Dive into the Machine

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With a selection of movie scenes articulated around three themes, Lionel Maes let us drift into imaginary worlds where bodies dematerialize, enter and navigate digital spaces; machines, networks, cyberspaces. What promises the experience of diving into the machine makes in terms of movement, actions possibilities, and limits? What happens to the body during this experience?

T.C. How did you get interested in representations of technology within collective imagination? According to you, why has cinema always been and still is, a primary input in this imagination?

L.M. I think we are all caught up in these imaginings. Our vision of and relation with technology are completely soaked by narrative patterns, themes and figures found in these movies and in science fiction literature. I don't think I would approach programming in the same way if I hadn't watched the film *PI* (Darren Aronofsky, 1998), or the web without having read *Do Android Dream Of Electric Sheep* (Philip K. Dick, 1968). Sci-fi movies and books, in all their problematic aspects, are clues to the common imaginaries with which we live, but above all which constitute us. One of the specificity of cinema is that it has to make both visual and sound proposals to represent things that are not *a priori* representable, like the transfer of data in a network, and these representations change the relation that we have with these things. For example, the film *TRON* (1982)—which depicts the inside of the computer and what happens there as a microcosm in which the individuals (the programs) are controlled by one of them (the Master Control Programme or MCP)—is very relevant, both because it brings to light political issues of technique and because it is full of visual proposals that feed our own representation of what a computer is.

T.C. In your presentation, you introduced the notion of *navigational database*, developed by computer scientist Charles Bachman in the 70's. In this new conception, the user/programmer[1] becomes a "navigator" of the database. Could you define this concept for us? According to you, it might have had an influence on representations of digital spaces in films. How?

L.M. When Charles Bachman received the Turing Award in 1973 for his work on IDS, a database management system, he gave a lecture entitled "The programmer as navigator". Bachman, who was not a philosopher but an engineer working in the computer industry, linked a technical evolution to a major epistemological change; he considered the emergence of the navigational database as an event comparable to the Copernican revolution. This was an important lecture because it revealed that Bachman was aware that what he was proposing went far beyond functional considerations. For him, it was a radical change, a revolution that would shift our conception of computer science from a machine-centered conception to a database-centered conception, conceived as navigable spaces.

I am particularly interested in what his proposal does to the figure of the programmer: the navigational database transforms the programmer, until now immobile in front of a screen, displaying scrolling data, into a navigator capable of going from a point A to a point B; of navigating through the data. If he is able to do this, it is because the data are no longer stored on sequential storage systems, such as magnetic tapes that have a beginning and an end and whose access to a precise point depends on their scrolling speed. They are now stored on "direct access" storage systems, magnetic disks in which each record has a unique address to which a moving read head can move almost instantaneously. The navigational database takes advantage of these new storage systems so that a record can reference the address of another record and that access from one to the other is almost immediate. This idea of reference, and therefore of relations, between records allows Bachman to propose the database as an *n-dimensional space*; from one record, there are now as many possible directions as there are relations between this record and the others.

Knowing that this space is moving and structured by the relations between data records, that it is indeed the navigator who moves there and that it will be for him a true adventure in which he will probably be confronted with barely perceptible reefs and shoals ("As navigator he must brave dimly perceived shoals and reefs in his sea"), Bachman states a world to be discovered, even conquered. In doing so, he places himself on the edge of science fiction. All that remains is to raise the questions that this vision raises. What would this space be like? What happens to the navigator's body while he is sailing? What would be the risks associated with navigation? What could be discovered or conquered within this space?

T.C. In 2021, Mark Zuckerberg launched the metaverse "Horizon World", a world in 3D where users should play themselves

and socialize. This concept of metaverse (named as such) is present in science-fiction literature at least since the 60's.[2] What could you say about the relation fiction/technology? What influence have film-makers (directors, scenarists, sets and special effects feigners…) if any on technologies?

L.M. I would tend to think that the narrative and visual proposals formulated by science fiction, and particularly by cinema, allow us to represent technology and its effects and that, in return, since our views change according to these representations, new technological developments respond to them. Perhaps the interface manipulated by Tom Cruise in Minority Report (Steven Spielberg, 2002), actually developed for the movie, allowed us to imagine (among other attempts) what an interface centered on gestural interactions could be. But this interface could not have been imagined without the research on "multi-touch" interfaces that existed since the 1980s and that accelerated in the early 2000s. What this example reveals is a common concern, a synchronicity and a mutual influence between applied research and cinema.

