

The Making of Neuro-Futures – BCI-figurations in Science-Fiction film

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Future Studies as Imaginary Studies

How do we imagine emerging technologies?

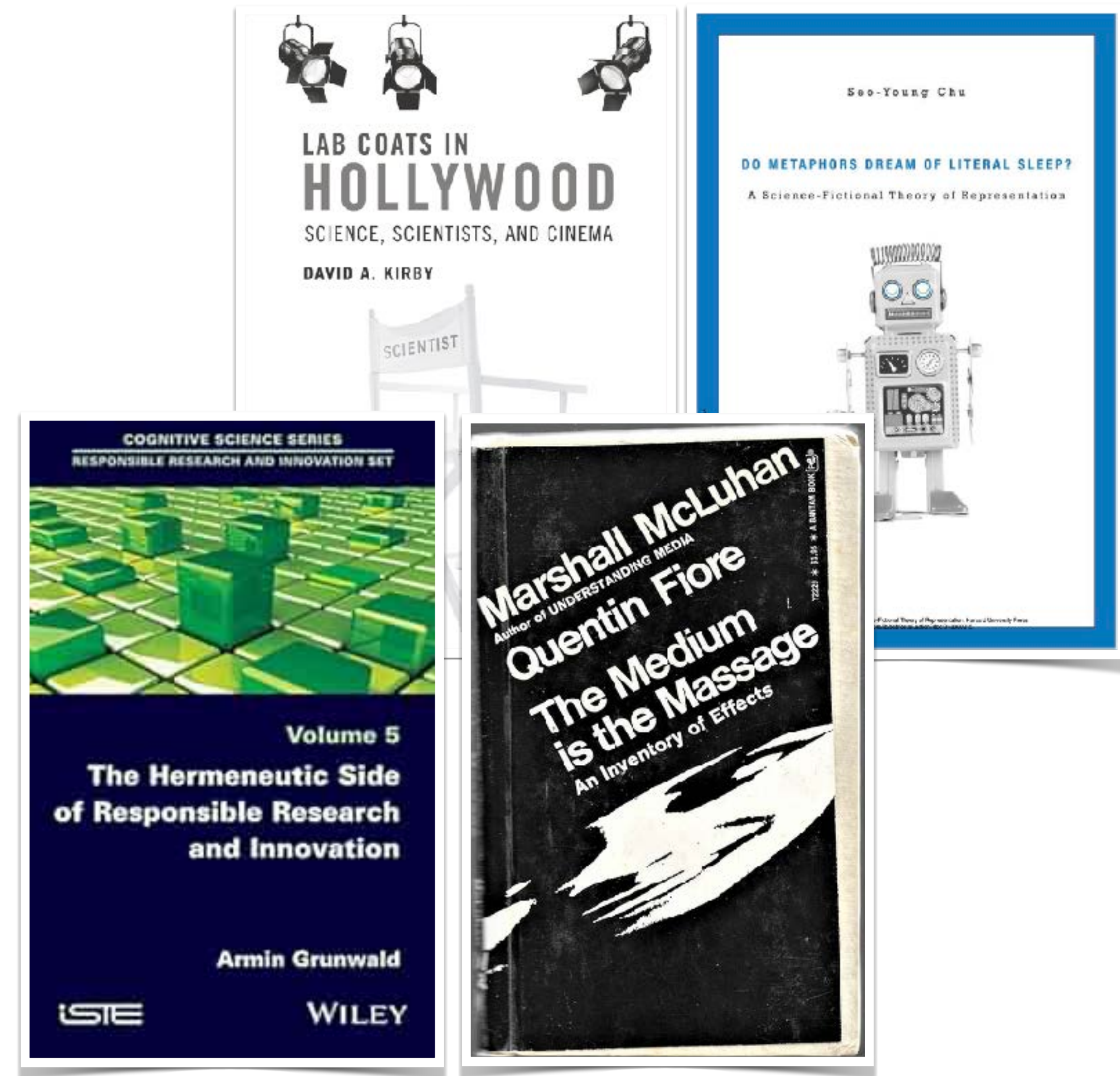
Brain Computer Interfaces
in US cinema and TV

How is the BCI
depicted / imagined
in SF film?

(Book chapter in Handbook on Hermeneutic TA)

Theoretical Background

- ▶ Hermeneutic TA (Grunwald, 2016)
- ▶ The Medium is the Me/assage (McLuhan, 1964)
- ▶ Diegetic Prototype (Kirby, 2011)
- ▶ Cognitively Estranging Referents (Chu, 2010)



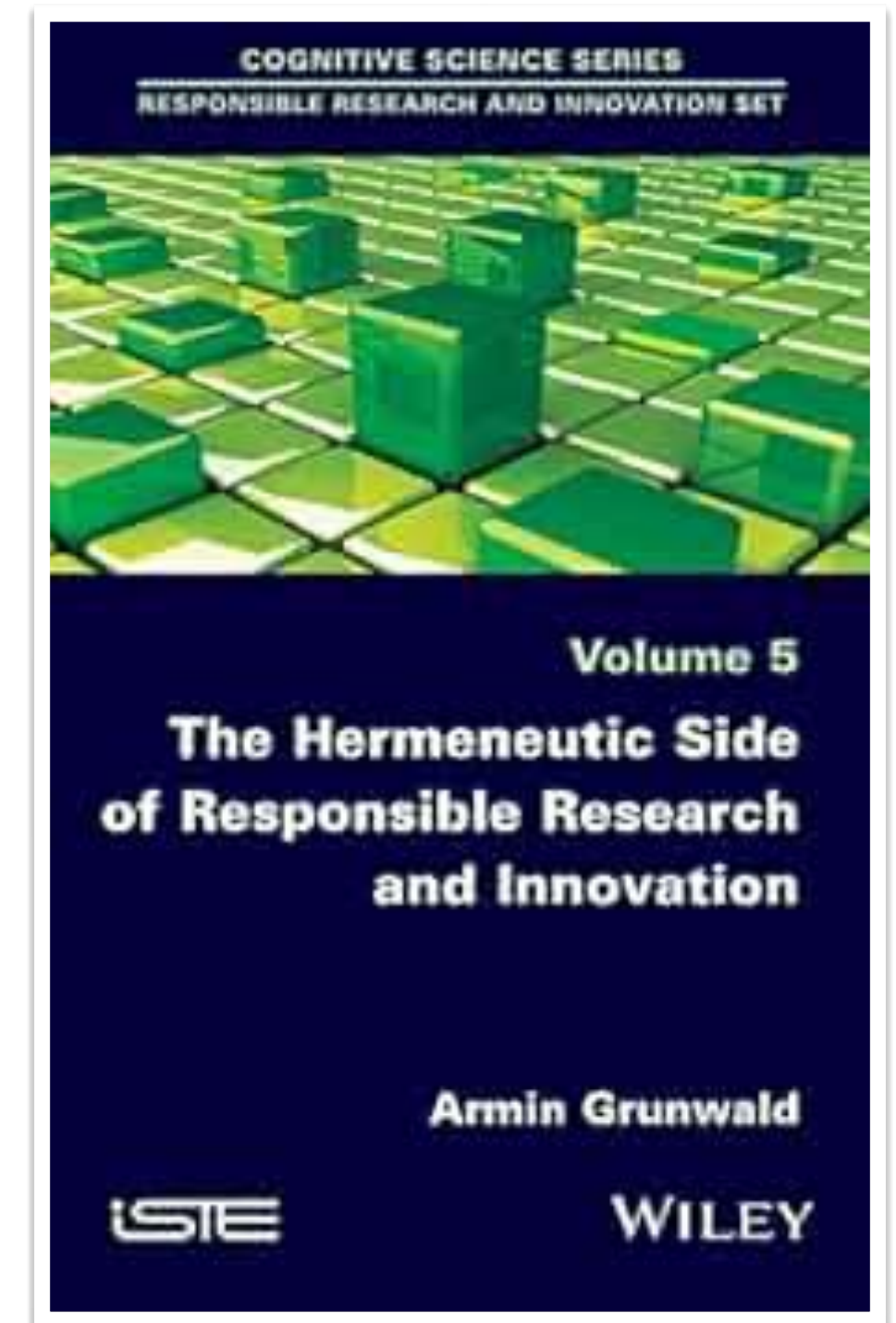
Grunwald, A. (2016). The hermeneutic side of responsible research and innovation. ISTE ; Wiley.

Kirby, D. A. (2011). Lab Coats in Hollywood: Science, Scientists, and Cinema. MIT Press.

