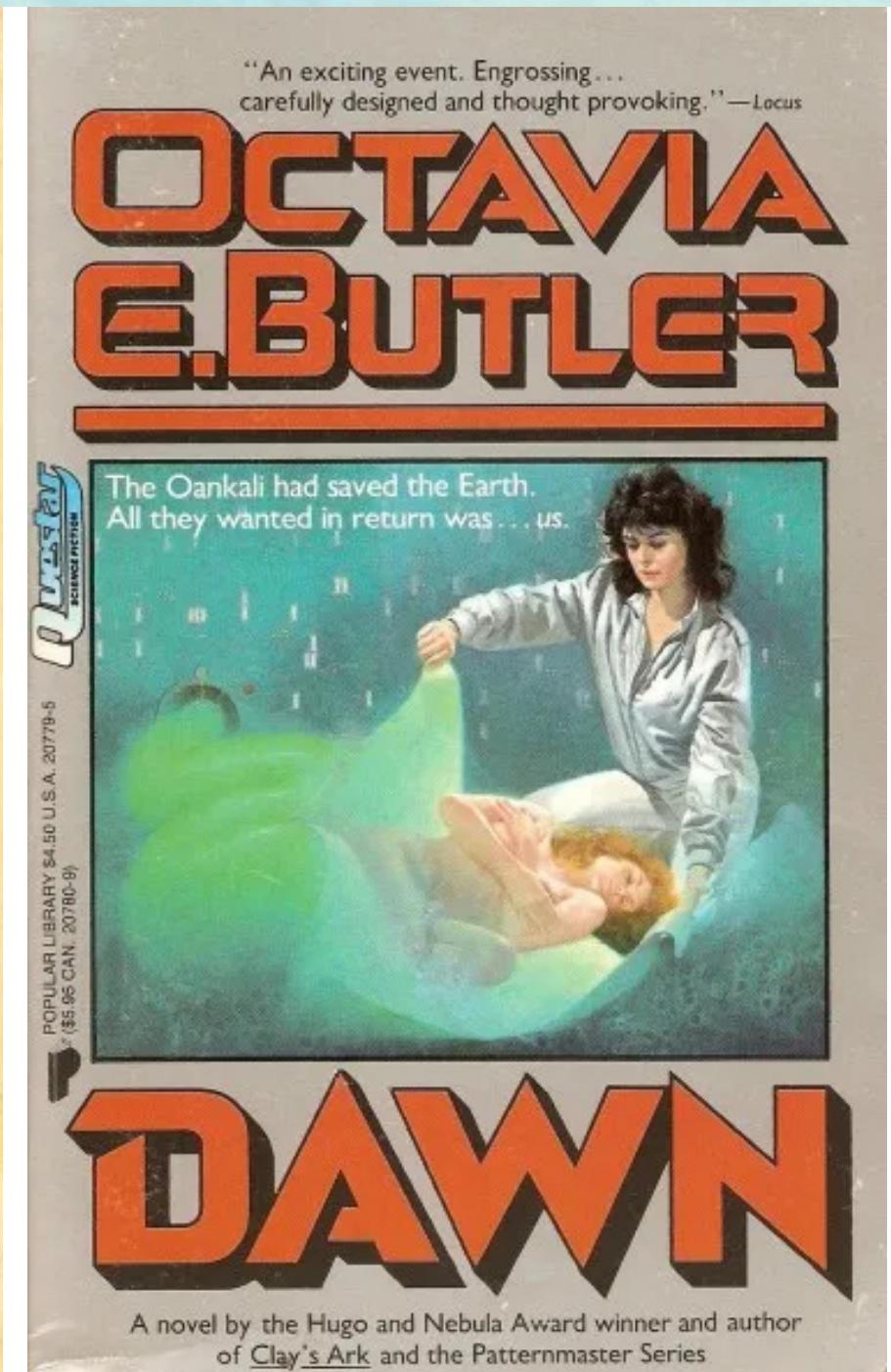
