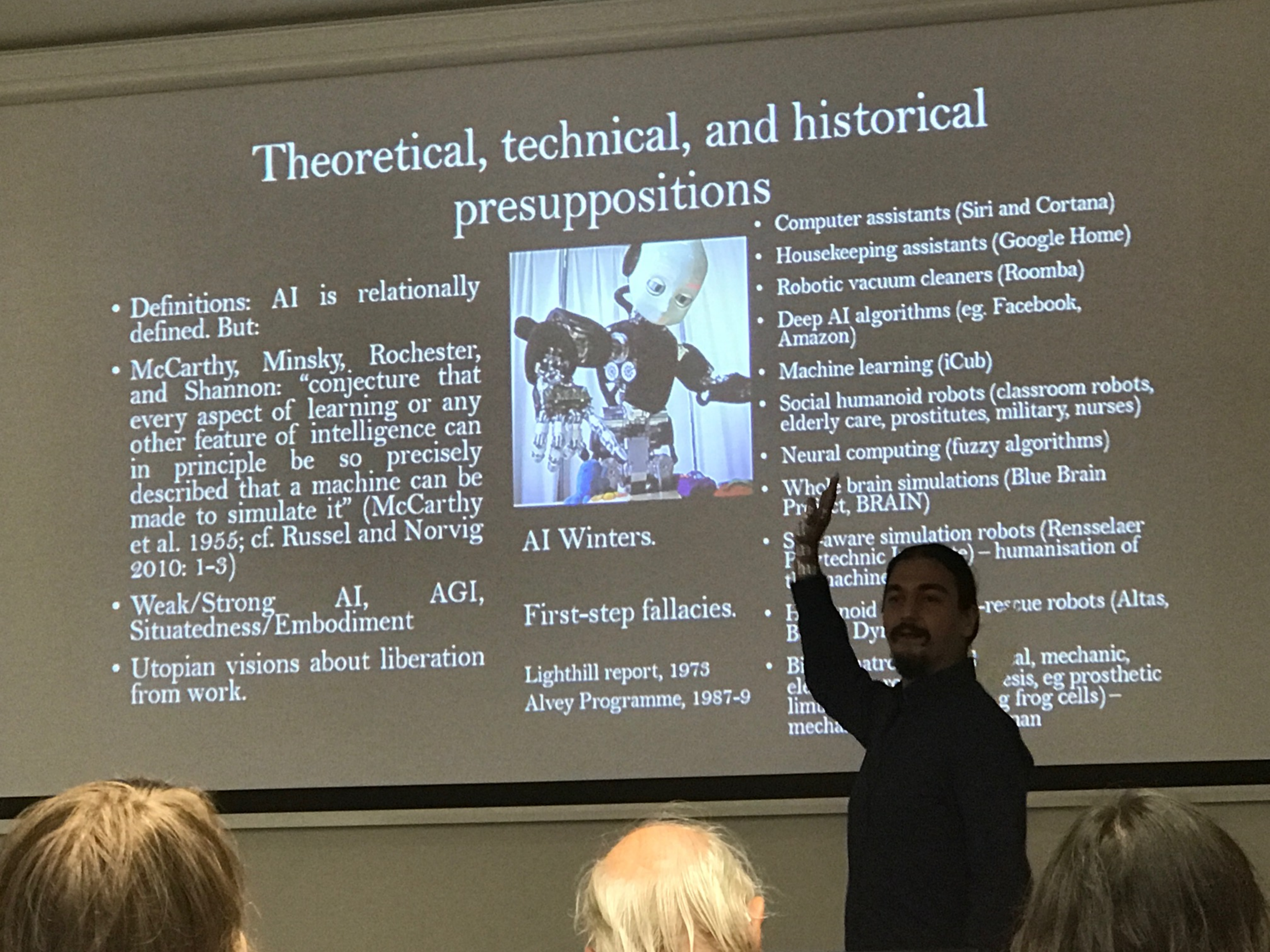
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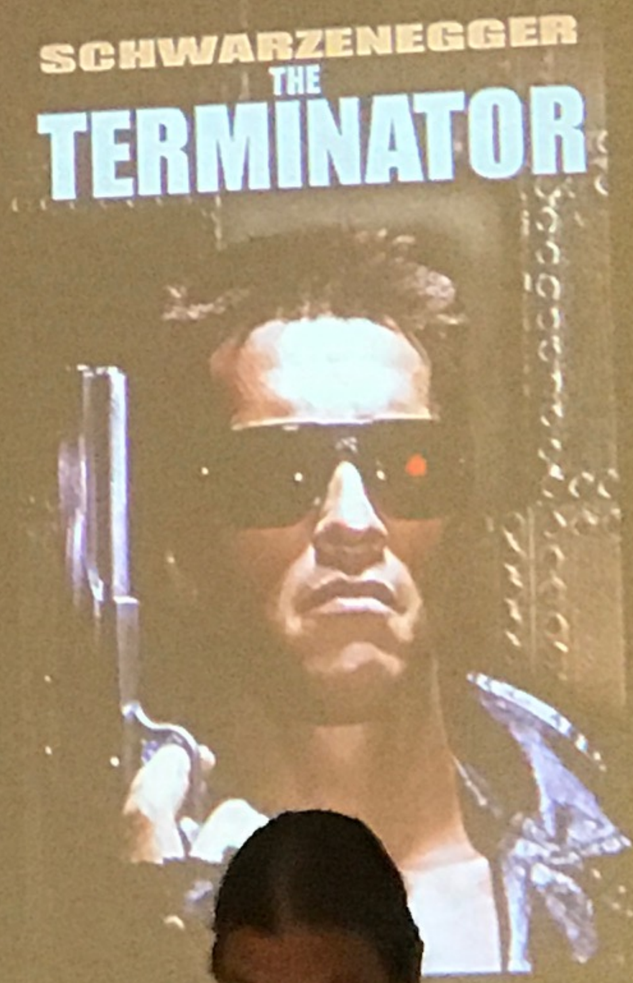
• H noid -rescue robots (Altas, B Dy
• Bi atr al, mechanic, ele esis, eg prosthetic lim g frog cells) – mecha an