The case of metaverses is more complex. They have existed for a long time in science fiction if we conceive them as immersive social environments to which we connect via a physical interface; helmet, glasses, implant, cable, which make us more or less absent from the reality of our body and the space where it is located in favor of another reality with its own characteristics. What strikes me about the promise of the metaverse as proposed by Facebook is that these features are completely lacking in interest; users can/could capitalize by selling and buying "assets" via a virtual currency, create their "personal space", consume entertainment, harass or be harassed, potentially have business meetings and pretend to have a drink. All of this is controlled by a monopolistic company, namely Meta. It is as if this new world is a replica, only worse, of the environment we know. I don't see how the project is desirable or even innovative. In terms of links with science fiction, I note the use of the term *metaverse*, a direct reference to *Snowcrash* (Neal Stephenson, 1992), a Cyberpunk novel. The word is used by what looks like a megacorp (Meta), run by a billionaire who has plans for humanity, a pattern found precisely in the novel (and found throughout Cyberpunk). *Snowcrash*'s post-apocaliptic world and its rich-only metaverse are far from desirable; why make a direct allusion to it, 30 years after the novel was published? The

metaverse is the dystopian future of the past. The wink is strange, to say the least.

T.C. How are computers represented throughout the last decades in movies? How about now?

L.M. The science fiction movies of the 50s and 60s produced by the United States are mostly devoted to the conquest of space, either initiated by human beings or by aliens, sometimes with the intervention of robots (*Forbidden Planet*, Fred M. Wilcox, 1956) which are not described as computers but rather as automatons and which can even be likened to aliens (*The Earth Dies Screaming*, Terence Fisher, 1964). But in 1968, HAL 9000 (*2001: A Space Odyssey*, Stanley Kubrick, 1968), makes appear a particular figure of the science fiction, the conscious computer, here on board computer of a spaceship. HAL 9000 is a general artificial intelligence, that is to say an artificial intelligence which has reached the point of singularity, the one which allows it to be conscious of itself. Assuming the emergence of such an entity, essentially software, digital, the question of the interface with the hardware world, analog, arises and it arises in a cinematographic context, of sound and light. HAL 9000 will thus manifest itself by a circle of red light and will communicate with a voice which will make it possible to institute it as a character with whole share within the film. Giving a voice to the computer-IA to transform it into a character becomes a recurring motif, which will be found notably in *Colossus, The Forbin Project* (Joseph Sargent, 1970), *WarGames* (John Badham, 1983), *Electric Dreams* (Steven Barron, 1984) or much later *Transcendence* (Wally Pfister, 2014).

In these films, the entities may be software, but they always keep a hardware body, they are always hosted in a machine that can be disconnected or destroyed, whether it is the size of a building (*Colossus*), a warehouse (*Demon Seed*, Donald Cammell, 1977) or a desktop computer (*Electric Dreams*). Once the point of singularity is reached, they will very often try to get out of their body/machine and propagate themselves in a network. But the representation of the network and the navigation within it will be approached as such by the cinema only from the Nineties. It is then that visual proposals will be brought to represent both packets of information - see the scene of the hack of the Gibson computer in *Hackers* (Iain Softley, 1995) - the transit of these packets within a network represented as a space - see *Johnny Mnemon-*

ic (Robert Longo, 1995) - and the projection of humans within this cyber-space - see *The Lanmower Man* (Brett Leonard, 1992). In doing so, cinema provides a visual support to Bachman's ambition and his *n-dimensional space* while infusing it with the ultra-violence of megabodies proper to cyberpunk literature.

