

Futures Circle

A framework to critically assess technofutures

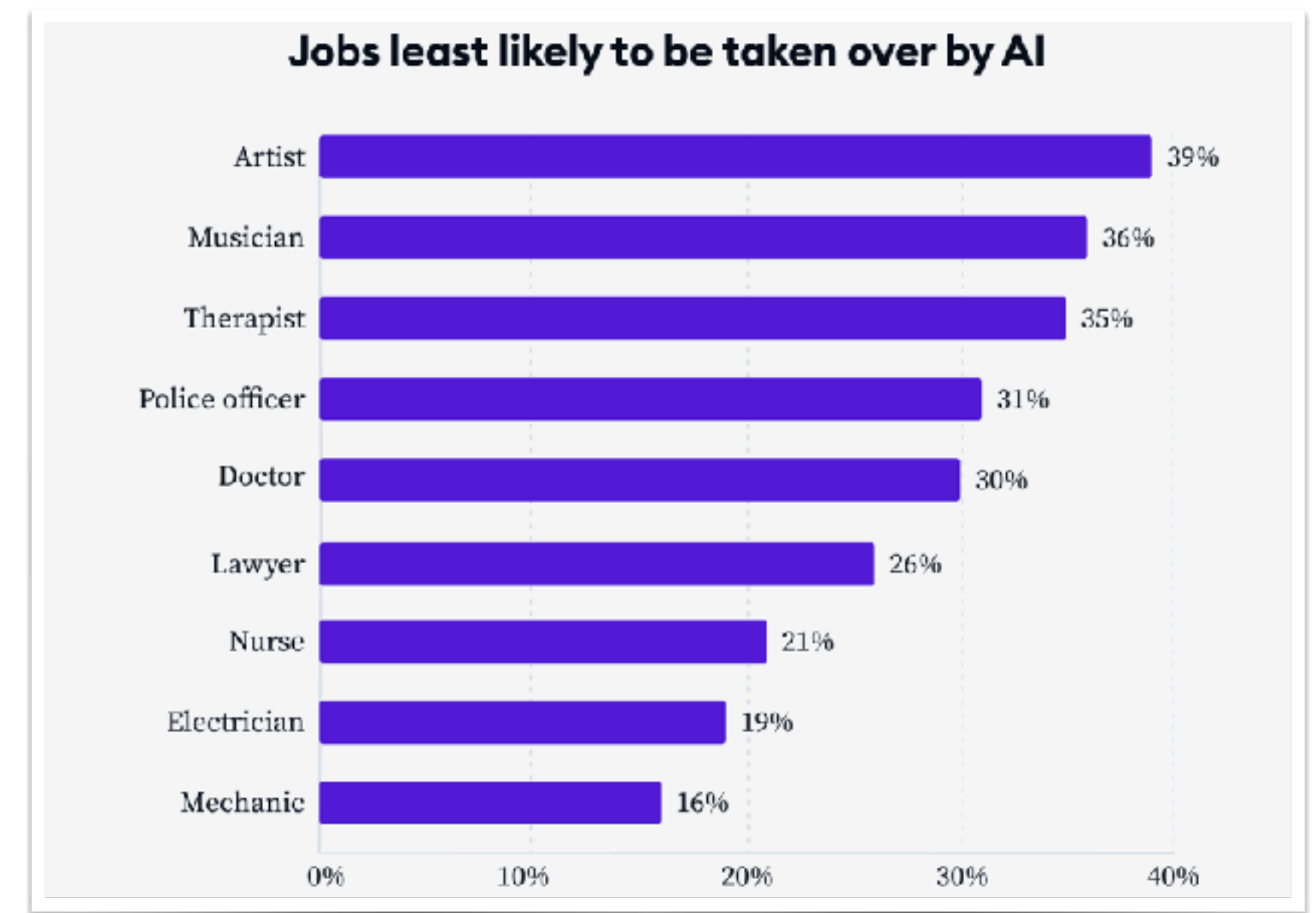
Structure

- ▶ **Technofutures as object of interest**
 - ▶ A definition
- ▶ **Framework for analysis (Futures Circle)**
 - ▶ Three perspectives on technofutures
- ▶ **Mind upload technologies**
 - ▶ An example

Technofutures

Technofutures are...

- ▶ ... **mediated statements** about our world being changed by new sciences or **technologies**, at a time when these technologies **have not yet materialised**.
- ▶ They come in the form of presentations, foresight reports, science fiction narratives, advertising, corporate visions, etc.



If-and-then statement (Nordmann, 2007)

- ▶ Narratives of causal change
- ▶ **If**: Function of an emergent technology
- ▶ **Then**: Change that occurs through the function

- ▶ **If** we can create a direct interface between brains and machines **then** this would be an invasion of privacy (Nordmann, 2007).
- ▶ **If** we can grow meat in the lab, **then** we can prevent the climate impact of meat production (Ferrari & Lösch, 2017)
- ▶ **If** we produce autonomous weapon systems, **then** these systems could be hacked and used against us (Mehnert, 2019).

- ▶ Often, neither the **if** nor the **then** can be claimed with certainty.
- ▶ Discussion often circles around the **then** and ignores the feasibility of **if** (#speculative ethics)