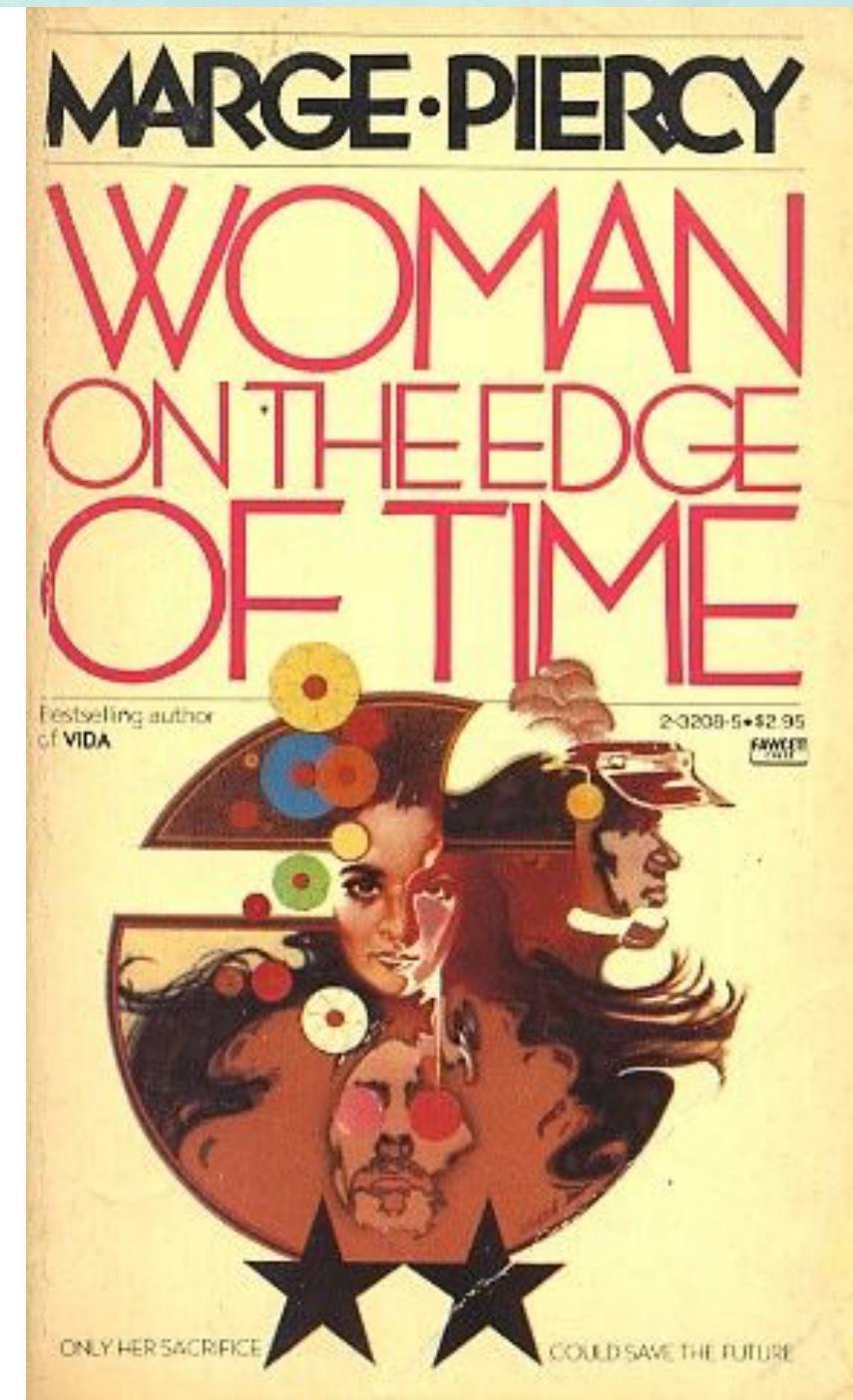