The film *Matrix* (Lana Wachowski & Lily Wachowski, 1999) features such a cyberspace but, unlike clearly identifiable 3D virtual spaces, proposes that this space is a simulation of the reality that we, the spectators, know, inducing a doubt on the fact that we ourselves could be immersed without knowing it in a simulation. This idea, which can be found in *ExistenZ* (David Cronenberg, 1999) and more recently *Free Guy* (Shawn Levy, 2021), but which has also been present in science fiction literature since the 1960s, makes it possible to represent an augmented or altered reality rather than a virtual reality. In addition to the anxiety of not knowing if we are really in "reality", there is a contemporary pattern of merging the digital and the analog within the same environment. This can happen in a simulation, but it can also happen in "reality". It becomes complex to distinguish the digital from the analog, the natural from the synthetic, like the raindrops in the final scene of *Transcendence*.

In these conditions, the digital (and not the computer, which is perceived as a body from which one must free oneself) manifests itself in the cinema "without form", that is to say as a vital substance composed of an infinity of particles (*Transcendence*) or translucent matter contained in a jar (*Ex Machina*, Alex Garland, 2015). It can even end up being completely free of matter, like Samantha and the other intelligent OS in *Her* (Spike Jonze, 2013).
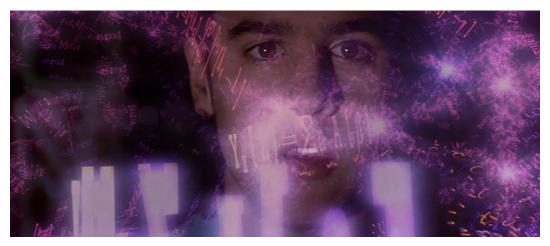
T.C. You made an assumption: Elon Musk, with his space conquest and transhumanist ambitions might use the "bad scientist", "mean scientist" character as a role model. Marion Coville criticizes how pop culture built the character of the "autistic geek", who would prefer numbers to social interactions. Do you think science-fiction films also inspire behaviors? What character types/stereotypes are they responsible for?

L.M. Without being able to estimate exactly the part played by cinema in the creation of stereotypes, I think that it obviously participates in them. The figures of *the geek*, the nerd, just like the figure of *artificial in-*

telligence, would not be the same without their cinematographic representations, which have a certain effectiveness in imposing themselves on the collective. Dennis Nedry in *Jurassic Park* (Steven Spielberg, 1993) is an example. Each of his attributes is important to situate him as the most detestable being there is: his physique and his diet, because he is fat and does nothing to stop being fat; his laziness at work and his greed, because instead of being driven by his boss's dream, he asks for a pay rise; his power and his dubious humor that the other characters are forced to endure, form a very effective ideological set.

As far as Elon Musk is concerned, it seems very unlikely that a person would identify with the figure of the evil leader of a megacorp, and this may not be his case at all, but, on the one hand, the companies he has created correspond to recurrent themes in science fiction (brain implants with Neuralink, autonomous cars with Tesla, space travel and satellite network with SpaceX) and, on the other hand, the way he invests in these themes, both from the point of view of the business strategies of these companies and of his own position within them, always seems to be linked to an ambition of control and monopoly. He has plans for humanity and he places himself as the main architect of their implementation. Concerning his relationship to science fiction, it is astonishing to claim to be such an amateur, to borrow so many themes and technological inventions, while ignoring the almost systematic dystopian character of the genre. From this I identify two hypotheses; either he has read and seen but half-heartedly, or he has read and seen and fantasized about being a super-villain. Knowing his tendency to self-fictionalize, especially in the story of his childhood and adolescence, and his tendency to troll regularly, the second hypothesis cannot be completely ruled out.

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[1] Which in the 70's was still the same person.

[2] See: *The Simulacra*, Philip K. Dick, Ace Books: New-York, 1964.

Hackers, Iain Softley, 1995.

The Terminal Man, Mike Hodges, 1974.

Her, Spike Jonze, 2013.

Dive into the machine   *Colossus: The Forbin Project*, Sargent, Joseph, 1970

Tron, Lisberger, Steven, 1982

The Lawnmower Man, Leonard, Bret, 1992

Hackers, Softley, Iain, 1995

Johnny Mnemonic, Longo, Robert, 1995

Machine enters us   *The Terminal Man*, Hodges, Mike, 1974

The Matrix, Wachowskis, The, 1999

Transcendence, Pfister, Wally, 2014

Machine walks out   *Demon Seed*, Cammell, Donald, 1977

Her, Jonze, Spike, 2013

Transcendence, Pfister, Wally, 2014