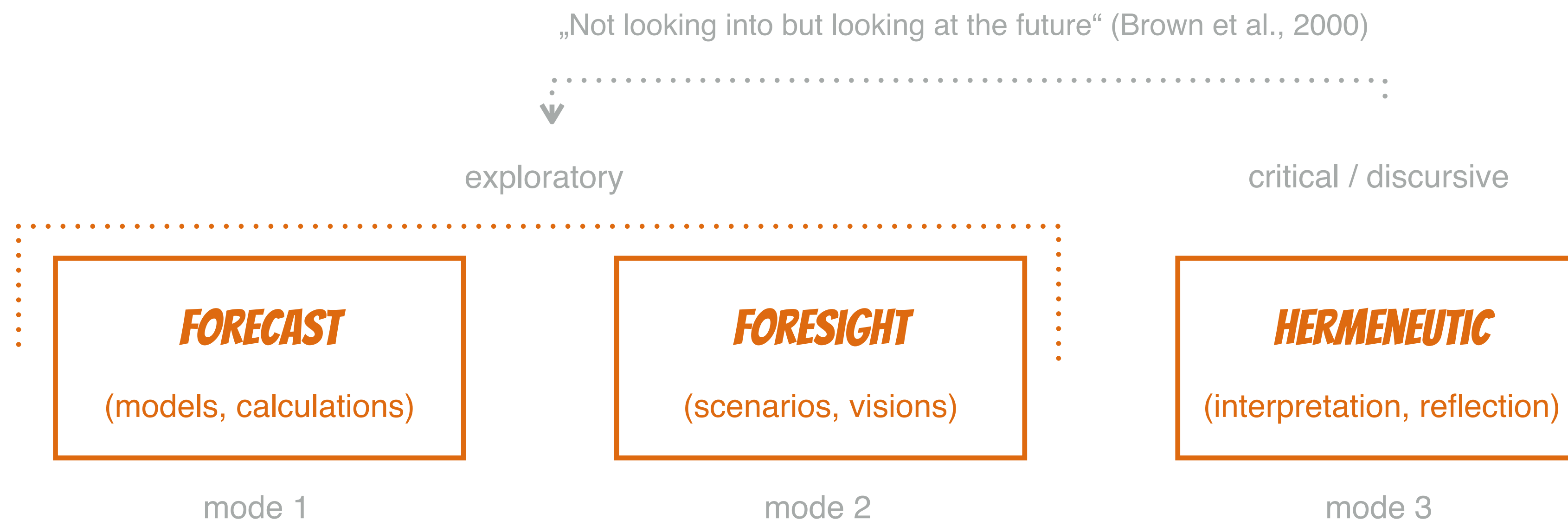
Societal meaning

- ▶ Technofutures attribute social meaning to an emerging technology.
- ▶ **Then:** Ethical, cultural, economic, social, political or ecological changes (Lösch et al., 2016).
- ▶ Emerging technology becomes socially meaningful and requires actors to position themselves in relation to the alleged changes (Grunwald, 2019, p. 105).
- ▶ Attribution of meaning becomes decisive for social acceptance or rejection
 - ▶ Technology futures forge alliances (Ferrari & Lösch, 2017)
 - ▶ Decide on promotion and regulation of the technology (Grunwald, 2019, p. 106)



Hermeneutic technology assessment

„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)“



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

Grunwald, Armin. 2014. „Modes of Orientation Provided by Futures Studies: Making Sense of Diversity and Divergence“. European Journal of Futures Research 2(1). doi: 10.1007/s40309-013-0030-5.

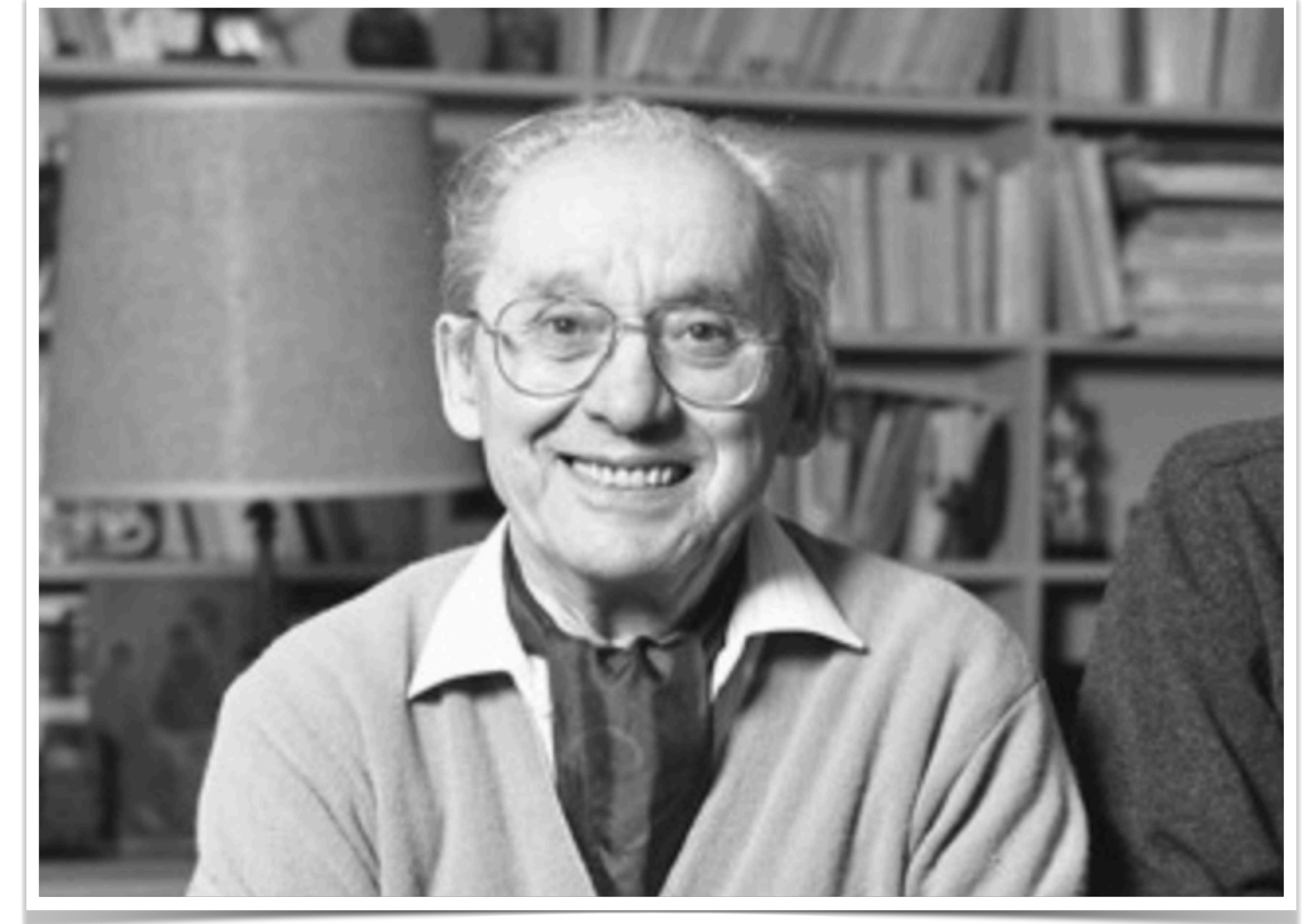
Brown, Nik, Brian Rappert, und Andrew Webster, Hrsg. 2000. Contested Futures: A Sociology of Prospective Techno-Science. Aldershot, England; Burlington, VT: Ashgate Publishing Limited.

Deciphering the meanings?