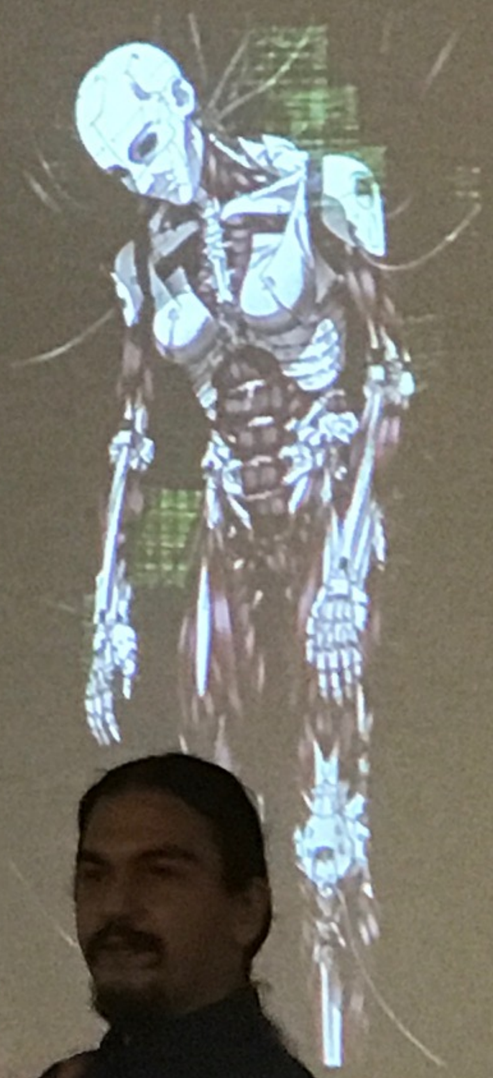
Futurism: compressed foresight

- Ultraintelligence (Irwin J. Good 1964)
- Moore's Law (Gary Moore 1965)
- Technological Singularity (Victor Vinge, Ray Kurzweil, Kevin Warwick 1990s-2000s)
- Superintelligence (Nick Bostrom 2014)
- ….
- Compressed foresight (Robin Williams 2008), novelty traps, and promise-requirement cycles…



2014-2018: Sensationalist dystopian fears of AI as an existential threat

- "One can imagine such technology outsmarting financial markets, outinventing human researchers, out-manipulating human leaders, and developing weapons we cannot even understand. Whereas the short-term impact of AI depends on who controls it, the long-term impact depends on whether it can be controlled at all" (Hawking, Wilczek, Russell and Tegmark. 2014, The Independent, May 1, 2014)
- Elon Musk "explained that his investments were, 'not from the standpoint of actually trying to make any investment return… I like to just keep an eye on what's going on with artificial intelligence. I think there is potentially a dangerous outcome there" (The Guardian, June 18, 2014).
- Musk: "With artificial intelligence we are summoning the demon. In all those stories where there's the guy with the pentagram and the holy water, it's like– yeah, he's sure he can control the demon. Doesn't work out" (The Guardian, October 27, 2014).
- Hawking: "The primitive forms of artificial intelligence we already have, have proved very useful. But I think the development of full artificial intelligence could spell the end of the human race" (The Guardian, Dece[illegible]r 2 2014).

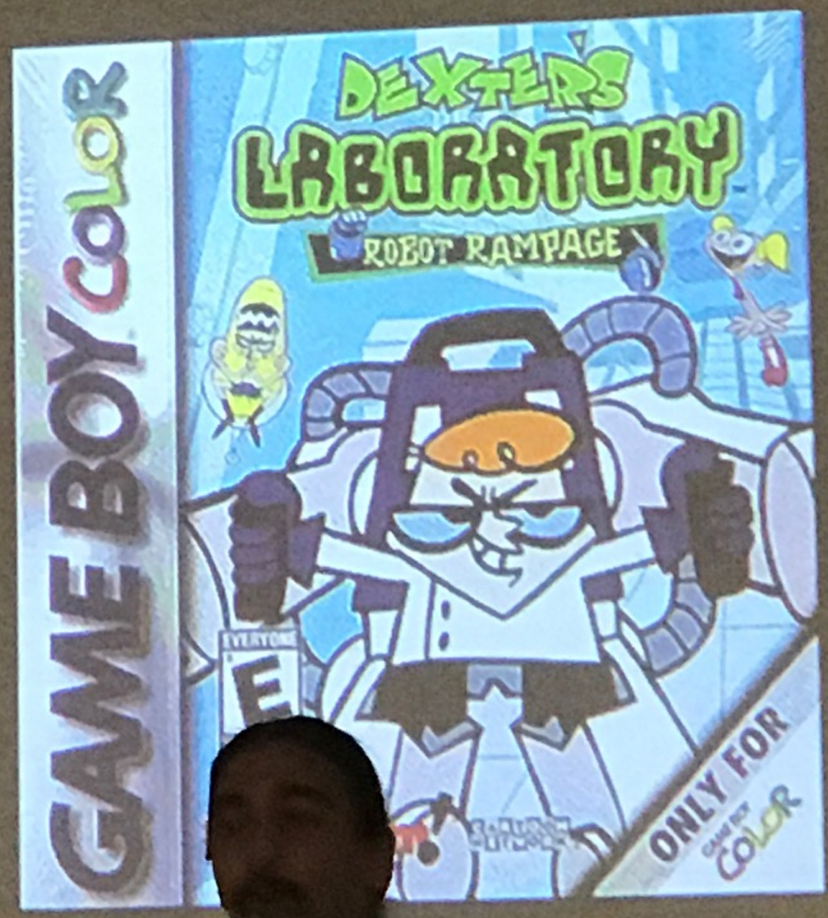


Artificial Intelligence is not /eɪ aɪ/

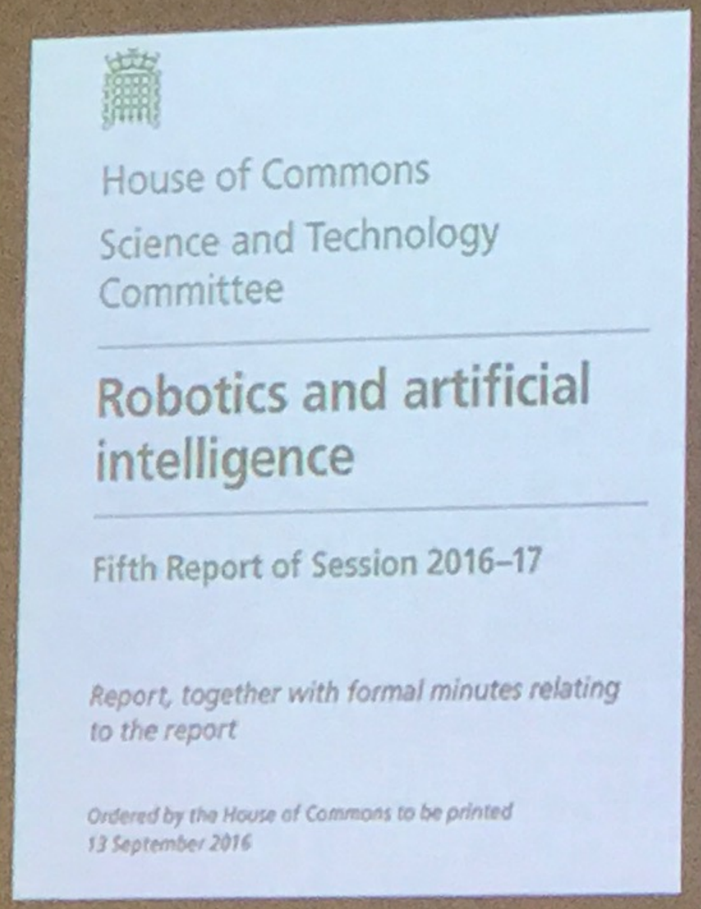
- Robots will steal our jobs!
- A robot bruised a toddler!
- A robot killed a worker!
- Beauty.AI is racist!
- Chess and Go champions lose to AI!
- A robot passed an "I am not a robot" test!
- Algorithms created their own language!