Chu, S.-Y. (2010). Do metaphors dream of literal sleep? A science-fictional theory of representation. Harvard University Press.

Hermeneutic Technology Assessment (TA)

- ▶ „The hermeneutic approach (...) will contribute to the development and application of **a new type of reasoning and policy advice in debates on future technology** beyond traditional consequentialism. Its objective is **to allow deciphering the meanings assigned to NEST developments** as early as possible in order to allow and support more transparent and enlightened debate.“ (Grunwald, 2016, p. 4-5)“
- ▶ **Object of interest:** Depiction of emerging / futuristic technologies
- ▶ **Approach of analysis:** Futures Circle (Mehnert, 2024)

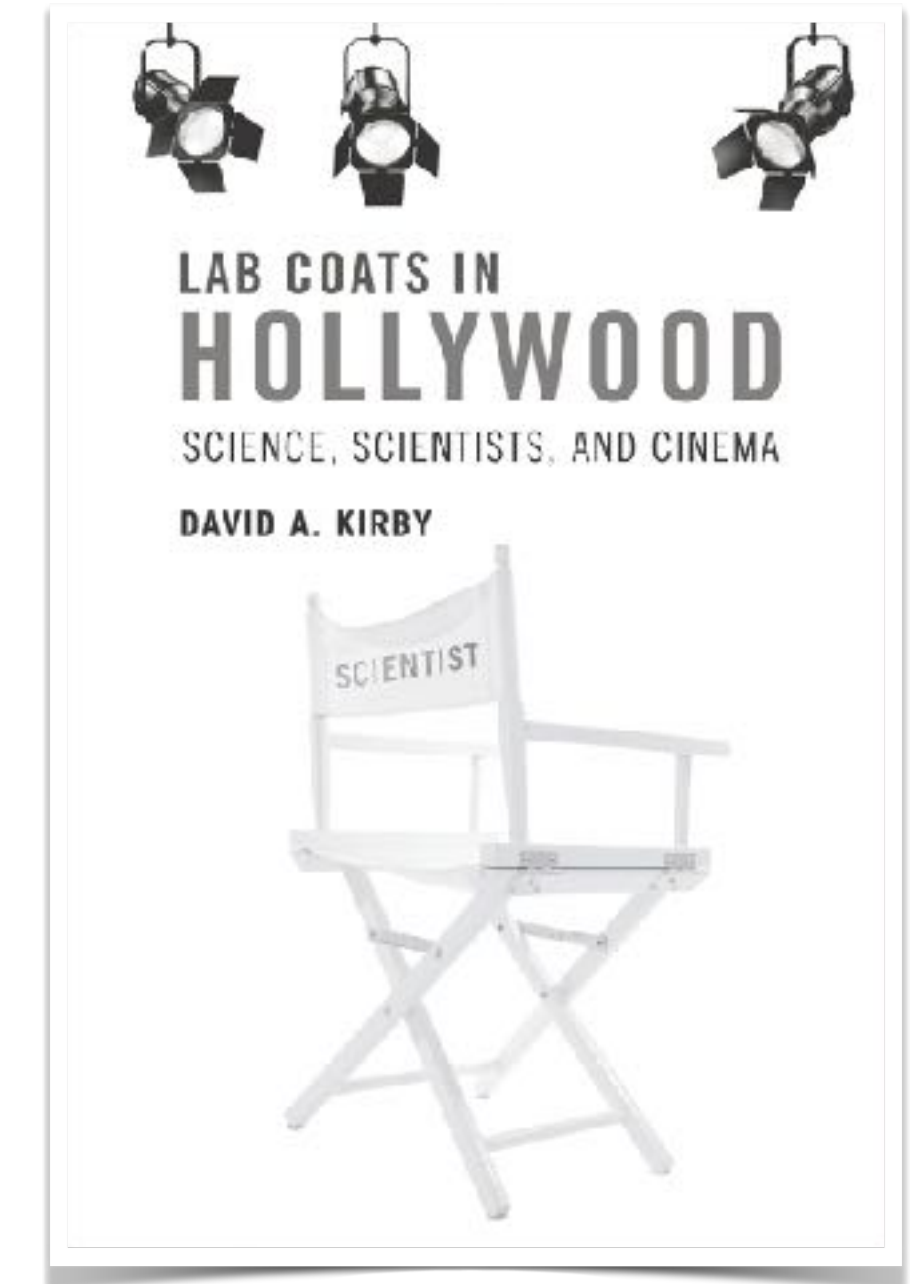


Mehnert, W. (2024). The Futures Circle—A Framework for Hermeneutic Technology Assessment. *Technology and Language*, 14(1), 129–151. <https://doi.org/10.48417/technolang.2024.01.10>



Diegetic Prototypes

- ▶ ... are „**filmic portrayals of technological possibilities** with the intention of reducing anxiety and stimulating desire in audiences to see those possibilities become realities.“ (Kirby, 2010, 43)
- ▶ „These technologies not only appear normal while on the screen, but **they also fit seamlessly into the entire diegetic world.**“ (Kirby, 2010, 50)
- ▶ „Diegetic prototypes entail an additional **visual and narrative rhetoric** specifically framed so as to encourage audience [interest] support for the development of the technology on the screen.“ (Kirby, 2010, p. 44)
- ▶ This is **not** about the actual technology but about the **imaginary technology**



The Future is Now:

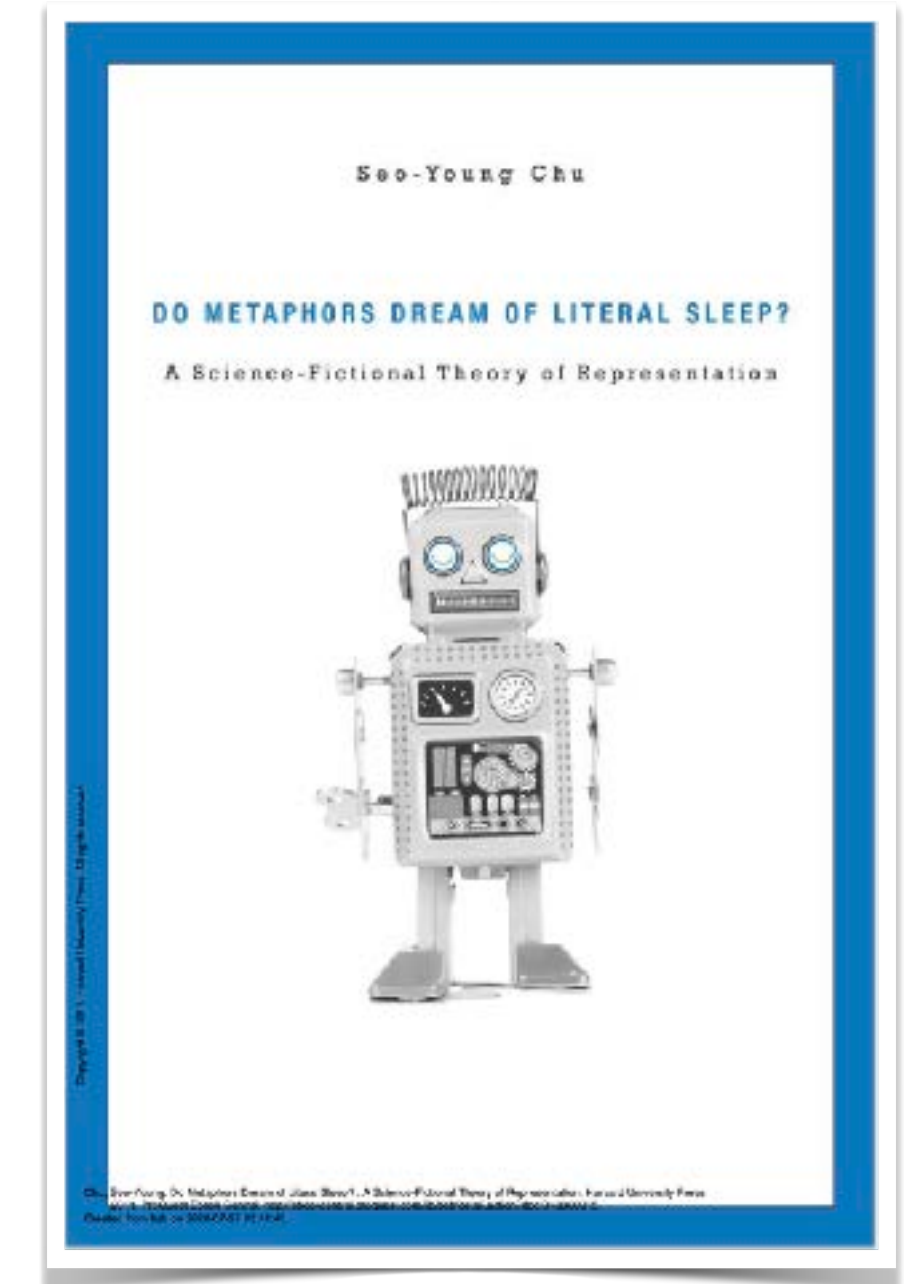
Diegetic Prototypes and the Role of Popular Films in Generating Real-world Technological Development

David Kirby

„Space may be the final frontier but it's made in a Hollywood basement.“ (Red Hot Chili Peppers, ‚Californiacation‘, 1999)

Cognitively Estranging Referents

- ▶ „Science-fictional environments, creatures, and artifacts are not the imaginary referents that most people understand them to be. They are **mediums of representation** constituted by literalized poetic figures of speech.“ (Chu, 2010, p. 79)
- ▶ Technology in SF becomes a cipher, **referring to “something outside of them, but without uncovering it in its entirety.”** (Grunwald 2012, 121 [author’s translation]).