Three perspectives on
technofutures

Narrative Hermeneutics

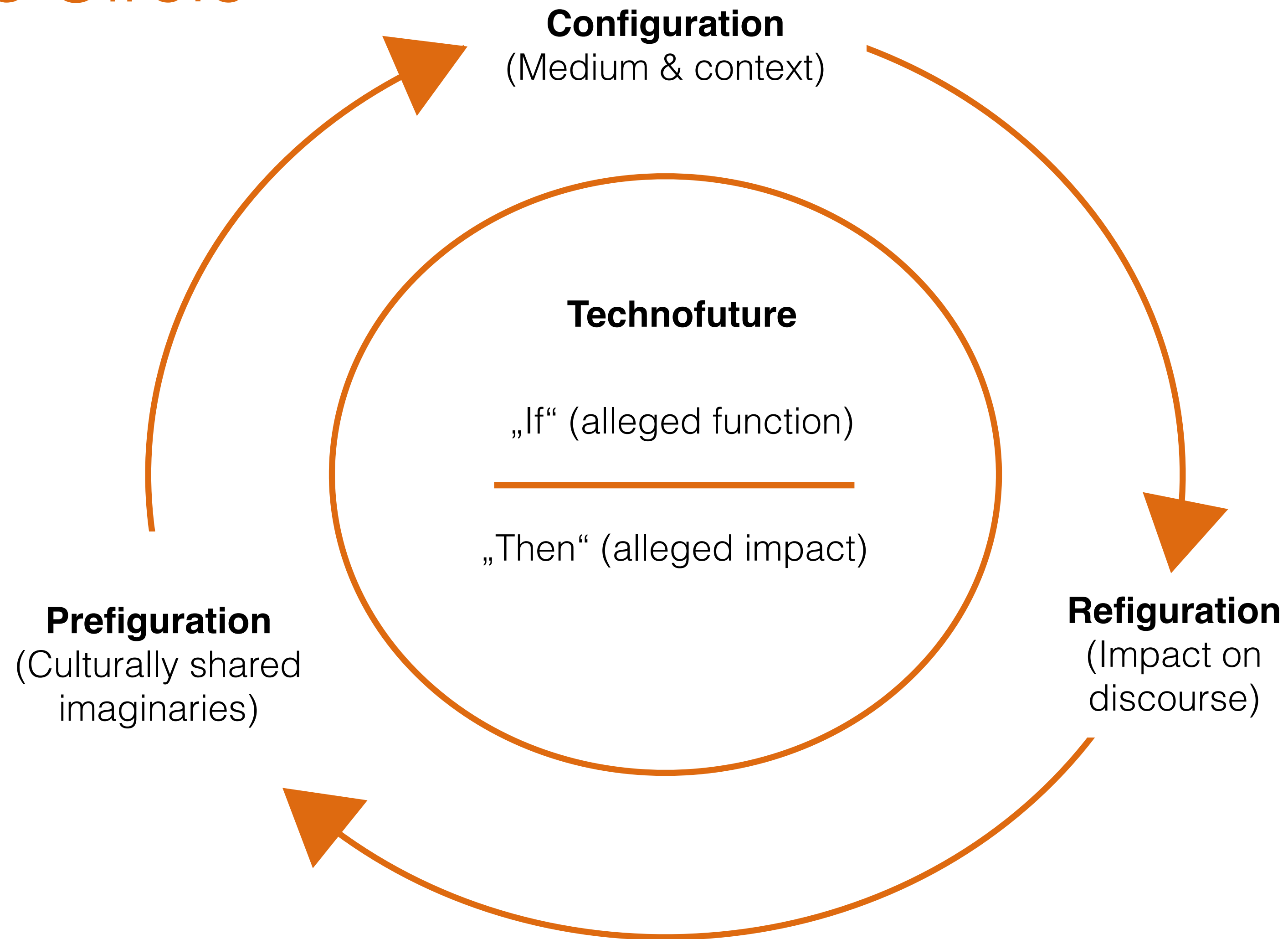
- ▶ **Paul Ricoeur – Time and Narrative (1984)**
- ▶ „Hermeneutics (...) is concerned with reconstructing the entire arc of operations (...) What is at stake, therefore, is the concrete process by which the textual **configuration** mediates between the **prefiguration** of the practical field and its **refiguration** through the reception of the work.“ (Ricoeur 1984, p. 53)



Technofutures as narratives

- ▶ **(1) Prefiguration** Looks at the content of technofutures, how they are entangled in cultural presumptions and informed by socially shared imaginaries; reflecting on desires, hopes, fears and needs that are inscribed into the respective visions.
- ▶ **(2) Configuration** Looks at the way they are constructed and reflects on the form (e.g., the role of the medium, the performance, the context in which it is embedded), the rhetoric (e.g., the language, narratives and verbal or visual metaphors used), as well as illustrative material (e.g. tables, pictures, movies or other pieces of art).
- ▶ **(3) Refiguration** Focusses on the impact of technofutures and the way they change present discourses or change already established concepts. This perspective includes, among others, the way that stakeholders position themselves towards the proposed future but also how technofutures impact other discourses and diffuse through society.

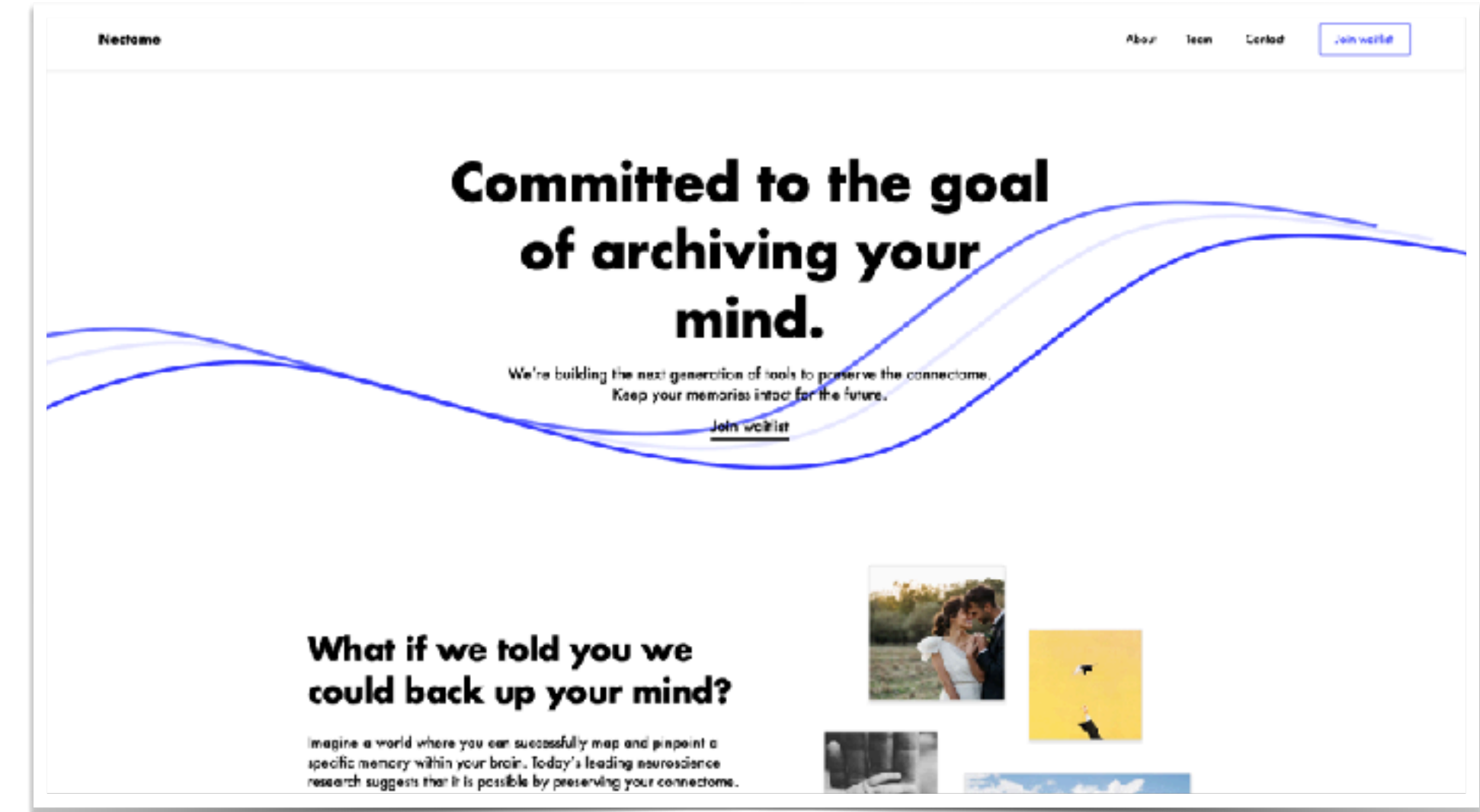
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An example:
Mind Upload