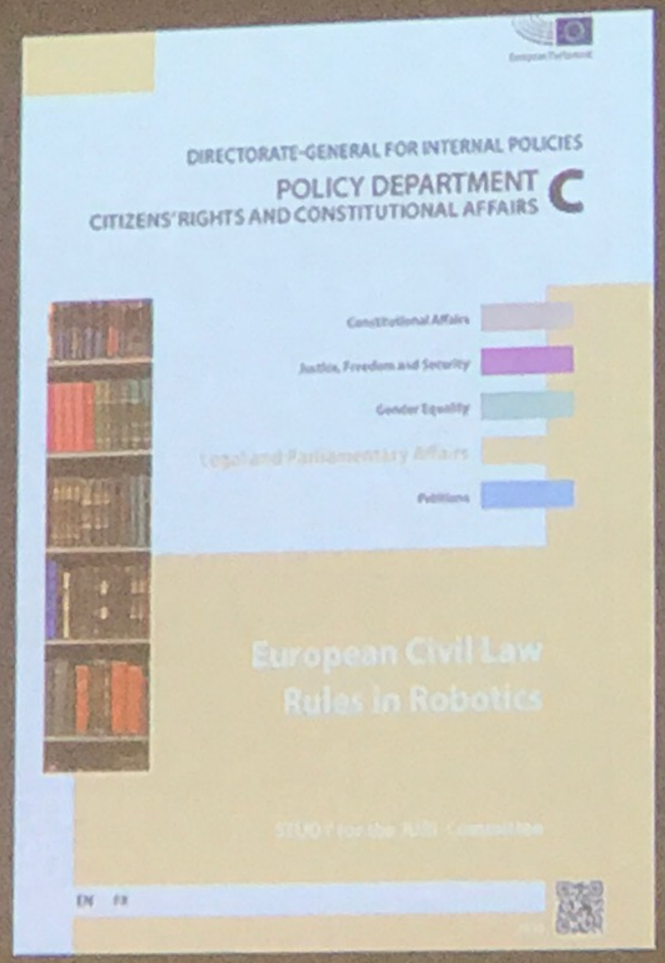
….

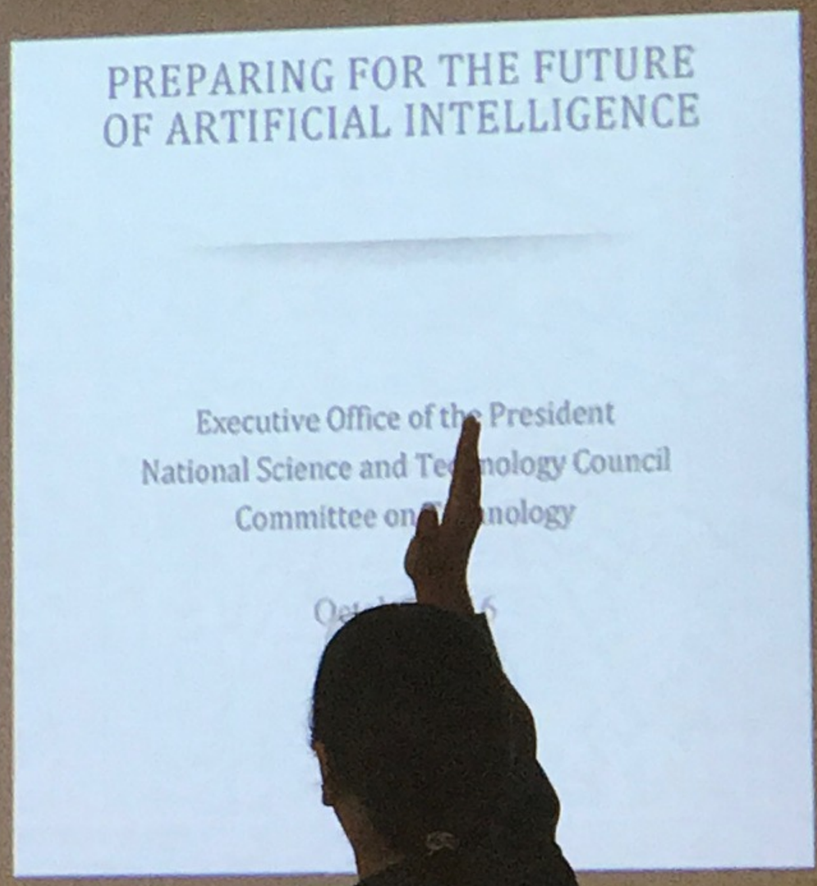
- Technological determinism…
- Responsible research and innovation, so[illegible]
  construction of technology



October 2016: Three Policy Documents about AI.

