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Envisioning the Interface

Watch the audiovisual essay here:

https://criticalcommons.org/view?m=it2cP9eh2

Abstract

Envisioning the Interface presents an interpretive chronology of Hollywood's imaginings of computer interfaces from the 1950s to the present. Although not rigidly chronological, this video essay observes a historical evolution from early visions of gestural interfaces when computers were linked with superhuman or extra-terrestrial intelligence, to the mundane, physical and punch-card based interfaces of the mainframe era, followed by a wave of strangely recalcitrant voice and anthropomorphic interfaces that emerged in the PC era. Drawing on the concept of cinema as a source of "diegetic prototypes" for the technology industries, this trajectory maps a profound transformation of the relationship between humans and computers as people became increasingly knowledgeable about — and dependent on — computation in daily life. The chronology comes full circle with a return to gestural and embodied interfaces and holographic displays since the 2010s. However, unlike their imaginary, post-war counterparts, Hollywood's second wave of gestural interfaces is closely tied to real-world technology development and product placement. Without suggesting a deterministic relationship between the cinematic imaginary and real-world technology design, *Envisioning the Interface* invites a more critical vision of computer interfaces — both on screen and in relation to consumer culture. The video tracks multiple historical trajectories in order to highlight the shifting relationship between interfaces in Hollywood and their counterparts in the real world, illuminating the limits and presuppositions of naturalized visions for our engagement with computational technologies.

Keywords

computer history, HCI, interface design, design fiction, diegetic prototype

The Wizard (1989)

Creator's Statement

> *A so-called new technology is the object of fascination, hyperbole and concern. It is almost inevitably a field onto which a broad array of hopes and fears is projected and envisioned as a potential solution to, or possible problem for, the world at large. Technological development is one of the primary sites through which we can chart the desires and concerns of a given social context and the preoccupations of particular moments in history.*
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> — Marita Sturken, Douglas Thomas, and Sandra Ball Rokeach, *Technological Visions: The Hopes and Fears That Shape New Technologies* (2004)

How have cinema and television envisioned the basic forms of interaction between humans and computers? From the speculative voice and gestural interfaces seen in super-computer films of the 1950s to the anthropomorphic interfaces of the 1960s–80s, and the holographic and biometric interfaces of the 2000s, cinema has long contributed to shaping the ways we imagine interacting with computational devices. With examples drawn from more than two dozen North American film and television sources, *Envisioning the Interface* maps a 60+ year evolution of on-screen modes of human-computer interaction. Following a trajectory that is roughly — but not rigidly — chronological, *Envisioning the Interface* performs a combination of close and distant readings, examining modes of interfacing with computers that are both real and imaginary.[1] Close textual analysis within the

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1)   The concept of "distant reading" originated with literary scholar Franco Moretti: see Franco Moretti, *Graphs, Maps, Trees: Abstract Models for Literary History* (London and New York: Verso, 2005). Although the "distance" evoked in this video essay falls short of the Digital Humanities' model of computational analysis

video addresses specific examples, while a more "distant" perspective identifies repetitive tropes and broader patterns that reveal structural predispositions, assumptions, and biases. As generative AI increasingly infiltrates consumer products in forms such as personal digital assistants, recommendation algorithms, and (a new generation of) voice interfaces, it is important to interrogate the ways these interfaces invite humans to interact with them. The sub-field of feminist STS (Science and Technology Studies) has documented and demonstrated the dangers of the technology industries' perpetuation of a limited range of models for human computer interactions reducible to: tool, companion, animal, or slave.[2] Resisting the tech industry's current fantasy that computers and AI-driven interfaces should be imagined as a new form of involuntary servitude, these cinematic and televisual examples provide illuminating historical context for the rapidly evolving relationship between humans and computers.

The media curated for this project ranges from some of cinema's earliest imaginings of computer technologies, to contemporary sci-fi genre films and popular TV shows that valorize and extend the ideologies of ubiquity and utility favored by the consumer technology industries. To counter this, the critical method of this project is partly inspired by media archaeology, pursuing a discontinuous — that is, roughly chronological but avowedly non-teleological — exploration of computer interfaces as they have emerged from the admittedly slippery concept of the "technocultural imaginary."[3] In their field-defining anthology, *Media Archaeology*, Erkki Huhtamo and Jussi Parikka contrast media archaeology with conventional historiographical methods in its capacity to construct "alternate histories of suppressed, neglected, and forgotten media that do not point teleologically to the present media-cultural condition as their 'perfection.'"[4] The historical ruptures and discontinuities allowed by media archaeology support my contention that Hollywood can and should broaden its imaginary for interfaces that exceed — rather than mirror — the limitations of real-world technologies, and in the process, contribute to expanding our vocabulary for conceiving relationships between humans and computers. Ultimately, my goal is to highlight both the benefits and limitations of cinematic and televisual depictions of the interface as symptoms of broader attitudes toward computation and its role in human society and behavior.