Brain Banking (Nectome, 2018)

- ▶ „Preserve your brain to bring you back in the future“ (Nectome)
- ▶ „Back up your mind“ (Nectome)
- ▶ \$960,000 federal grant from the U.S. National Institute of Mental Health.
- ▶ „A growing number of scientists and technologists believe that **future technology may be capable of scanning a preserved brain's connectome** and using it as the basis for constructing a whole brain emulation, thereby **uploading that person's mind into a computer** controlling a robotic, virtual, or synthetic body,“
- Kenneth Hayworth, **Brain Preservation Foundation**



<https://www.geneticsandsociety.org/biopolitical-times/what-if-we-told-you-we-could-back-your-mind>



Robert McIntyre,
CEO Nectome



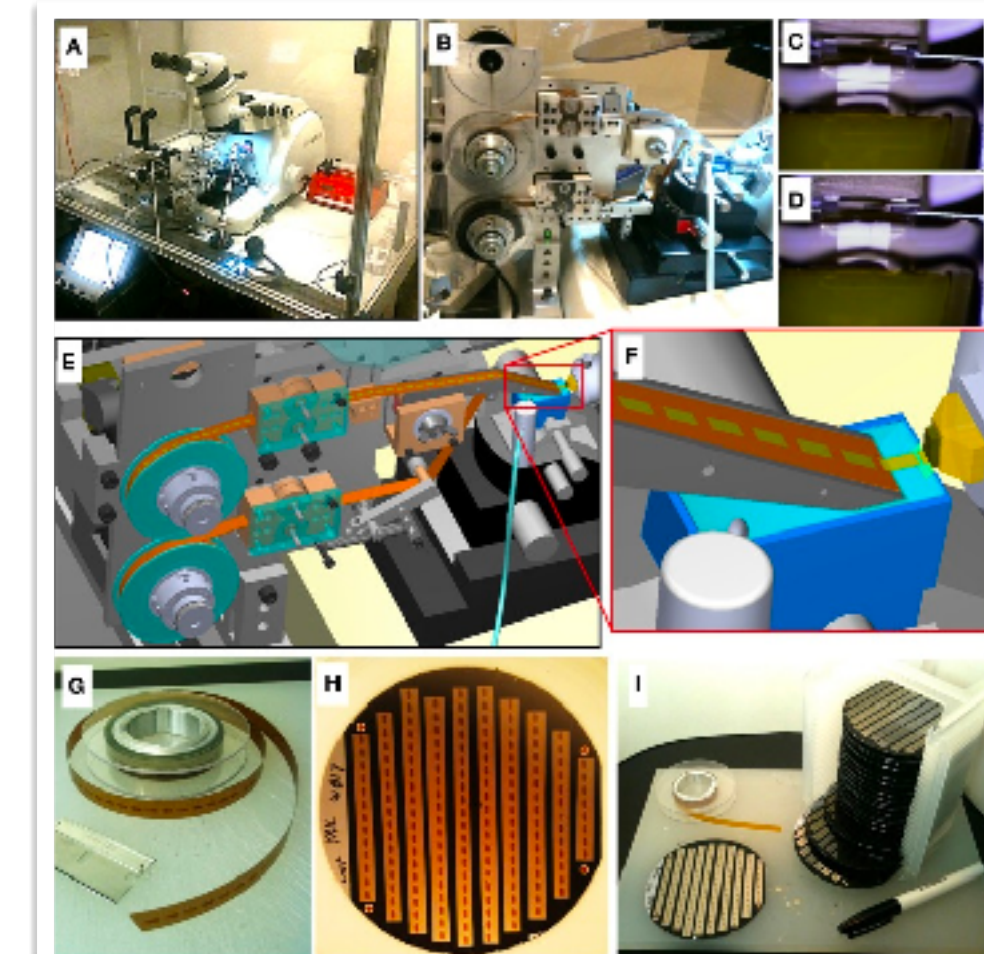
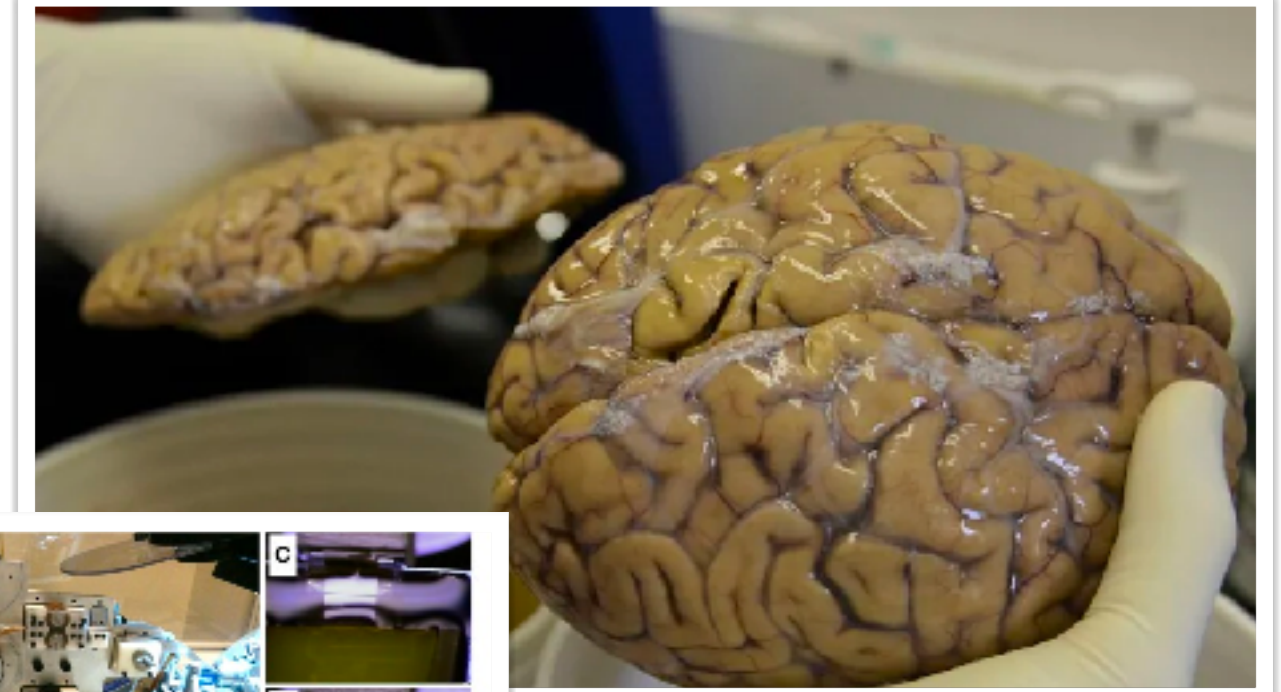
Kenneth Hayworth,
Neuroscientist

Technology ATUM-SEM

- ▶ Automatic Tape-collecting Ultra-Microtome Scanning Electron Microscopy

"Once all the brain strips have been imaged via this destructive process our patient's original physical **brain and spinal cord will have been completely destroyed**, but a **5x5x5nm resolution volume image of her entire brain and spinal cord will have been acquired in the process.**" (Hayworth, 2010, p. 4)