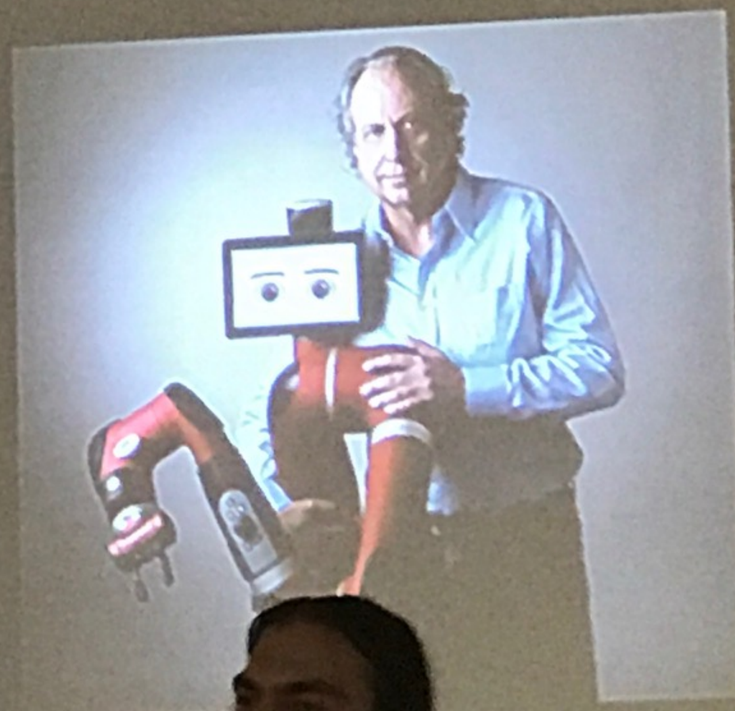






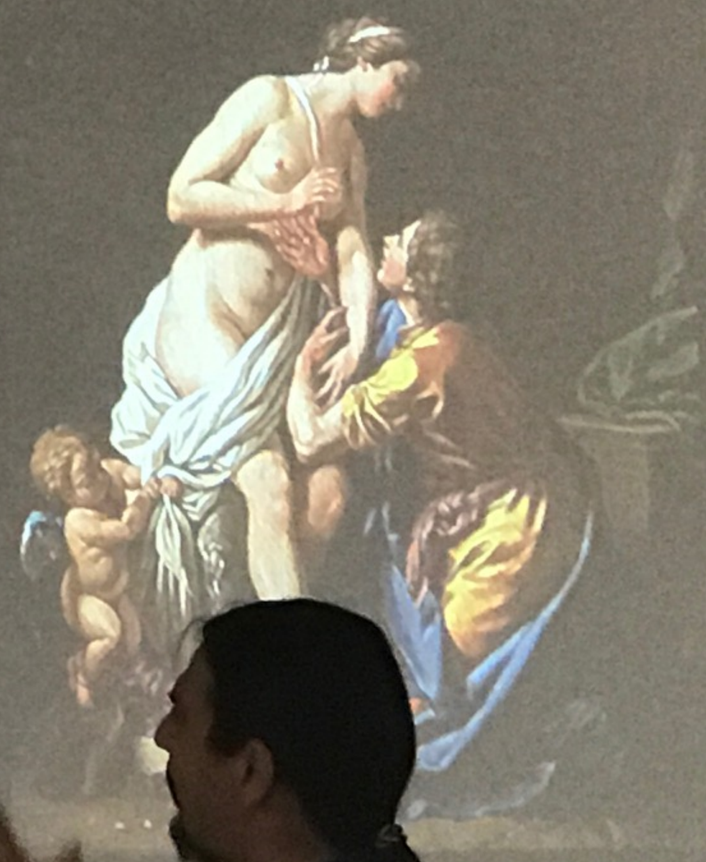
Any room for experts?

- "This Famous Roboticist Doesn't Think Elon Musk Understands AI"
- "There are quite a few people out there who've said that AI is an existential threat: Stephen Hawking, astronomer Royal Martin Rees, who has written a book about it, and they share a common thread, in that: they don't work in AI themselves. For those who do work in AI, we know how hard it is to get anything to actually work through product level" (*TechCrunch*, July 19, 2017).
- "So you're going to regulate now. If you're going to have a regulation now, either it applies to something and changes something in the world, or it doesn't apply to anything. If it doesn't apply to anything, what the hell do you have the regulation for? Tell me, what behavior do you want to change, Elon? By the way, let's talk about regulation on self-driving Teslas, because that's a real issue" (ibid.).



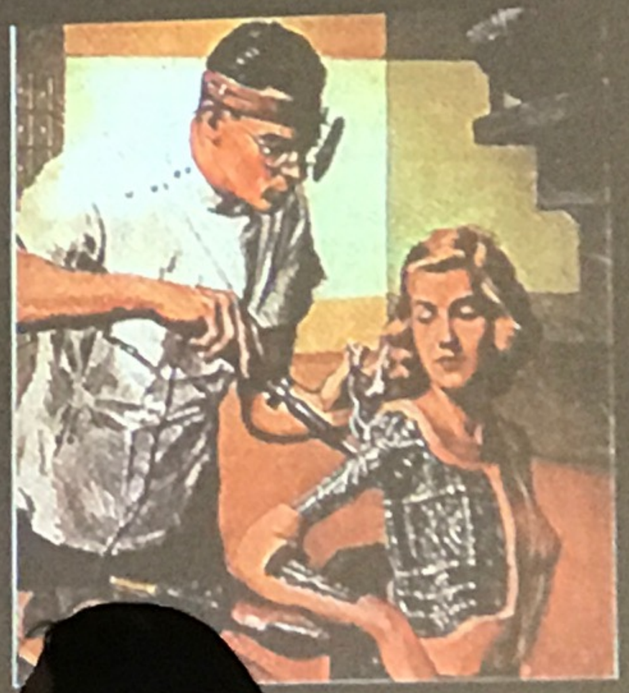
Non-binary Lacanian Inspiration

- "*la femme n'existe pas*" ("the woman does not exist") – she *has* vagina and she is not lacking the "constitutive phallus" – hence "man" does not exist either.
- Binarisation is futile as long as it is based on a dominating, privileged constitutive agent (the male), whereas this formal difference does not make any difference at all (hence, the man does not exist either).
- What if we use such a framework for our robotic/AI scapegoats?
- Can we deconstruct the notion of AI as a humbling exercise in order to change everything we know about it and everything we think it will do?



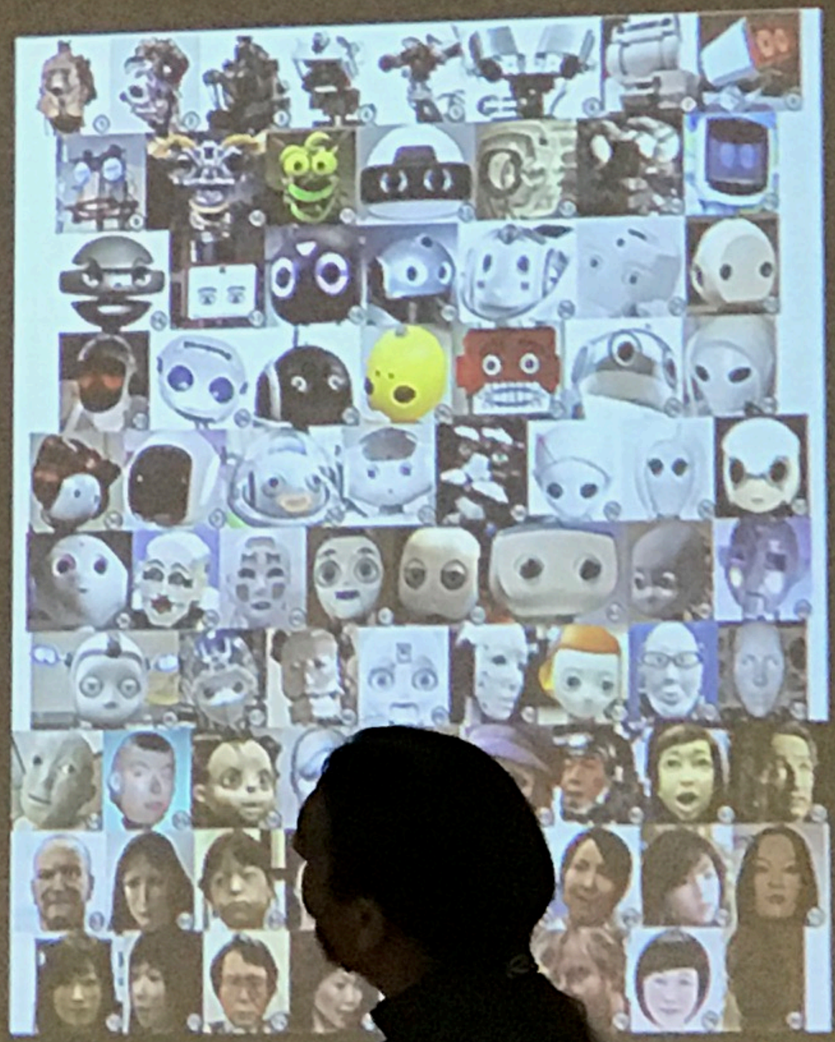
Artificial 1: Nature-Nurture, Nature-Culture, and the Convergence of *Physis* and *Techne*