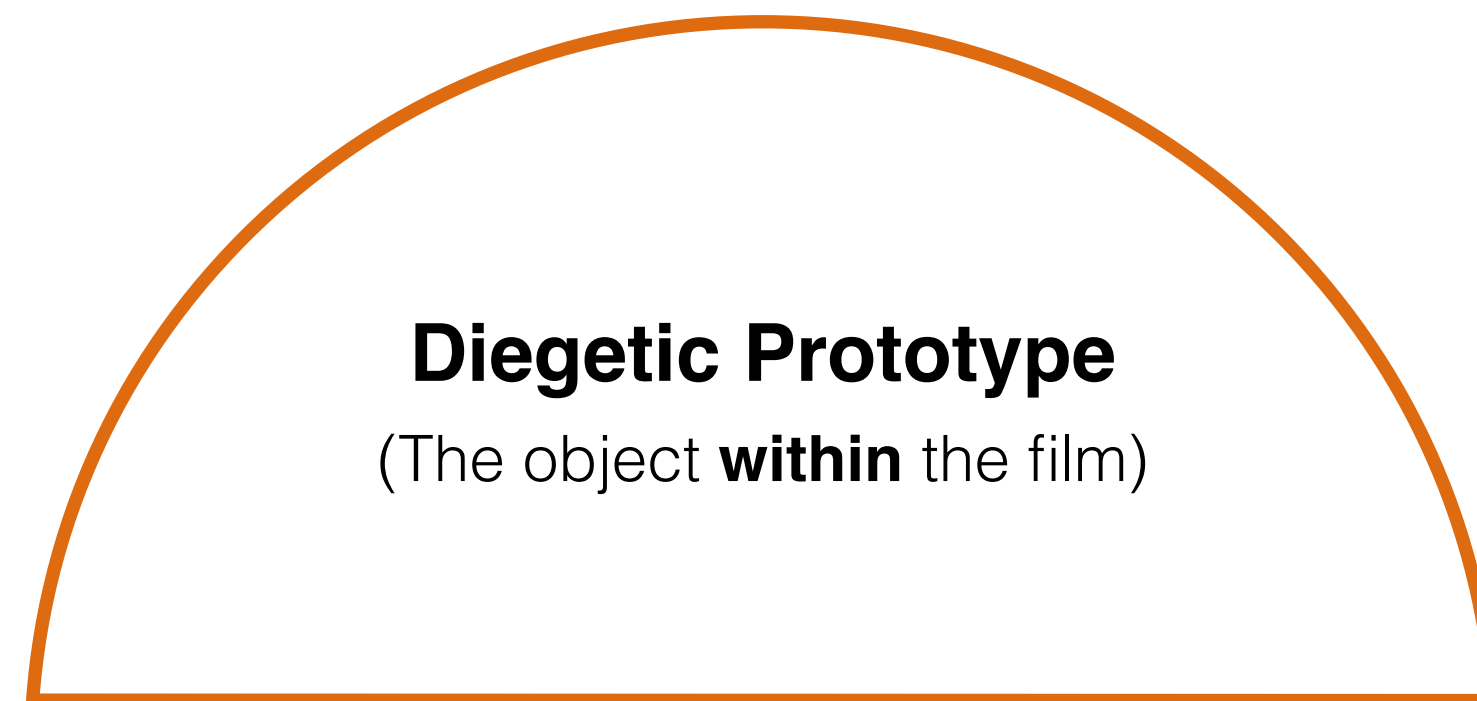


- ▶ Example:
- ▶ **Diegetic Prototype:** The depiction of a human in a costume, like in the BBC-TV film R.U.R. (Bussel, 1938)
- ▶ **Cognitively Estranging Referents:** workers revolution



Semantic Model

Signifier



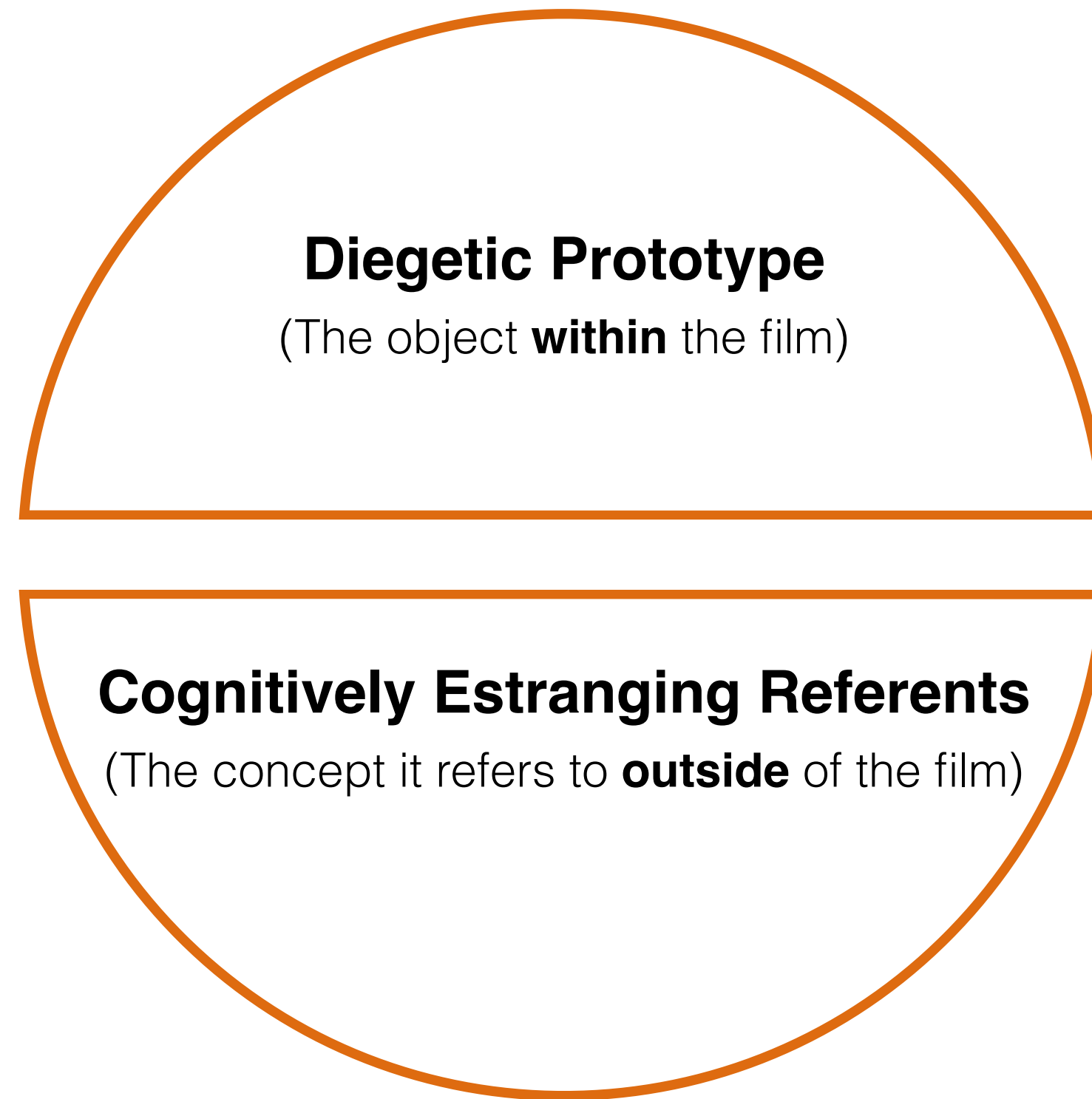
Semantic Model

Signifier

Diegetic Prototype
(The object **within** the film)