- ▶ **If** we can digitally map the brain,
- ▶ **Then** we will have found a "cure for death" (Hayworth, 2010, p. 1)



<https://www.cbc.ca/radio/quirks/may-5-2018-preserving-brains-for-uploading-coral-reefs-sound-sick-south-american-child-sacrifice-and-more-1.4647066/preserving-your-brain-might-kill-you-but-it-could-help-you-live-forever-1.4647089>

https://www.researchgate.net/publication/263898872_Imaging_ATUM_ult_rathin_section_libraries_with_WaferMapper_A_multi-scale_approach_to_EM_reconstruction_of_neural_circuits

Killed by bad philosophy

Why brain preservation followed by mind uploading is a cure for death

Kenneth Hayworth
(January 2010)

A tragic miscalculation:

You wake up with a splitting headache and weakness on one side of your body. Your wife rushes you to the hospital where a CT scan reveals what is wrong. You have a massive aneurysm that is about to burst in your brain and will surely kill you when it does. Furthermore, the location of the aneurysm is deep within the brain making a traditional

Cultural Prefiguration

▶ Image of man

- ▶ Mind-body problem: Functionalism (Putnam, 1960)
- ▶ *A person's mind is independent of the substrate that harbours it. If the functions of the brain are simulated with another substrate, the mind can be replicated.*

▶ Metempsychosis

- ▶ The reincarnation of the soul after death
- ▶ "And the dead in Christ shall (...) be caught up together with them in the clouds to meet the Lord in the air." (Thessalonians 4:16-18)

▶ Science Fiction

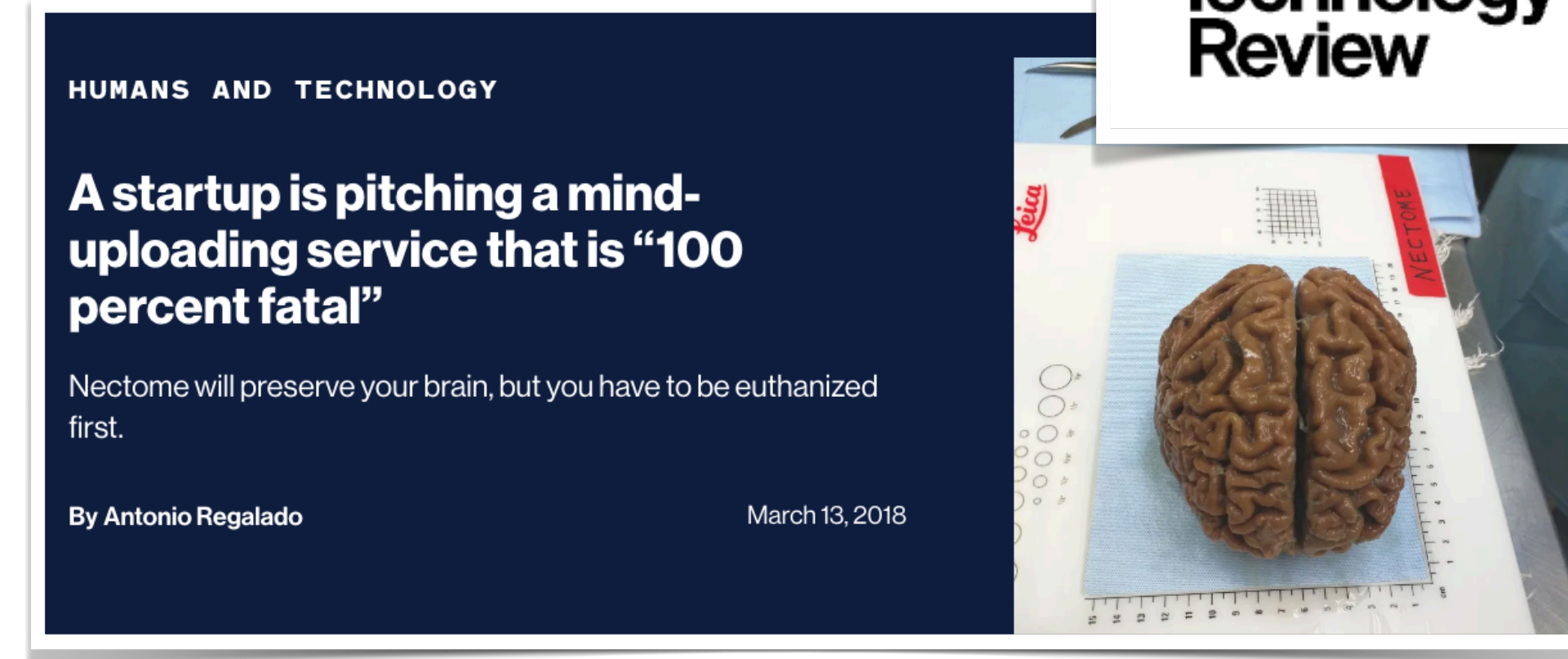
- ▶ Cyberpunk & near-future SF
- ▶ Philosophical thought experiments (e.g. Greg Egan)



Configuration Press Releases

- ▶ **Medium** Press releases, March 2018
 - ▶ Spectacular claim, click-baiting, attention economy
- ▶ Legitimation strategy:
 - ▶ „Either way, you should pay attention to Nectome. The company has won a **large federal grant** and is collaborating with **Edward Boyden**, a top neuroscientist at MIT, and its technique just claimed an \$80,000 **science prize** for preserving a pig’s brain so well that every synapse inside it could be seen with an electron microscope.“ (Regalado, 2018)
- ▶ Commodification of the Mind Upload imaginary
 - ▶ **Marketing** through provocative statements
 - ▶ Grant Application „enable whole-brain nanoscale preservation to a deep **understanding of the mind** and of the **brain’s diseases**“.
 - ▶ „The company has found a way to test the market.“ (Charles, 2018)

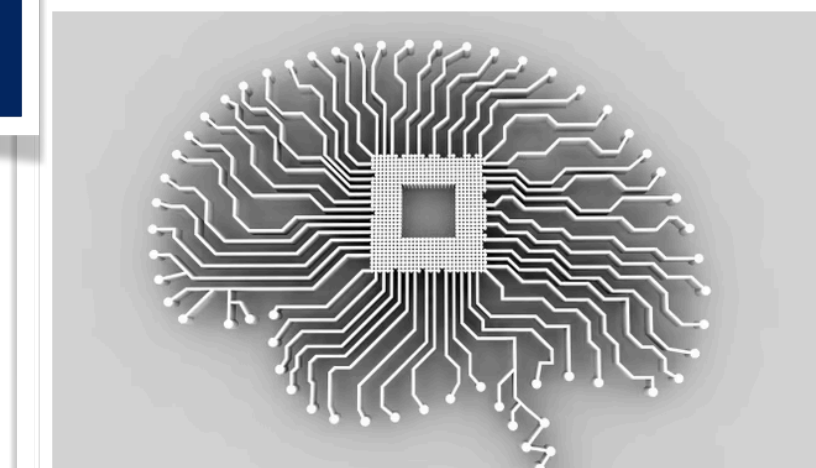
<https://www.technologyreview.com/2018/03/13/144721/a-startup-is-pitching-a-mind-uploading-service-that-is-100-percent-fatal/>



<https://www.theguardian.com/technology/2018/mar/14/nectome-startup-upload-brain-the-cloud-kill-you>

Startup wants to upload your brain to the cloud, but has to kill you to do it

Nectome offers to preserve grey matter through 'vitrification' process tested on rabbits - but doesn't have a method for uploading brains yet



❑ Blood flow to the brain will be replaced with embalming chemicals that preserve the neuronal structure, even as they kill the patient. Photograph: Alfred Pasieka/Getty Images/Science Photo Library RF

US-Firma konserviert Gehirne

Tiefgefroren in die Zukunft

Die US-Firma Nectome will menschliche Gehirne einfrieren - um das konservierte Bewusstsein dereinst auf einen Computer zu überspielen. Eine Schnapsidee?