- Are behavioural characteristics learned or inherited? Are entities and phenomena natural outcomes or are they products of sociocultural manipulation?
- Are machines products of a long-term evolutionary process, inscribed in natural randomness, or are they the outcomes of human intention? Does their intelligence depend on human intelligence or is it simply intelligence?
- "Methodological reductionism": reducing the analysed phenomenon to its constituents and therefore speak of different scales of impact affecting the generated phenomenon. (socioeconomic factors (nurture) can explain behaviour (nature), but also psychological behaviour can explain social phenomena, which in turn can be reduced to molecular levels of analysis…) (Longino 2014)



Artificial 2: It's complicated!

- (a) either the concepts of nature and nurture exist but only as long as they are in interaction (the biologist view: "We have moved beyond *versus*" Tabery 2014)
- (b) or the very concept of nature versus culture can be criticized precisely as a cultural construct (MacCormack 1988) and hence the entire existence of nature and culture can be doubted
- Bruno Latour's principle of symmetry: nature and culture simply do not exist, but different groups of humans in different times have constituted different sets of what is natural and what is cultural (1993)
- Synthetic biology: "An important aspect of how we understand 'natural' rests on what we oppose to it" (Calvert 2010)
- Dynamic biological systems, sex and gender: "we are always 100 percent nature and 100 percent nurture" (Fausto-Sterling 2005)

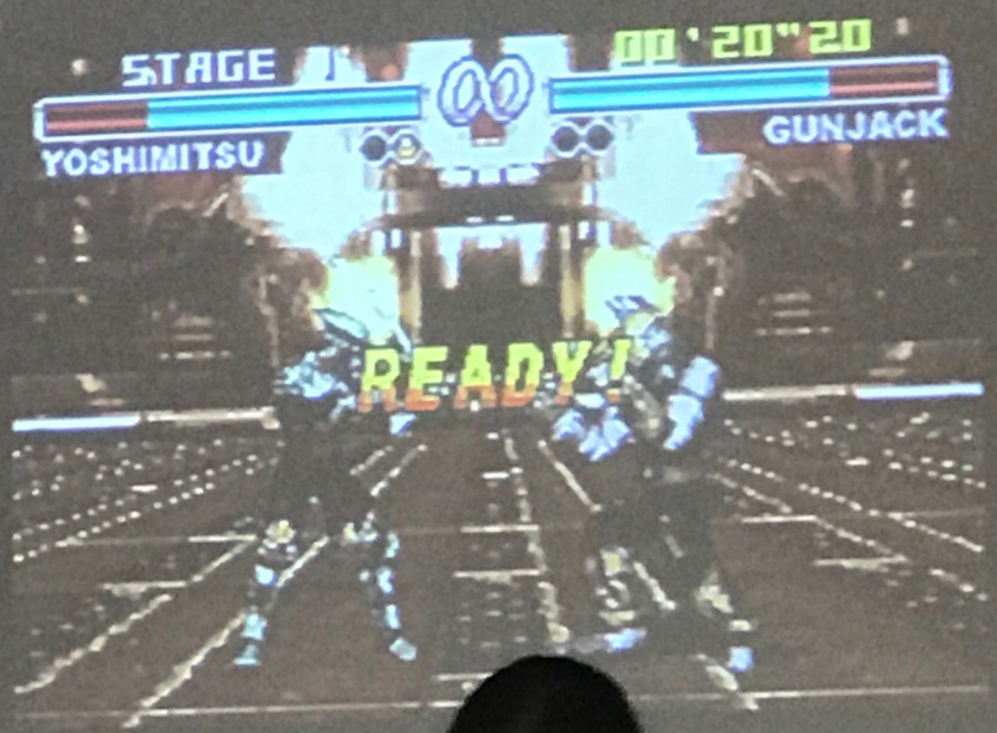


Artificial *3*: "A" in "AI" is…

- Fallacious from a physicalist/naturalist point of view (eg. Alfred North Whitehead's 1920 *The Concept of Nature*: "For natural philosophy everything perceived is in nature. We may not pick and choose"). If AI exists, by all means there is nothing artificial in it.

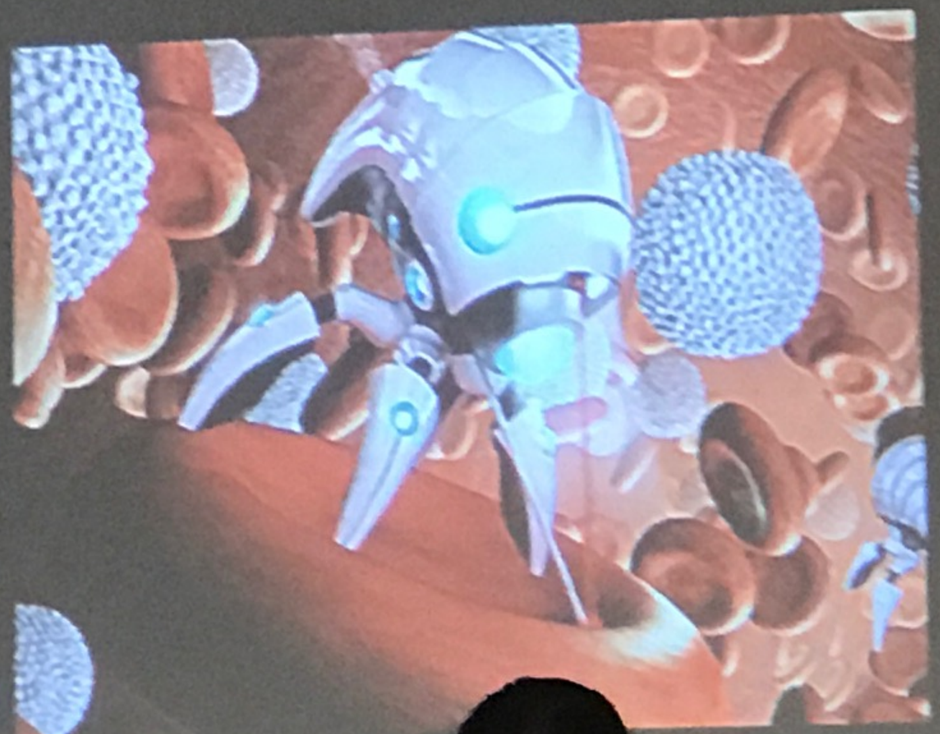
Or…

- Redundant from a social constructionist point of view where everything we perceive is mere artificial interpretation, so it is impossible to speak of nature (eg. Berger and Luckmann's 1966 *The Social Construction of Reality*). If AI is artificial, it is because everything is artificial.