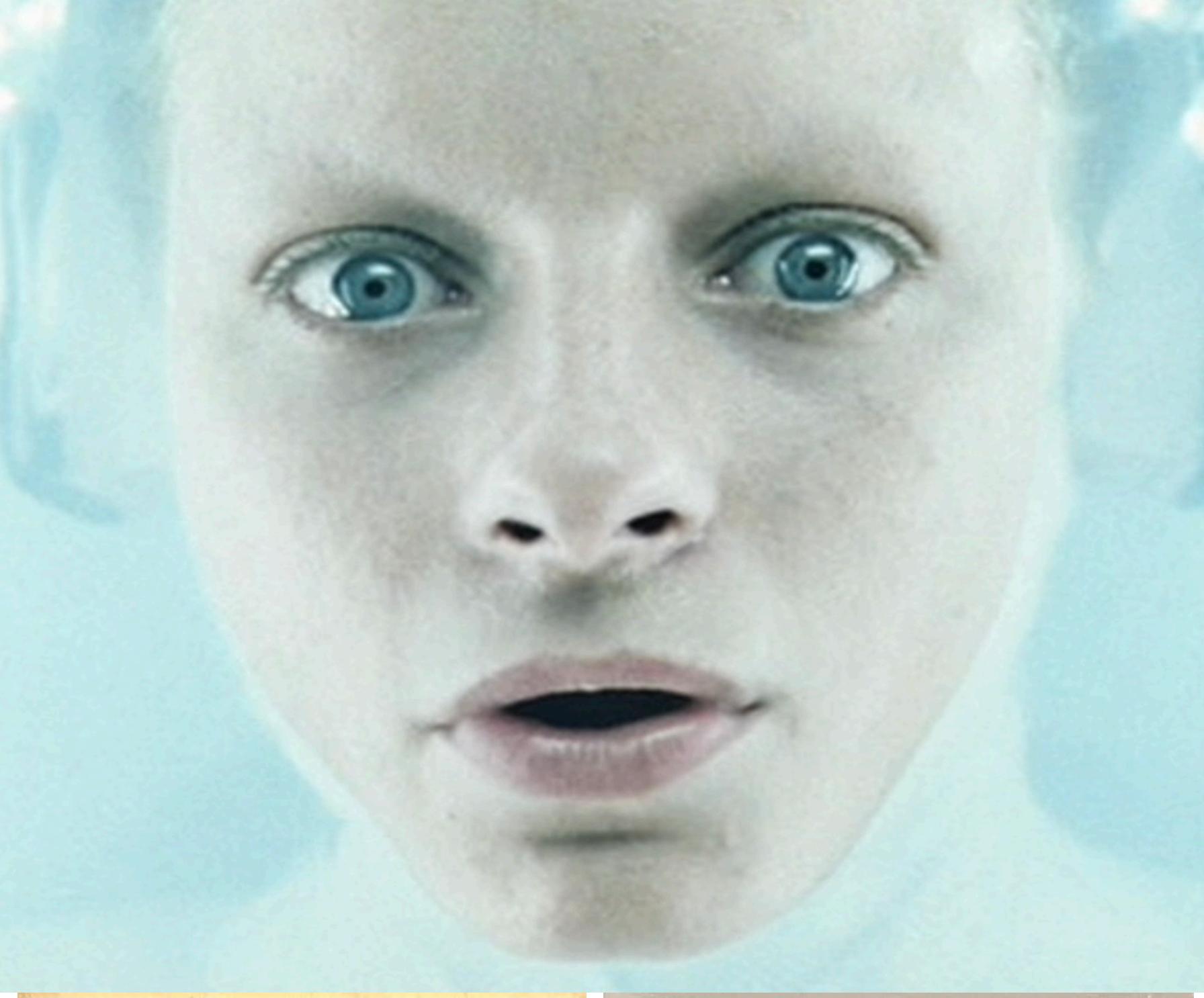
'Informatics' (a footnote)