Signified

Cognitively Estranging Referents
(The concept it refers to **outside** of the film)



Brain Computer Interfaces in US cinema and TV

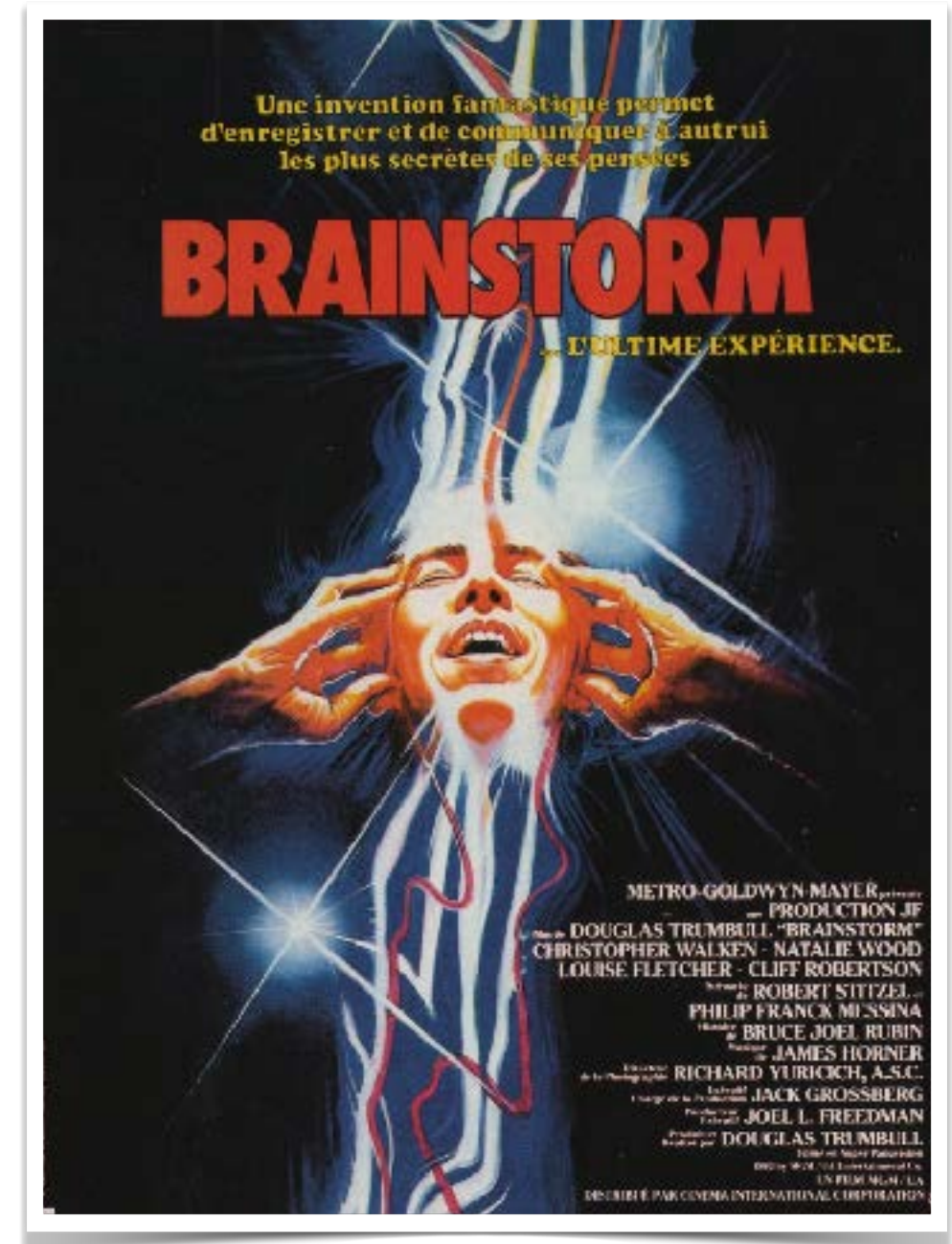
Non-Invasive		Invasive		Excavating
1980's		2000's		2020's

Brain Computer Interfaces in US cinema and TV

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Brainstorm (Trumbull, 1983)

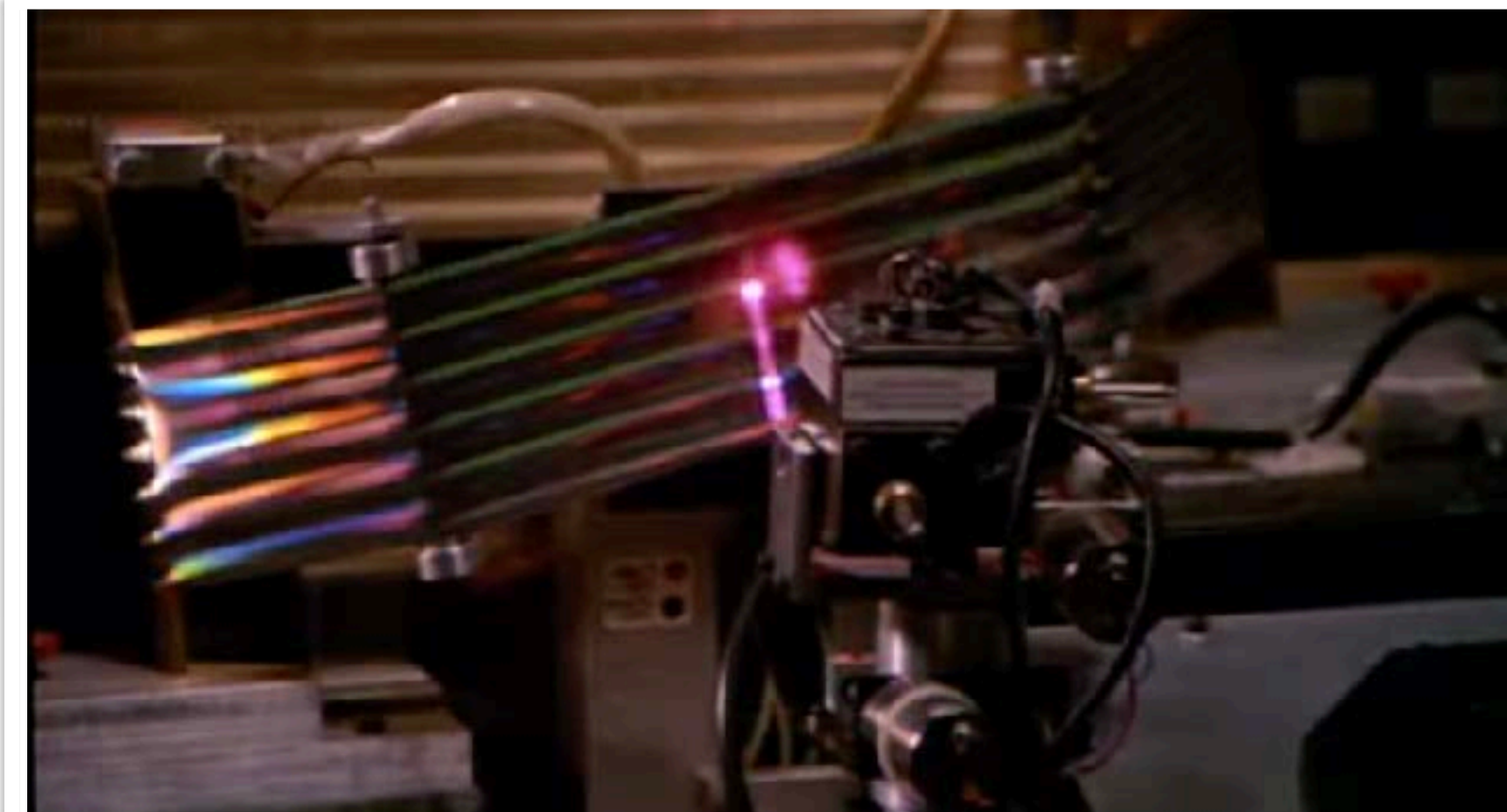
- ▶ Directly recording and replaying the sensory experiences and emotional feelings of a subject.
- ▶ „Many science-fiction texts invoke the mystifying **„sound‘ of science** by innovating strangely gorgeous pseudotechnical abracadabra.“
(Chu, 2010, p. 60)



Chu, S.-Y. (2010). Do metaphors dream of literal sleep? A science-fictional theory of representation. Harvard University Press.