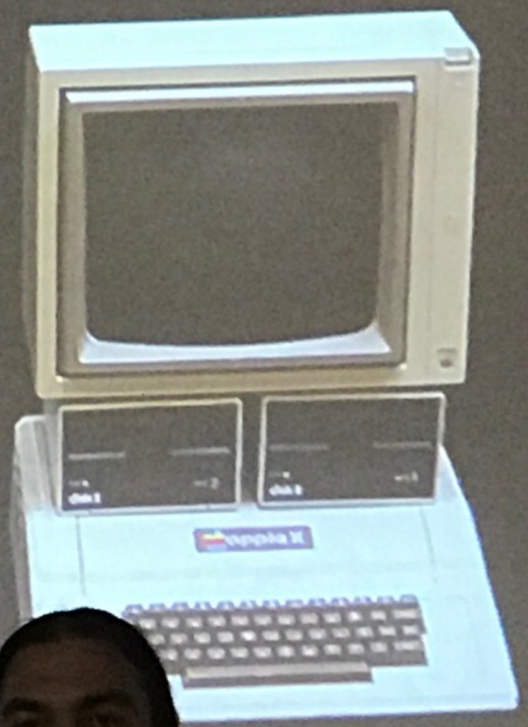
Intelligence 1: Distributed Cognitive Agency and Giant Steps to an Ecology of Mind

- Does a decision-making intelligent machine act as a single entity or as in relation to a group? Does its intelligence (natural, artificial, or otherwise) exist inside it, or is it the outcome of collective/distributed processes?
- There is no precise ontological or epistemological limit separating a human's actions from their AI (or other) tools, as all agents function as functions of each other; the calculations of an online buying recommendation system are the result of my interaction with the system which reflects at the same time my personal behaviour but also other customers' behaviour, and so on. The distribution of intelligence and agency is boundaryless and expanding and AI applications provide good evidence for this.
- Michael Bratman's 1992 shared cooperative activity: "(i) Mutual responsiveness, (ii) commitment to the joint activity, and (iii) commitment to mutual support" towards a given goal/task. (cf. Philip Pettit's 1996 social holism in *The Common Mind*)



Intelligence 2: It's even more complicated!

- Edwin Hutchins' "constraint satisfaction networks" and "cognitive ecologies" (1991, 2010): "A system composed of a person in interaction with a cognitive artifact has different cognitive properties than those of the person alone [...] A group of persons may have cognitive properties that are different from those of any person in the group [...] A central claim of the distributed cognition framework is that the proper unit of analysis for cognition should not be set a priori, but should be responsive to the nature of the phenomena under study" (2010) – or simply: "Everything is connected to everything else" but "not all connectivity is equally dense" (*ibid.*)
- Gregory Bateson's 1972 *Ecology of Mind* "*the mental characteristics of the system are immanent, not in some part, but in the system as a whole*" (early cybernetics and systems theory, ie, origins of AI), (eg. "the self-corrective (i.e. mental) process is brought about by a total system, tree-eyes-brain-muscles-axe-stroke-tree" (*ibid.*))
- Paul Edwards' 1997 *The Closed World* (i.e. environments created by new technologies): "Everything in the closed world becomes a system, an organized unit composed of subsystems and integrated into supersystems"



Intelligence 3: "I" in "AI" is…

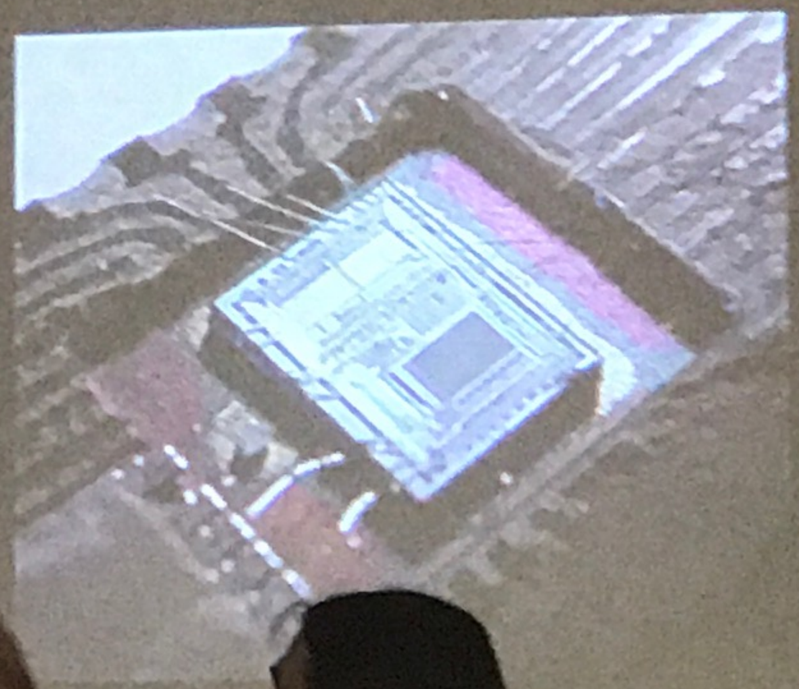
- Fallacious if perceived as the content of separate units

Because it is…

- Contextual and distributed; intelligence *happens* and is not restrained within certain boundaries, and therefore it makes no sense to attribute this feature to a natural or artificial entity.