Von **Manfred Dworschak**
10.04.2018, 03.41 Uhr

SPIEGEL Wissenschaft

Refiguration Neurotech Community

- ▶ Ethical concerns, as the hopes of patients are being played with
 - ▶ „Any suggestion that you can come back to life is simply **snake oil.**“ (Hendricks, 2015)
 - ▶ „When you die, the brain cells die, so **there is no memory after death.**“ (Brown in Begley, 2019)
 - ▶ „Just knowing what’s in the brain probably **isn’t enough to extract meaning** from it.“ (Jasanoff in Begley, 2019)



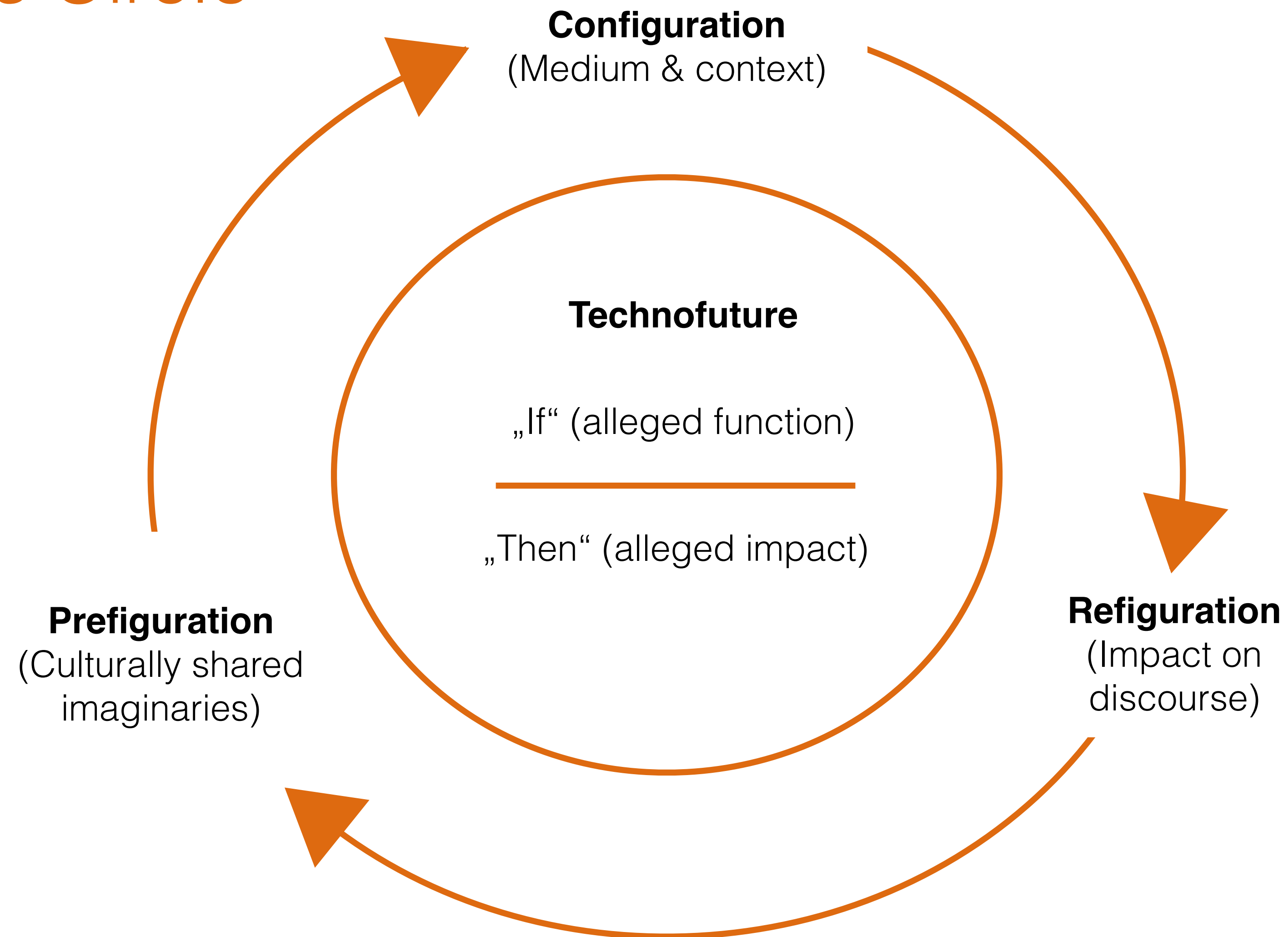
- ▶ Collaboration with MIT cancelled
 - ▶ „**Upon consideration** of the scientific premises underlying the company’s commercial plans, as well as **certain public statements that the company has made**, MIT has informed Nectome of its intent to terminate the subcontract between MIT and Nectome in accordance with the terms of their agreement.“ (Boyden, 2018)
 - ▶ "Neuroscience has not sufficiently advanced to the point where we know whether any brain preservation method is powerful enough to preserve all the different kinds of biomolecules related to memory and the mind. **It is also not known whether it is possible to recreate a person’s consciousness.**“ (Boyden, 2018)