Trumbull, D. (Regisseur). (1984, Februar 10). Brainstorm [Video recording]. JF Productions, Metro-Goldwyn-Mayer (MGM), SLM Entertainment.

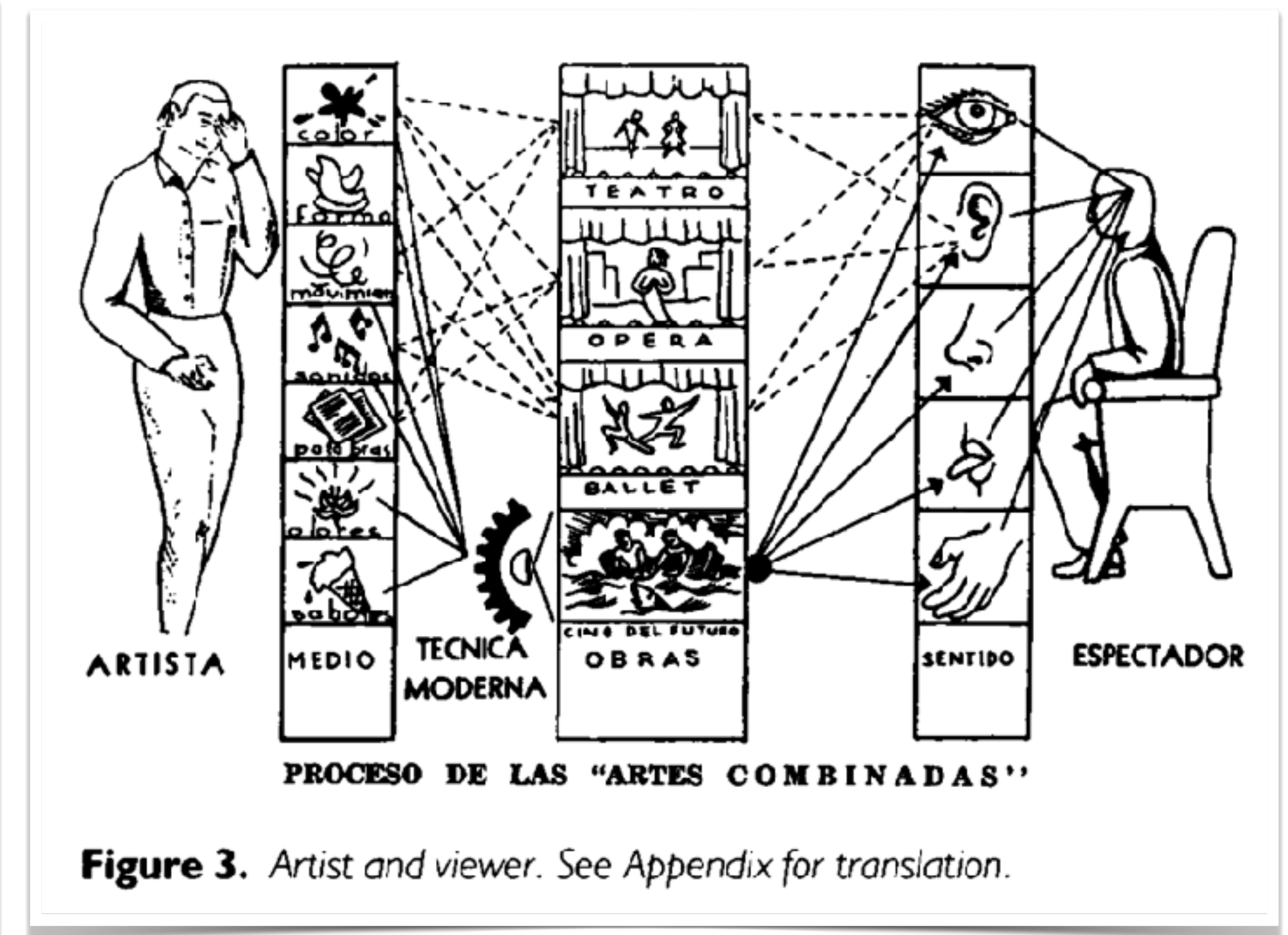
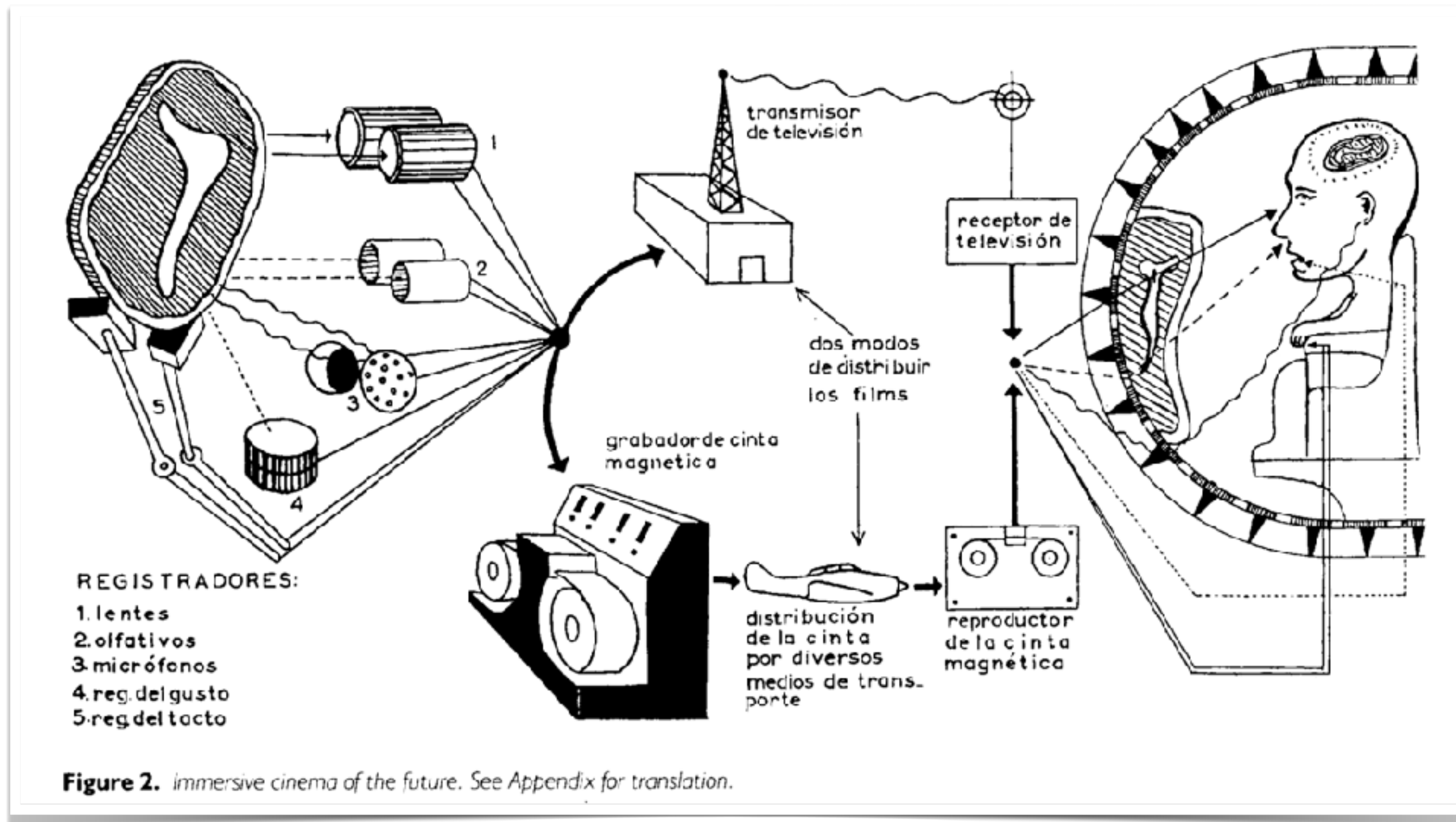
Diegetic Prototype