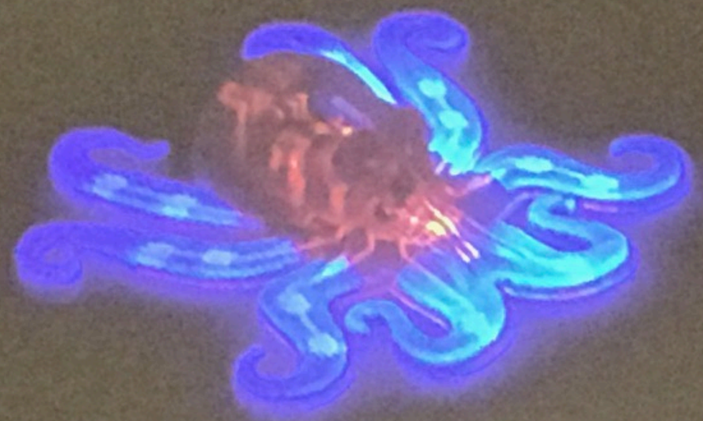
"It would not, I imagine, be very bold to maintain that there are not any more or less intelligent beings, but a scattered, general intelligence, a sort of universal fluid that penetrates diversely the organisms which it encounters, according as they are good or bad conductors of the understanding" (Maurice Maeterlinck 1907, *The Intelligence of Flowers*) – a proto-cybernetics?

"But, surely, the interesting question is what entitles us to attribute intentionality to nonmachines in the first place? What makes our description of human intentionality other than metaphorical?" (Steve Woolgar 1993)



To conclude 1.

- For all the reasons above, AI does not exist.
- AI is part of nature, so it is not artificial, or everything is a social construct, so it's pointless to say that AI is more artificial than anything else.
- AI is part of a broader, distributed and context-based network of intelligence, so there is no meaning in praising or being afraid of the intelligence of AI.
- But!



If AI does not exist, then why are we here?

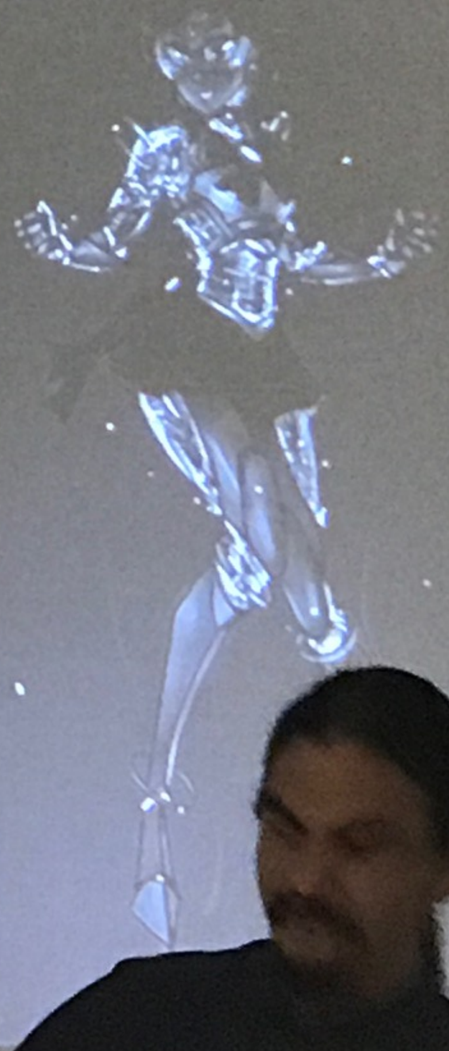
"But if the capacity to think stretches across an entire ecological landscape, what then? If nature is plastic, agential and inventive, then need we equate biologism and naturalism with a conservative agenda, a return to prescription and the resignation of political quietism?"
(Vicky Kirby, 2017, *What if Culture was Nature All Along?*)

...

No.

To conclude 2: AI *does* exist, as long as it is perceived as…

- Relationally defined according to the purposes and definitions suggested by different scientists/researchers (laboratories, machine learning, algorithms, neural networks, iCub, IBM Watson, AI with physical support, robots without AI, AI without physical support, and so on)
- An institutional hybrid (as in xenotransplantation, challenging traditional perceptions of natural and artificial, eg. Haddow *et al.* 2010) with need of STS (and other) scholars working on taxonomies of definitions, hierarchies of relations, public engagement, social (mis)understanding