By "informatics," I mean the material, technological, economic, and social structures that make the information age possible. **Informatics includes the following: the late capitalist mode of flexible accumulation; the hardware and software that have merged telecommunications with computer technology; the patterns of living that emerge from and depend on access to large data banks and instantaneous transmission of messages; and the physical habits – of posture, eye focus, hand motions, and neural connections – that are reconfiguring the human body in conjunction with information technologies.**

For readers who know the term "informatics" mainly from Donna Haraway's work, where it frequently occurs as "the informatics of domination," I should clarify how this term is currently being used in technical and humanistic fields here and abroad. To computer people, "informatics" means simply the study and design of information technologies. In many European countries, especially Norway, Denmark, and Germany, departments of humanistic informatics are being formed to study the cultural impact and significance of information technologies. Researchers in these departments regard "informatics" as a descriptive term no more value-laden than physics, biology, or literature. A historian in such a department may study the history of computers; a linguist, correlations between computer and natural languages; a literary theorist, new forms of electronic textuality.

How We Became Posthuman, p. 313, note 4

Image: it is too little mentioned that Haraway's famous essay, 'The Cyborg Manifesto' (here with its original title, from The Socialist Register, 1986) was a contribution to fiery debates about how postmodernism might relate to the struggles for global, female emancipation. Hayles follows Haraway in her use of the concept of 'informatics' and details how in a footnote.



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The powers of narrative, the flexibility of the fact

Donna Haraway argued in 'The Cyborg Manifesto' that Octavia Butler and other sci-fi authors had more convincingly explored the lives, bodies, experiences and ethical dilemmas of technoscientific worlds than had scholars or scientists. **Hayles also grants a uniquely powerful role to 'narrative' – that of her own account of the cultural history of computing and cybernetics** (its "polymorphous digressions, located actions, and personified agents").

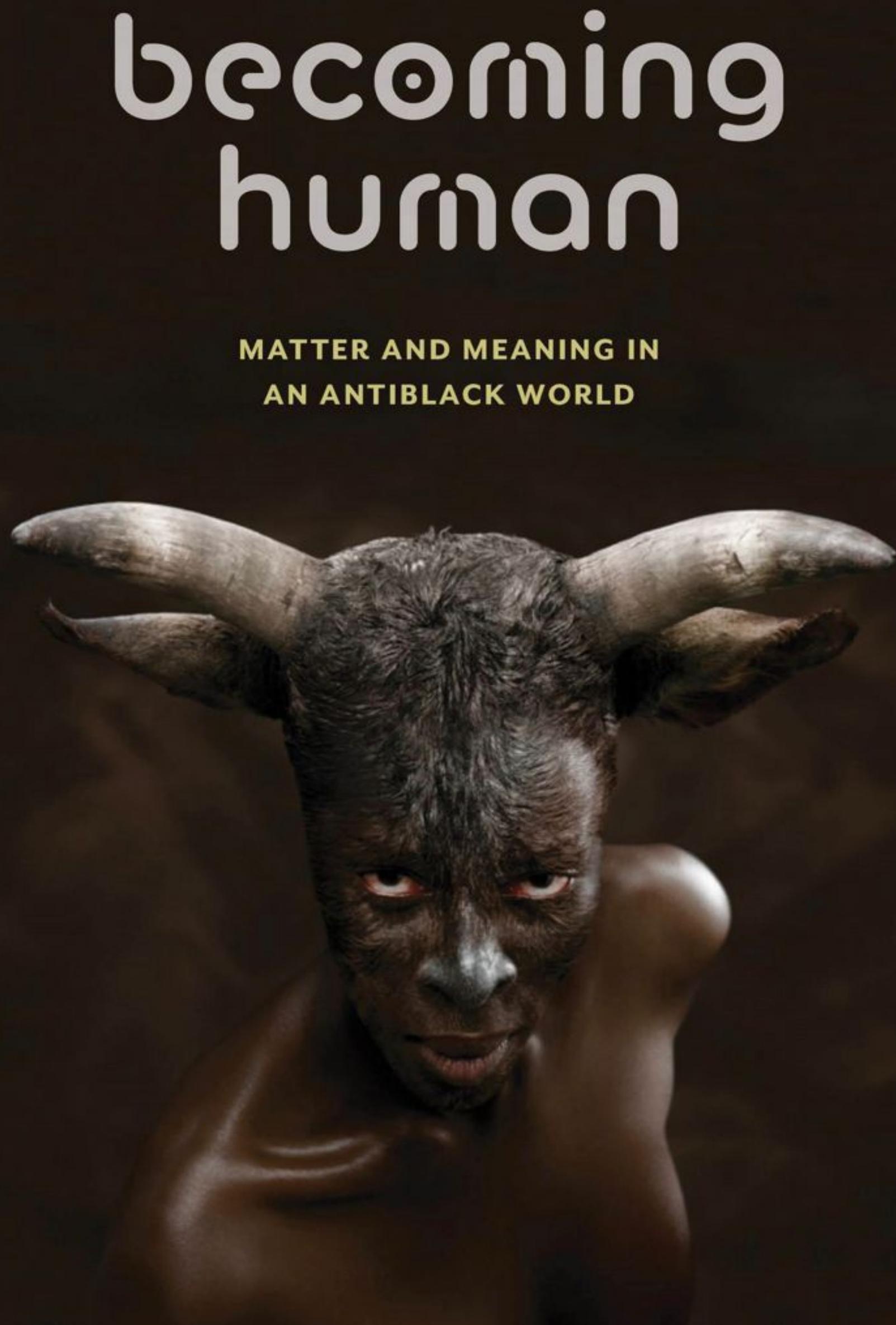
When we think of the powers (science) fiction has had, we might think of its worlds and spaces, their influence on Facebook's Metaverse, or the carrying over into the corporate landscape of figures from books that twenty-something tech entrepreneurs read (ref: Tech Won't Save Us podcast: 'Silicon Valley Doesn't Get Science Fiction w/ Annalee Newitz', 23 December, 2021).