Envisioning the Interface begins by noting the eccentricity of early computer interfaces that were unburdened by fidelity to real-world technologies. In both *The Day the Earth*

imagined by Moretti, the emphasis on patterns of analysis seen here is consistent with the "tropical" synthesis of formal repetition described by Allison de Fren: Allison de Fren, "From the Essay Film to the Video Essay: Between the Critical and the Popular," in *Reclaiming Popular Documentary*, eds. Christie Milliken and Steve F. Anderson (Bloomington: Indiana University Press, 2021), 157–178.

2)   Kelly B. Wagman and Lisa Parks, "Beyond the Command: Feminist STS Research and Critical Issues for the Design of Social Machines," *Proceedings of the ACM on Human-Computer Interaction* 5, issue CSCW 1 (2021), 1–20.

3)   I borrow this term from Simon Penny's keynote presentation, "What Robots Still Can't Do (With Apologies to Hubert Dreyfus) Or: Deconstructing the Technocultural Imaginary," given at the Robophilosophy conference on February 15, 2018. Penny's work — both as a theorist and designer — has been exemplary for its devotion to seeking practical solutions to philosophical and ethical problems associated with artificial intelligence, robotics, and computation broadly.

4)   Erkki Huhtamo and Jussi Parikka, *Media Archaeology: Approaches, Applications, and Implications* (Berkeley: University of California Press, 2011), 3.

Stood Still (1951) and *This Island Earth* (1955), computers that were brought to earth by space aliens operate seamlessly through gestural and voice interfaces. Soon after, as real-world, mainframe computing became a more common feature of everyday life, these examples of interface-as-spectacle gave way to more mundane and literal interactions requiring keyboards and punch cards. Subsequently, with the transition from room-sized mainframe computers to PCs in the home, depictions of the interface made a corresponding transition to the cinema-friendly form of voice interaction. As in the real world, however, voice interfaces on screen are more likely to result in frustration and obstruction than convenience and efficiency. With the introduction of gestural and holographic interfaces (which largely continue to elude the real-world technology industries of the 2020s), Hollywood follows the logic of extending the body to direct interaction with computers and electromagnetic signals, ultimately erasing the hardware of computing altogether. The video also includes a call for more thoughtful and creative imaginings of technology in Hollywood design fictions and a celebration of the uniquely embodied visions of bio-organic interfaces conceived by Canadian director David Cronenberg.

It is axiomatic to this project that the development of real-world technologies is complexly — that is, bi-directionally and non-deterministically — entangled with their depiction in popular culture.[5] Movies and TV shape the ways we think about and relate to computers, often reinscribing social hierarchies related to gender, race, class, age, and access. With his influential articulation of the concept of the "diegetic prototype," David Kirby notes the capacity for cinema to "ease public fears and demonstrate the possibilities" of future technologies.[6] At the same time, the design and marketing of computer systems reflect and often — consciously or unconsciously — emulate Hollywood's fetishistic visions of on-screen technology. Whether set in a utopian or dystopian story world, these visions all too frequently obfuscate the economic interests and industrial interdependence of the military-entertainment complex. Although Hollywood sometimes appears to serve a marketing function for Silicon Valley, producing design fictions that shape consumer expectations and desires, the film/TV industries' depictions of computers are rarely calm or quotidian. In his 2005 book *Shaping Things*, science fiction author Bruce Sterling both coined the term "design fiction" and distinguished it from the goals of science fiction generally. "Science fiction wants to invoke the grandeur and credibility of science for its own hand-waving hocus-pocus, but design fiction can be more practical, more hands-on. It sacrifices some sense of the miraculous, but it moves much closer to the glowing heat of technosocial conflict."[7] With the interests of the entertainment and technology industries closely, but not always predictably entwined, on-screen depictions of real and imaginary technologies paint a revealing portrait of our technological obsessions, fears, desires, dreams, and anxieties, creating both opportunities and obstacles for real-world technological development.

As the entertainment industries scramble to keep pace with the implications and potentials of technological change, theorists of visual culture must pursue increasingly varied critical frameworks for understanding media and technology. Taking as its primary

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5)   The two-way relationship between science and science fiction is effectively observed in Constance Penley, *Nasa/Trek: Popular Science and Sex in America* (London: Verso, 1997).