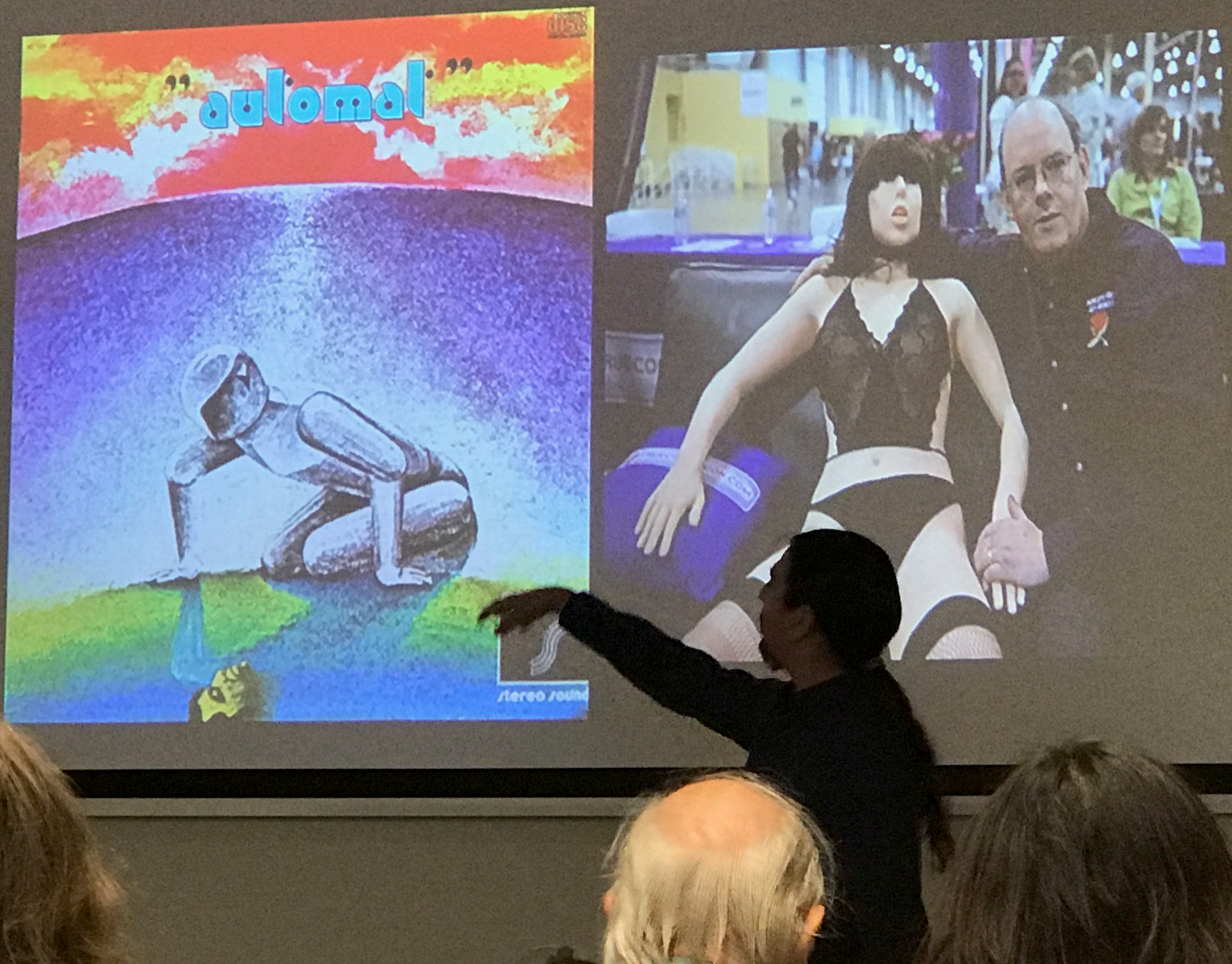


Future work: A sociopolitical understanding of reasons that make AI exist

- (a) attempts at more precise definitions and analytical taxonomies of various applications of AI according to experts,
- (b) tentative (yet rigorous) demarcation of expertise especially in the cases of prestigious figures in mass media associating themselves with AI, and
- (c) empirical investigation through qualitative means of the impact of current AI hypes and/or disillusionments in the public sphere on AI R&D and policymaking.

Open questions towards a sociology of AI

- How are societal factors impacting the conceptions of AI, and possibly, from an ethical scope, how should we change AI conceptually towards the greatest benefit (instead of proposing technologically deterministic responses of ethics to AI's impact)?
- Can there be a politics of decentralized and simultaneous 100 percent natural and 100 percent artificial cognition?
- What is the normative morality "taught" to machines by humans? What can we learn about human morality by studying what we teach to the machines?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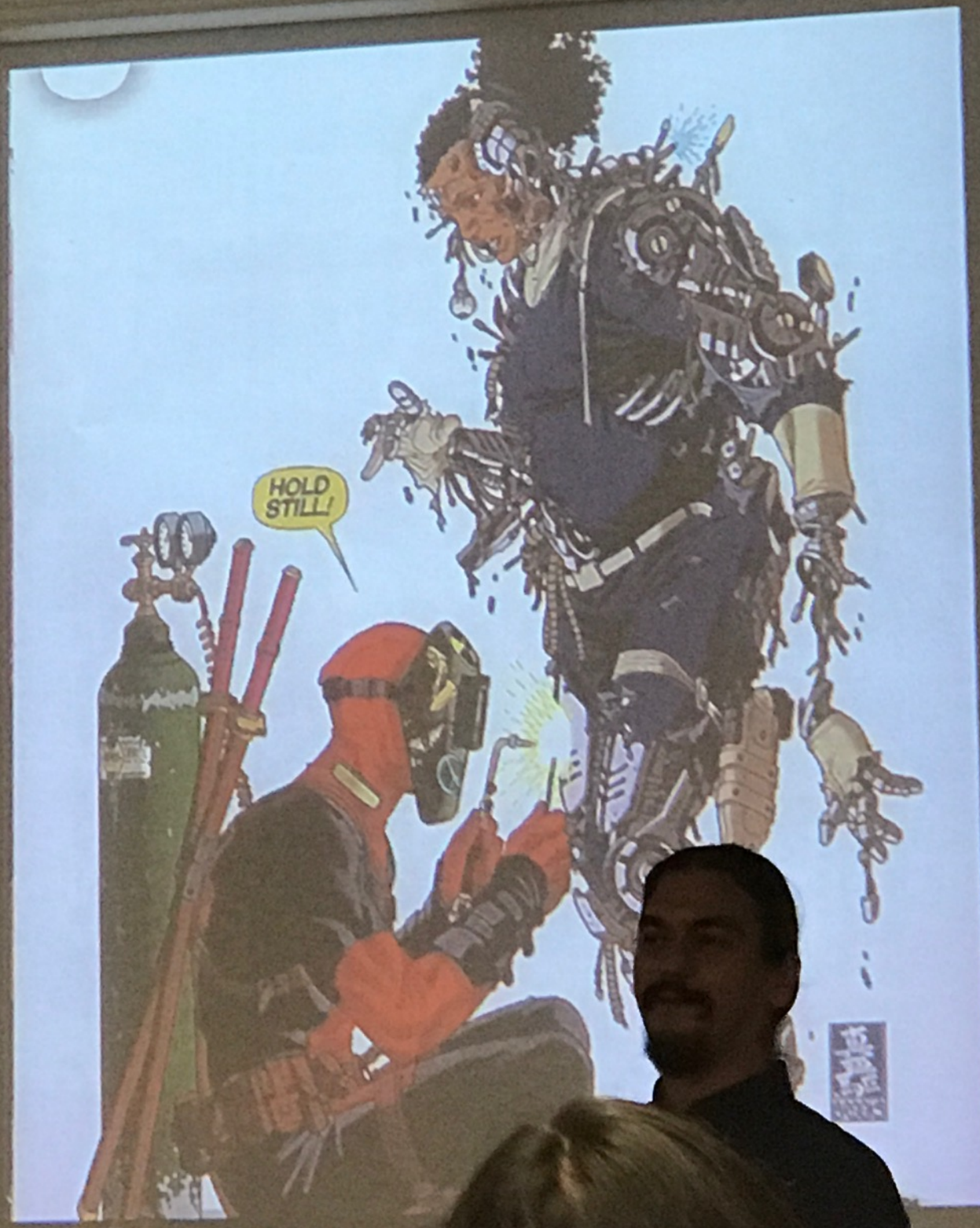
Thank you for your attention!

Questions?



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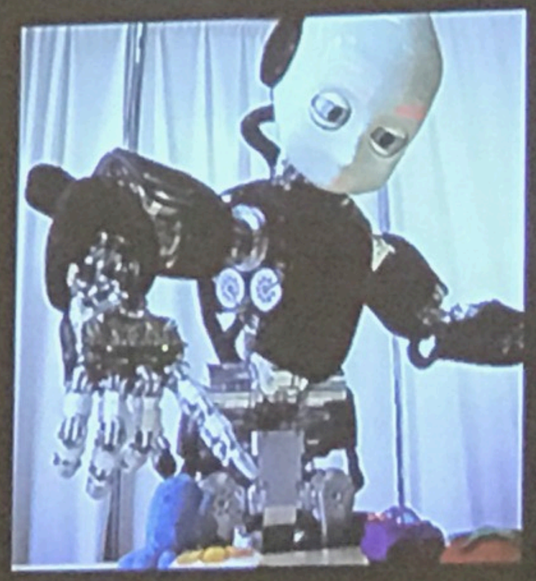

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- Biomechatronics[illegible]al, mechanic, electronic, robo[illegible]is, eg prosthetic limbs, artificial [illegible] cells) – mechanis[illegible]