Hayles situates fiction's agency in its obligation (its unavoidable attraction) to a holistic, integrated telling that includes psyche, body, geography and history.

Subjects displaced by metanarratives – i.e. those not white, male, bourgeois, healthy or 'sane' – had, furthermore, made it into a powerful medium with which to question a world that refused to incorporate them properly, or give accounts of their reality, let alone their political agency.

Image top: The precog, Agatha, from Steven Spielberg (and Philip K. Dick's) *Minority Report* (2002)

Images bottom: Books by Marge Piercy and Octavia Butler – authors whom Donna Haraway credited with having influenced her conceptual modelling of the 'cyborg' and its capacities



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Theories of knowledge, theories of being (epistemology / ontology)

Zakiyyah Iman Jackson's book, *Becoming Human* (2020), makes strikingly similar claims to N. Katherine Hayles regarding the epistemological powers of literature and art

While we often isolate African diasporic literary studies from the fields of science and philosophy, **I contend that African diasporic literature and visual culture introduce dissidence into philosophical and scientific frameworks that dominate definitions of the human:** evolution, rights, property, and legal personhood. By reading Western philosophy and science through the lens of African diasporic literature and visual culture, we can situate and often problematize authoritative (even if troubling) conceptualizations of being and material existence, **demonstrating that literary and visual cultural studies have an important role to play in the histories of science and philosophy.** Using literature and visual art, my study identifies conceptions of being that do not rely on the animal's negation, as repudiation of "the animal" has historically been essential to producing classes of abject humans. *Becoming Human* reveals that science and philosophy share many characteristics with literature and visual art despite the espoused objectivity and procedural integrity of scientific and philosophical discourses. (p. 2)

It is perhaps prior scholarship's interpretation of this tradition as "denied humanity" that has facilitated a call for greater inclusion, as a corrective to what it deems is a historical exclusion of blackness. (p. 3)

Image: Zakiyyah Iman Jackson, *Becoming Human: Matter and Meaning in an Antiblack World* (2020)



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Timeline collapse: history in threads / asynchrony

Everything for Everyone is a recent example of fiction using genres associated with realism, documentary or historiography (the oral history) to trouble our understanding of the present.

From the Introduction:

"In the forties, when Miss Kelley started doing sex work in Hunts Point, she never imagined she would one day act in a pivotal event of the city's history. But on May 6, 2052, she joined with thousands of others to storm the neighborhood's produce market in a riot that would commence a far-reaching transformation of New York. She would go on to coordinate food reappropriation and redistribution for the fledgling commune. By the end of the summer, Miss Kelley and her comrades would be feeding a million-and-a-half New Yorkers across eleven residential communes in the Bronx and Uptown."

The insurrection of Hunts Point, and our interview with Miss Kelley, opens this collection of life histories. Miss Kelley's memories of catapulting burning trash cans and endless meetings began this oral history project, just as those events marked the subsequent twenty years of revolutionary change in New York City. This collection bridges multiple distinct experiences, roles, geographies, and temporalities in this two-decade history. These interviews, we hope, will contribute rich and varied voices of New Yorkers as they experienced the misery and joy of the insurrections, and the growing hope that characterized this recent era [...]"

Image: M. E. O'Brien and Eman Abdelhadi, *Everything for Everyone* (2022)