6)   David A. Kirby, *Lab Coats in Hollywood: Science, Scientists, and Cinema* (Cambridge: The MIT Press, 2011), 42.

7)   Bruce Sterling, *Shaping Things* (Cambridge: The MIT Press, 2005), 30.

evidence pieces of the vast body of film and TV shows that display changing relations be-
tween people and computers, this project seeks to critically map the narrative tropes by
which human-computer interaction is constructed and imagined in popular media. Giv-
en the long sweep of history — more than 60 years — covered by this brief video, I have
developed a mode of analysis that I term "interpretive chronology," in which a critical ar-
gument is developed by addressing the historical sources within each category of analysis
more or less in the order they were created. Far from implying a sense of "progress" in the
development of the technologies depicted, this strategy is meant simply to ground the
viewer in the various historical moments when certain types of computer interface were
presented to viewers as opposed to others.

In keeping with contemporary models of representation studies, *Envisioning the Inter-
face* does not assume a direct — never mind a causal — relationship between real world
computation and its depictions on screen. At best, I view Hollywood's vision of technolo-
gy as an industrially and ideologically embedded refraction of lived reality — at worst, it
is an economically overdetermined and uncritical recycling of consumerist fantasies. This
project approaches the media under analysis as traces of cultural discourse and disposi-
tion that are neither directly reflective of the real world nor determinative of cultural
meaning, but part of an ongoing process of negotiation. As depictions of computation
have evolved in dialogue with the industries that support them, it seems clear that we are
in need of new models for engaging the potentials and pitfalls of the technocultural imag-
inary as it converges with contemporary technology development. As real-world interfac-
es come to resemble increasingly literal extensions of the body, the stakes of this investiga-
tion are raised, and a new sense of technologized corporeality is normalized on the screens
of Hollywood. My hope is that, through a combination of historical framing and textual
analysis, reader-viewers are invited to think systematically about ongoing tensions be-
tween both media and technology on screen and the media and technology industries in
the real world.

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Filmography

Alphas (Michael Karnow and Zak Penn, 2011)

Back to the Future Part II (Robert Zemeckis, 1989)

Barbarella (Roger Vadim, 1968)

Burn After Reading (Ethan Coen and Joel Coen, 2008)

Date Night (Shawn Levy, 2010)

Eureka (Andrew Cosby and Jaime Paglia, 2006)

eXistenZ (David Cronenberg, 1999)

Iron Man 2 (John Favreau, 2010)

Knight Rider (Glenn A. Larsen, 1982)

Mannix (Bruce Geller, 1967)

Minority Report (Steven Spielberg, 2002)

Mission Impossible 4 (Brad Bird, 2011)

Paycheck (John Woo, 2003)

Sherlock (Mark Gatiss and Steven Moffat, 2011)

Star Trek, episode "Assignment Earth" (Gene Roddenberry, 1968)

The Billion Dollar Brain (Ken Russell, 1967)

The Day the Earth Stood Still (Robert Wise, 1951)

The Fly (David Cronenberg, 1986)

The Island (Michael Bay, 2005)

The Lawnmower Man (Brett Leonard, 1992)

The Towering Inferno (John Guillermin, 1974)

The Wizard (Todd Holland, 1989)

This Island Earth (Joseph M. Newman and Jack Arnold, 1955)

Videodrome (David Cronenberg, 1983)

30 Rock (Tina Fey, 2011)

2001: A Space Odyssey (Stanley Kubrick, 1968)

Biography

Steve F. Anderson is a Professor of Digital Media in the School of Theater, Film & Television and Associate Dean for Academic Affairs in the School of the Arts and Architecture at UCLA. He is an award-winning media artist and scholar working at the intersections of media, history, technology and culture. His books include *Technologies of Vision: The War Between Data and Images* (The MIT

Press 2017), *Technologies of History: Visual Media and the Eccentricity of the Past* (Dartmouth 2011), and the co-edited volume *Reclaiming Popular Documentary* (Indiana 2021). He is the creator of the public media archive *Critical Commons* and co-creator of the electronic publishing platform Scalar. He is a longtime member of the editorial board of *[in]Transition: Journal of Videographic Film & Moving Image Studies* and the creator of video essays including *Screening Surveillance* (2017) and *Reality Frictions* (2024). Anderson received a PhD in Film Literature & Culture from USC and an MFA in Film & Video from CalArts.