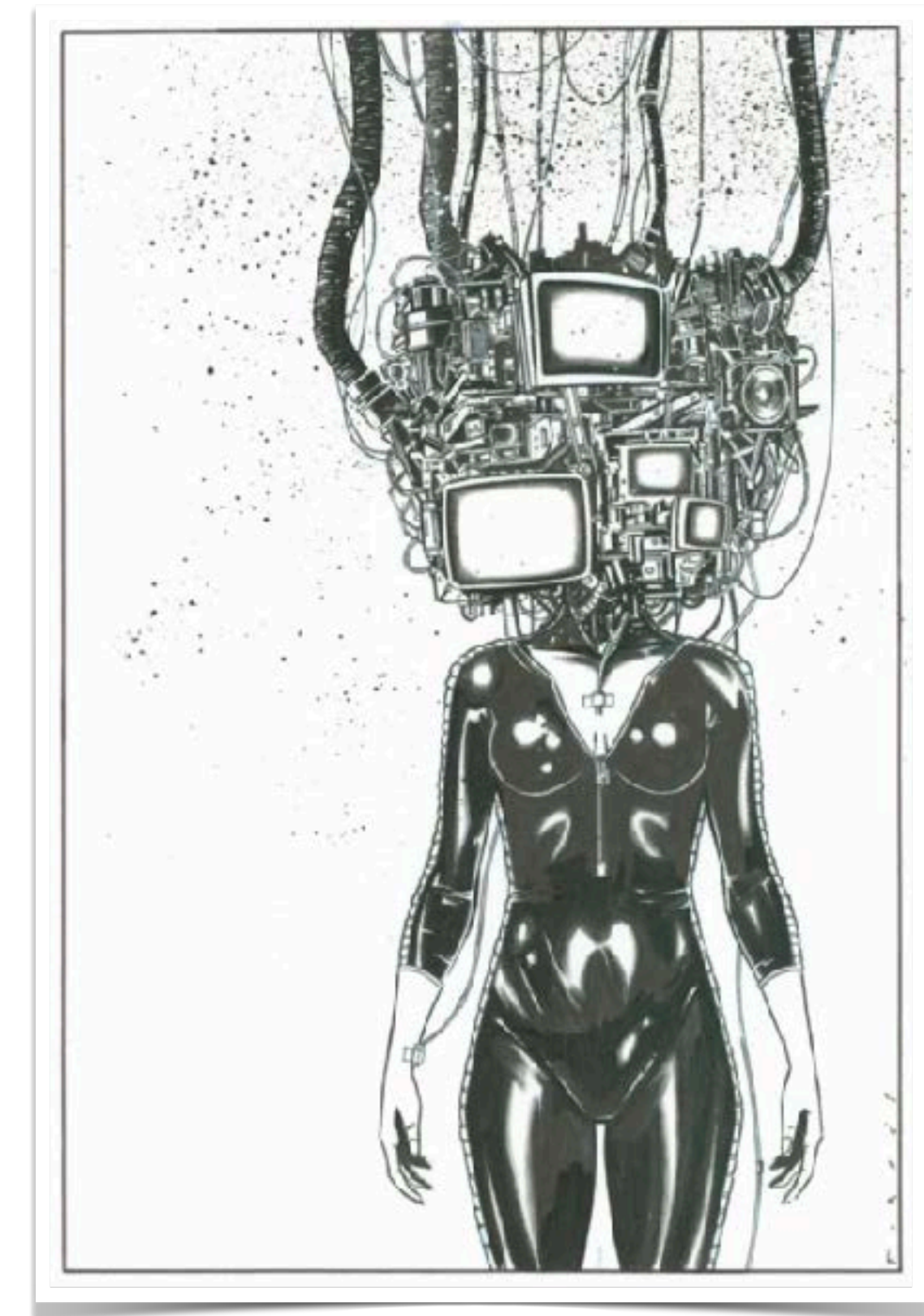
Imaginary: El Cine del Futuro (Heilig, 1992)

- „Open your eyes, listen, smell, and feel—sense the world in all its magnificent colors, depth, sounds, odors, and textures—this is the cinema of the future!“ (Heilig, 1992, p. 283)



Brain-Cinema

- ▶ **Diegetic Prototype:**
 - ▶ Utilizing technically produced images that are recorded from a user's sensory system and played back by other users in order to be experienced.
- ▶ **Cognitively Estranging Referents:**
 - ▶ The Brain Cinema.
 - ▶ The brain becomes the screen. The BCI becomes the projector.
- ▶ BCI-imaginary influenced by the media changes of the 80s and 90s, e.g. video recorders, TV sets, ubiquitous entertainment media.



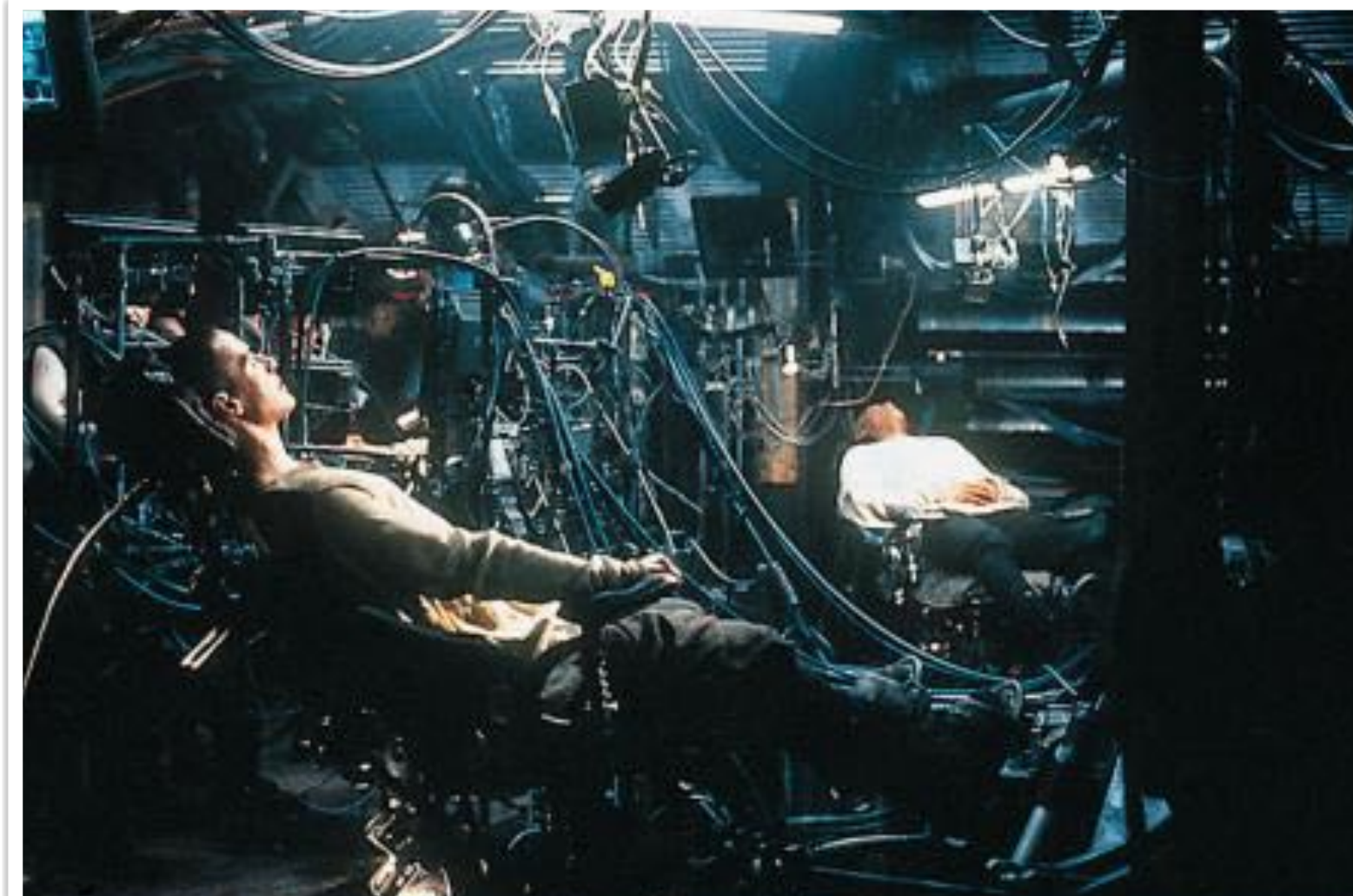
Brain Computer Interfaces in US cinema and TV

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Matrix (Wachowskis, 1999)