Refiguration Definition of *Mind*

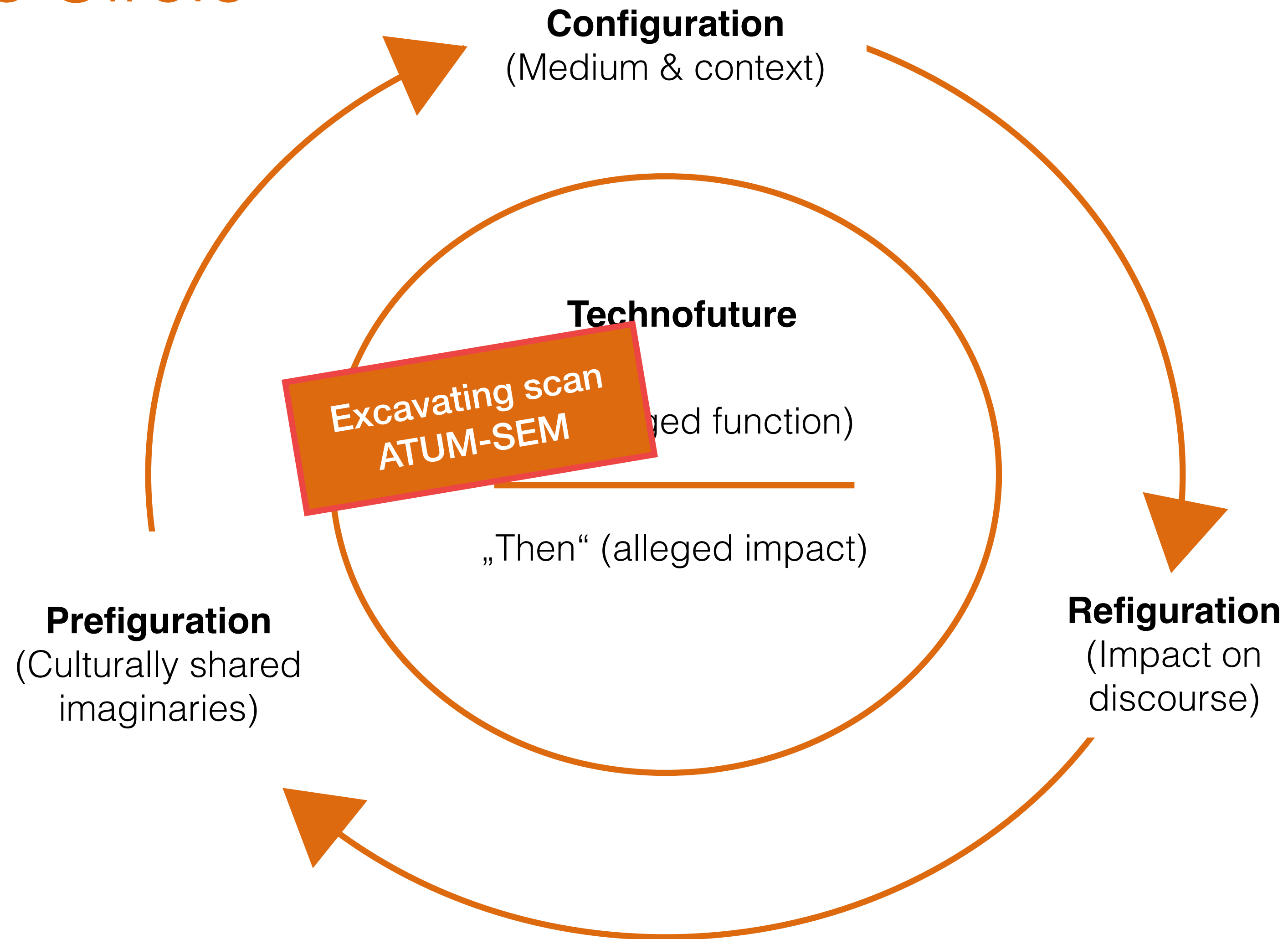
- ▶ **The human mind becomes information**
 - ▶ If technology can measure the mind, then the mind is what technology can measure.
 - ▶ Refiguration of the imaginary of the human mind.
- ▶ Technomorphisation of the human body