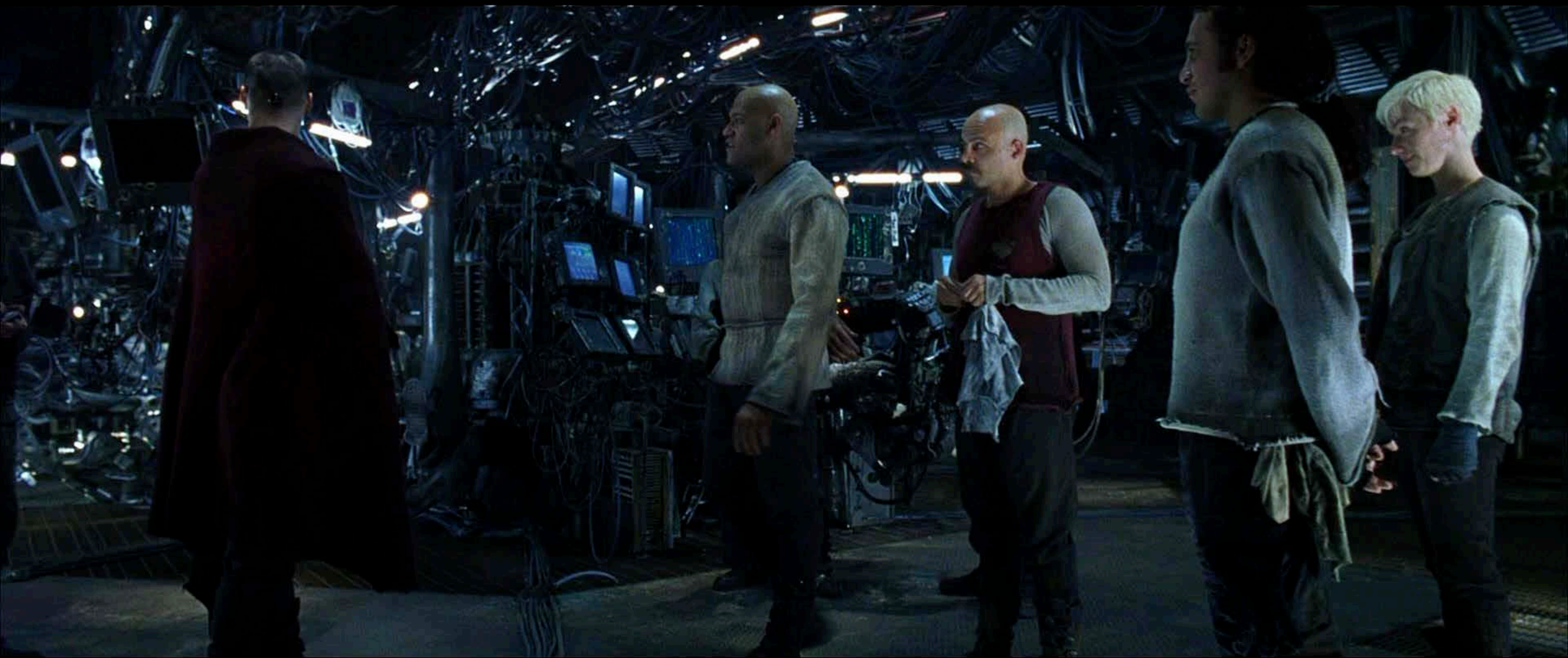
- ▶ Invasive port connects directly to the brain and spinal cord
- ▶ Neural Jack at Skull Base on the human body
- ▶ BCI reads motor commands and writes artificial sensory input
- ▶ BCI as gateway between the reality of the protagonists and the digital world in which they [jack in].

„Neo: If you're killed in the matrix, you die here? Morpheus: The body cannot live without the mind.“



Wachowski, L., & Wachowski, L. (Regisseure). (1999). The Matrix [Film]. Warner Bros.





Diegetic Prototype



Interactive s(t)imulation

- ▶ **Diegetic Prototype:**
 - ▶ The machine is plugged in into the human body
 - ▶ Merging the mind with the machine
- ▶ **Cognitively Estranging Referents:**
 - ▶ Everything is connected
- ▶ The internet era and imaginaries of connected machines and ubiquitous computing prefigured the aesthetics of BCI imaginaries

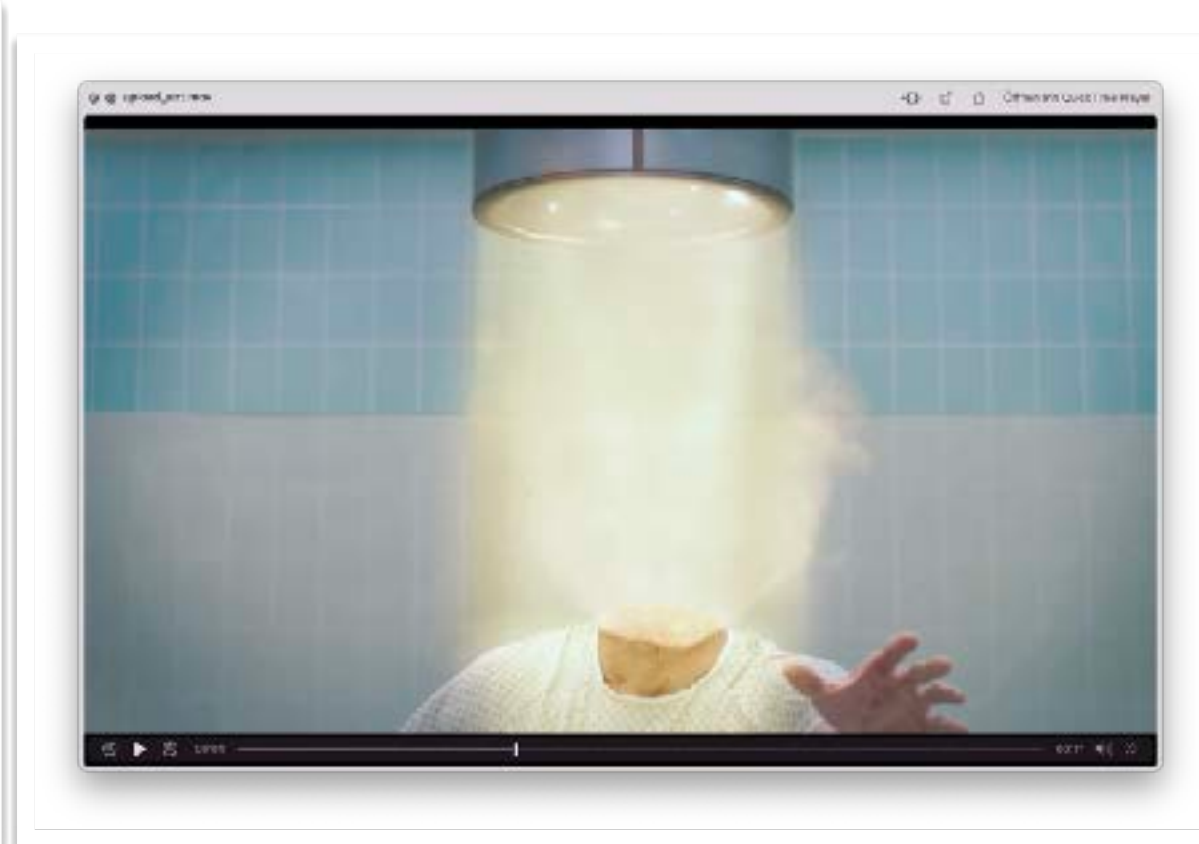


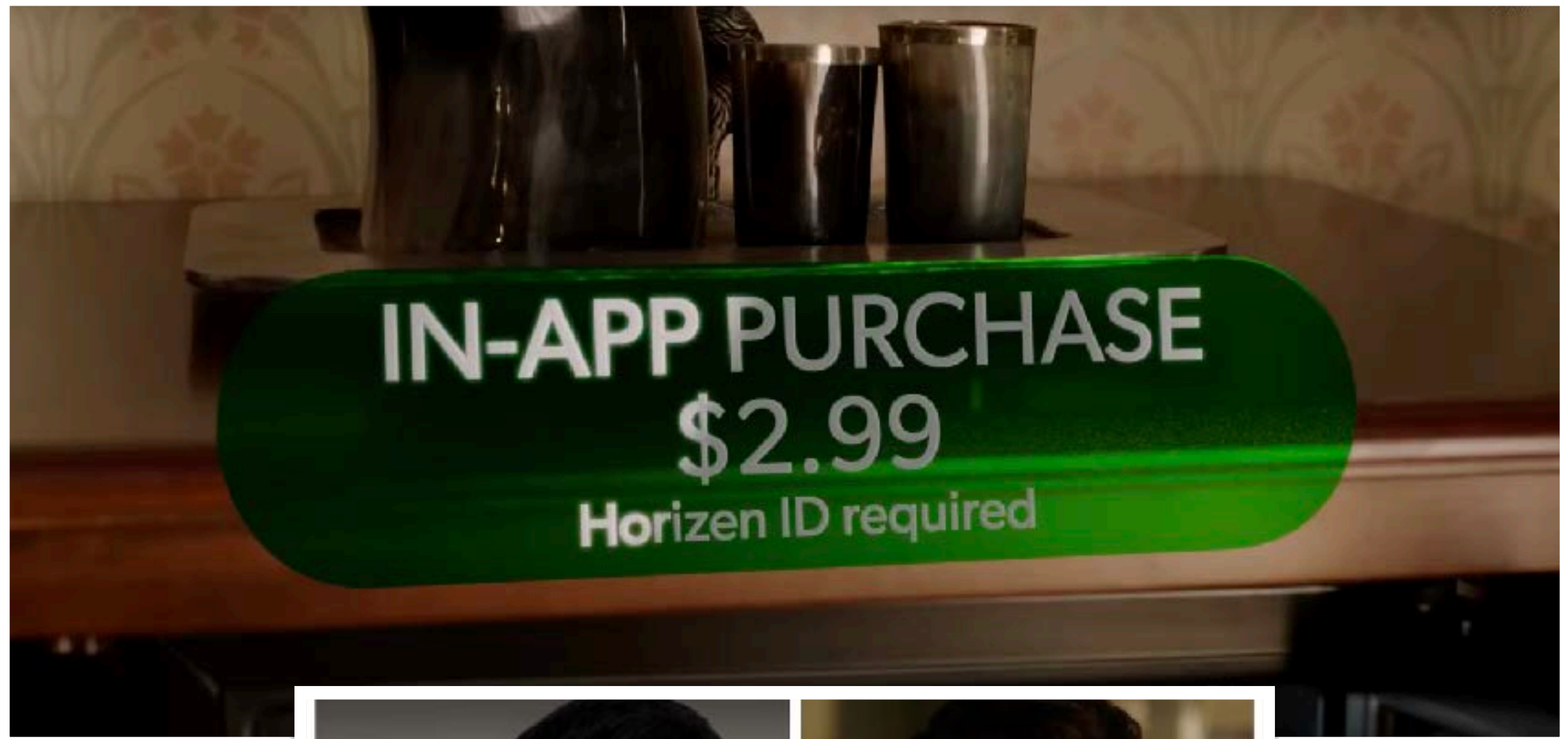
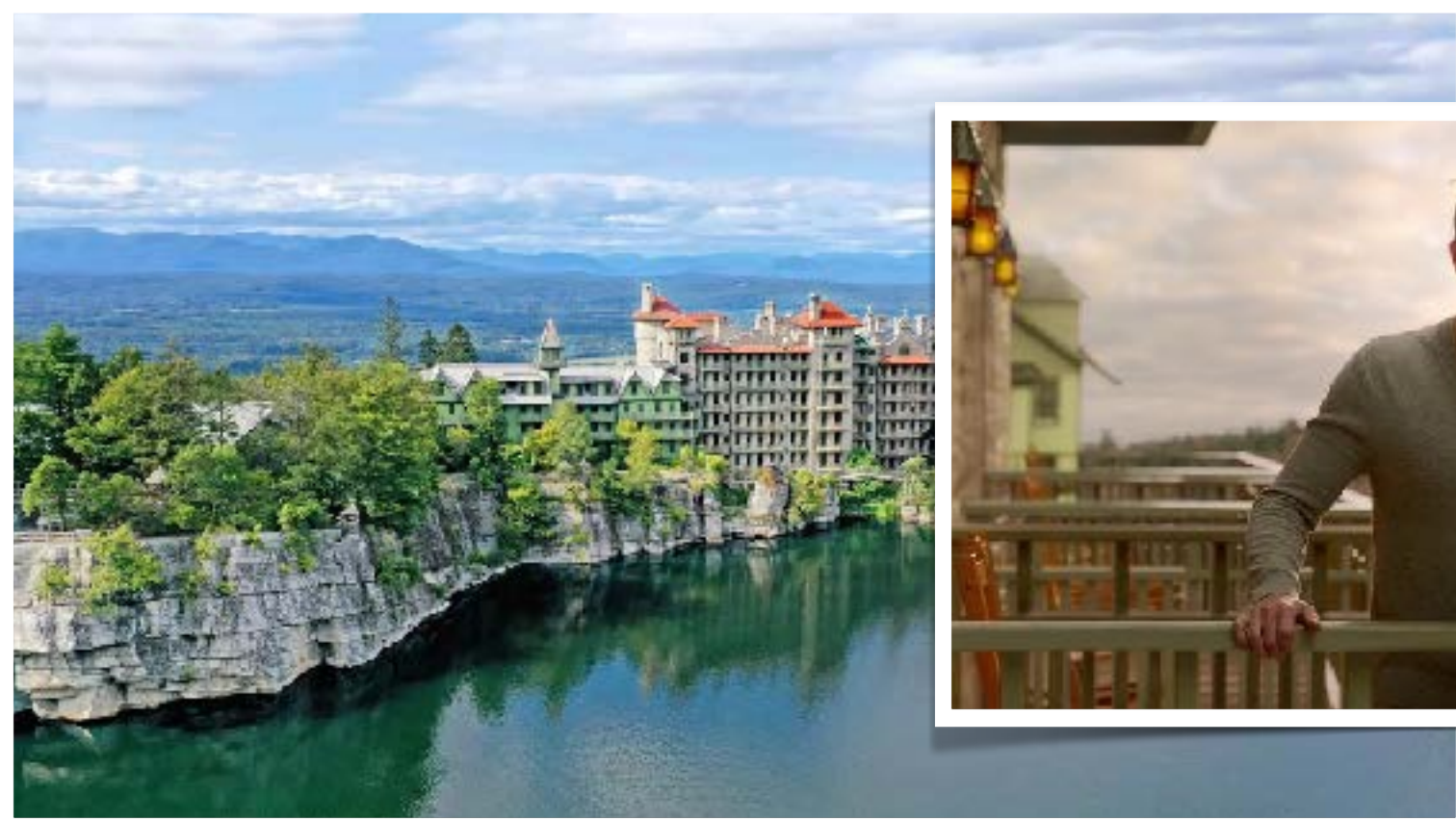
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Upload (Daniels, 2020)

- ▶ Amazon Prime
- ▶ Excavation of the brain
 - ▶ BCI to create a digital simulation of the brain





Alien Earth (2025)

- ▶ Uploading the human mind into a robot



Alien Earth (2025)

„When can I take her home?“

„Let me be clear about something. The **unit** you call your sister **is the property of the Prodigy corporation**. She is the prototype for a transhuman product. Which once refined will create human immortality. This makes her the **next evolutionary step between our animal past and our transhuman future**. There is no universe in which you get to take her home. Are we clear?“

„She is still a human being.“

„**No. She is not.** Not anymore.“ (34min)

- Alien Earth, episode 4

Mind Upload

- ▶ **Diegetic Prototype:**
 - ▶ Excavating the brain. Leaving the body behind to regain immortality as a digital being.
- ▶ **Cognitively Estranging Referents:**
 - ▶ Data Privacy, Ownership and AI Ethics
 - ▶ Who owns the software / the human remains?
- ▶ The BCI aesthetic is prefigured by current debates on...
 - ▶ Power dynamics between capitalist corporations and users
 - ▶ Data ownership and control
 - ▶ Accessibility and equality

Take Away

Conclusion and Take away

- ▶ **BCI imaginaries across media changed over time**
 - ▶ Recording sensory experiences, Immersive digital realities, digital afterlife and mind-transfer economies
- ▶ **BCIs in film are not predictions**
 - ▶ ... but inspire technological development and discourse
 - ▶ Instead, they are narrative devices that explore current social discourses through the aesthetic depiction of emerging technologies
- ▶ **Technoimaginary:**
 - ▶ Current media technology impacts how we imagine the technology of the future
 - ▶ „Medium is the Massage“ (McLuhan, 1964)

Thank you

- ▶ Mehnert, W. (2024). **The Futures Circle—A Framework for Hermeneutic Technology Assessment.** Journal of Technology and Language, Special Issue on Hermeneutics of Technology, 14(1), 129–151.
- ▶ Mehnert, W. (2023). „**The future is going to be weird.**“ **Zur Ästhetik kommodifizierter Mind-Upload-Visionen.** In M. Tamborini (Hrsg.), Die Ästhetik der Technowissenschaften des 21. Jahrhunderts (S. 177 - 200). wbg Verlag.
- ▶ Mehnert, W. and Grunwald, A. (2024): **Hermeneutic Technology Assessment.** In: Grunwald, A. (ed.): International Handbook of Technology Assessment. London: Edward Elgar Publishing (in press).

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