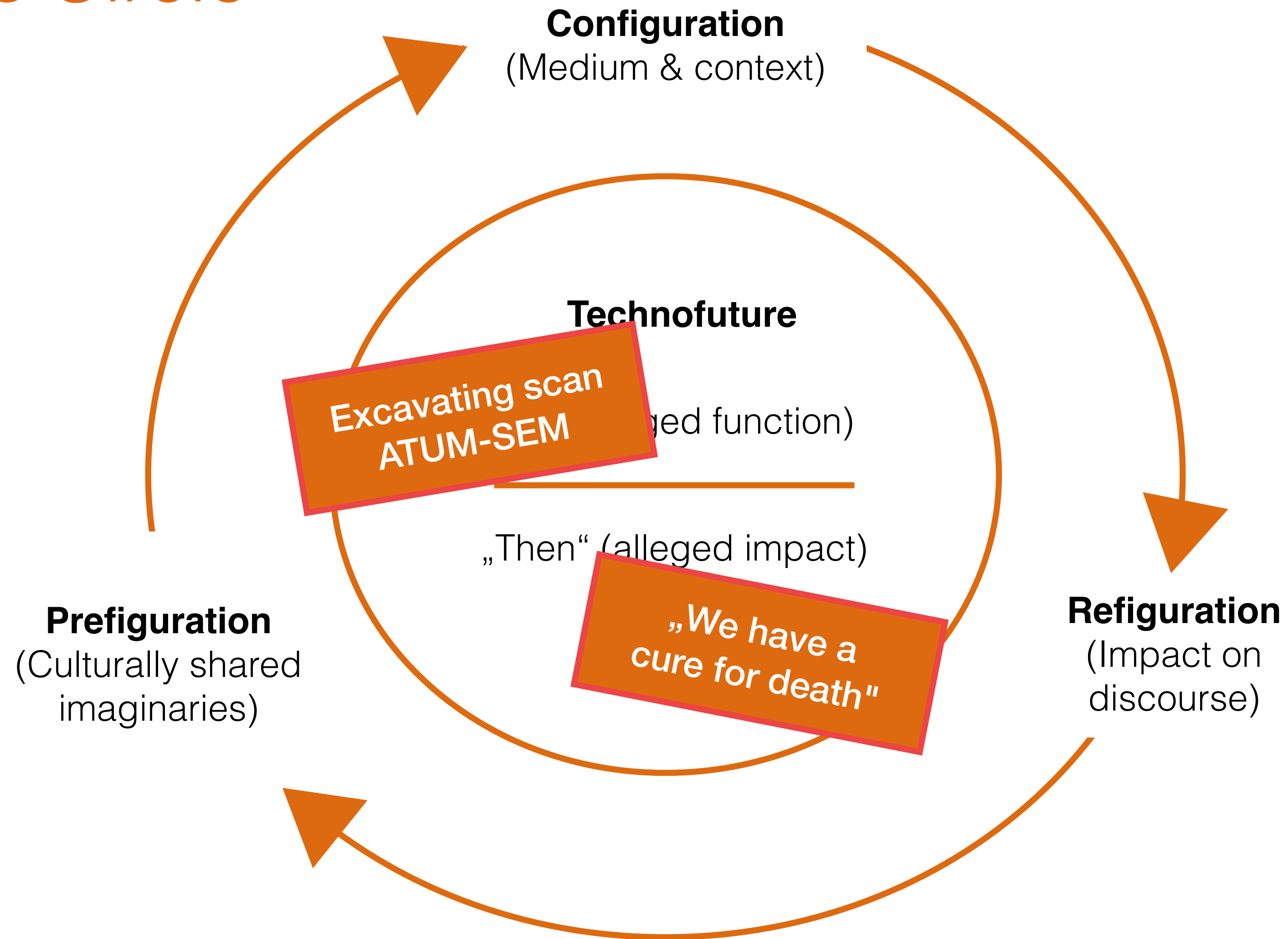
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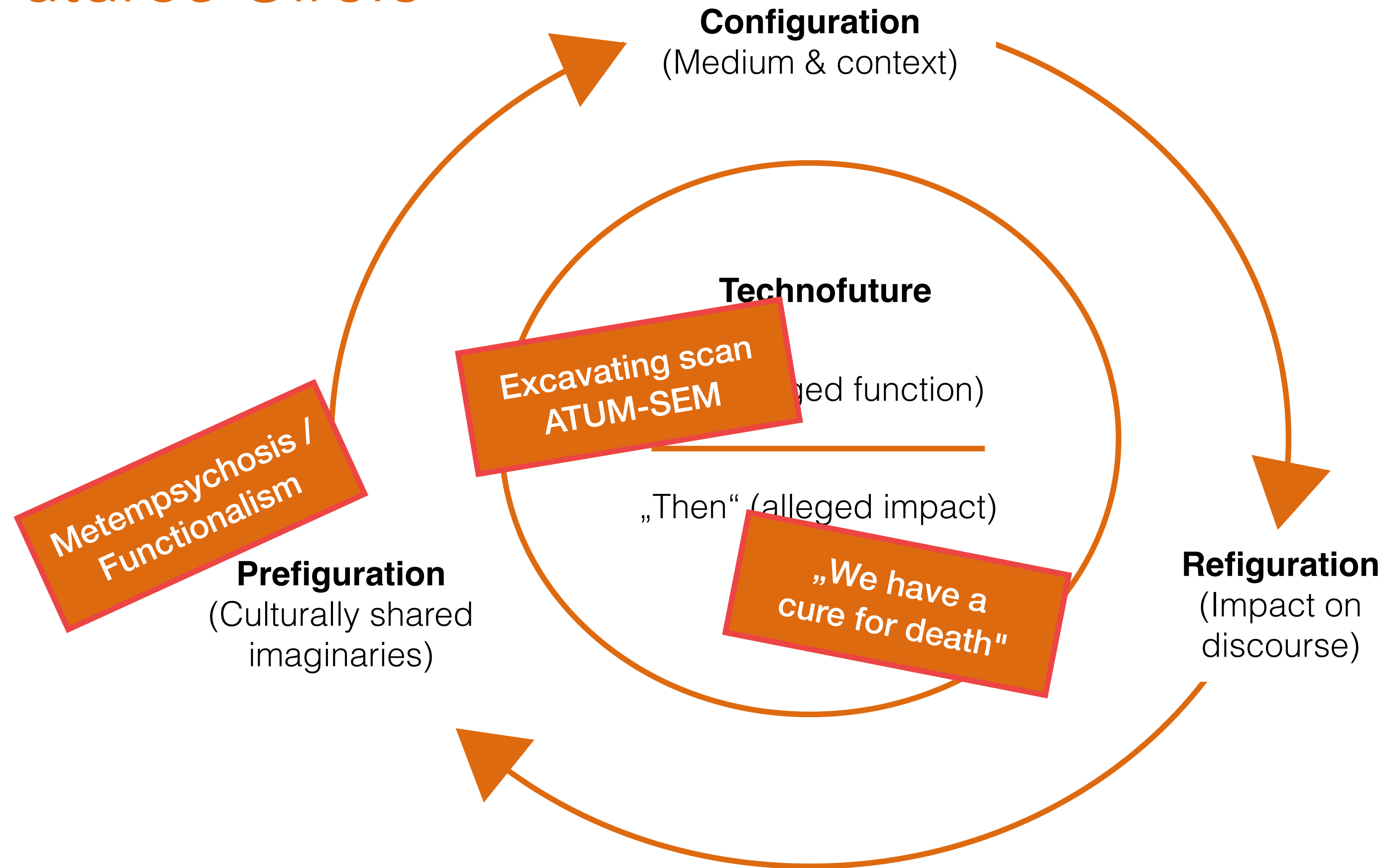
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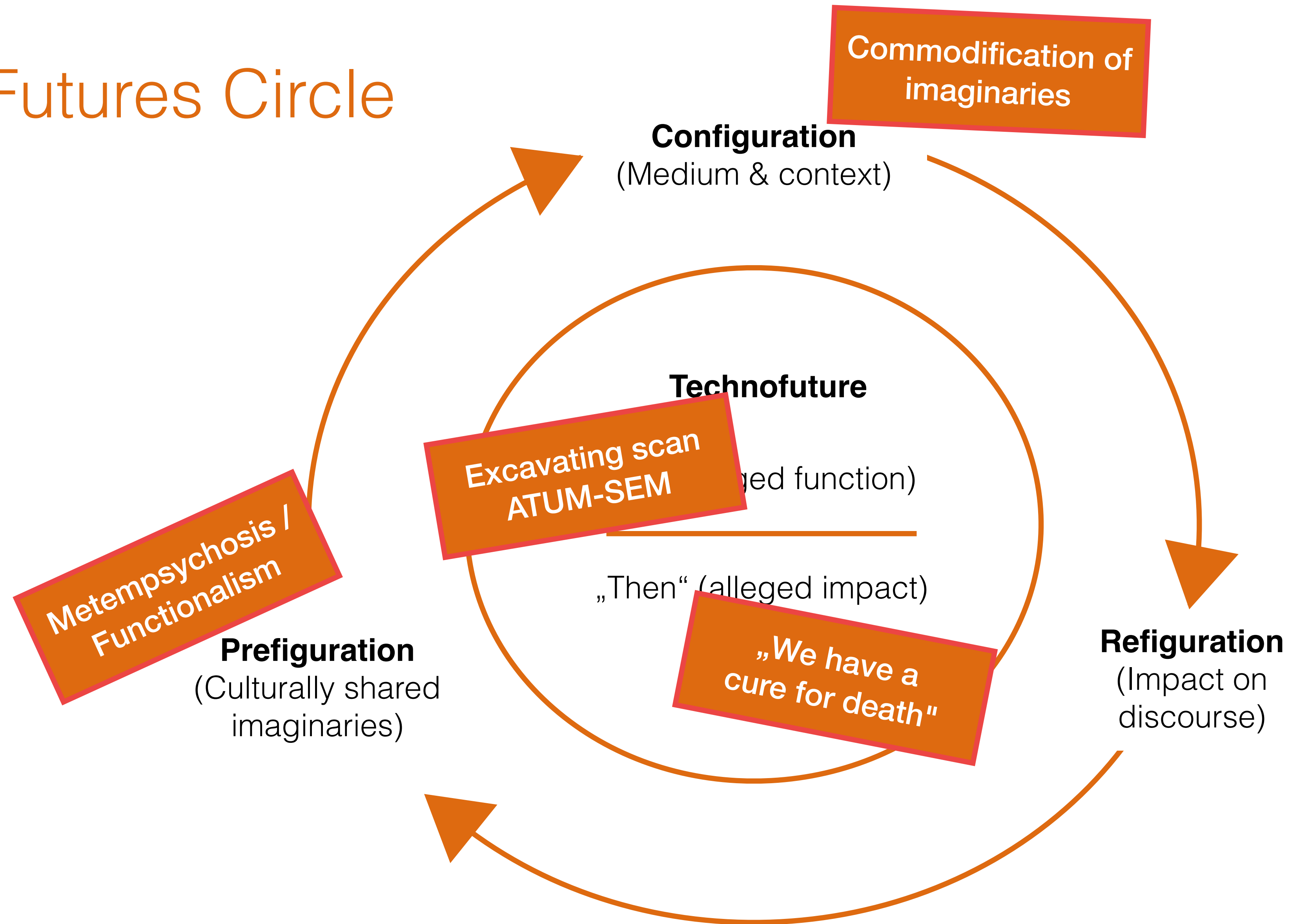
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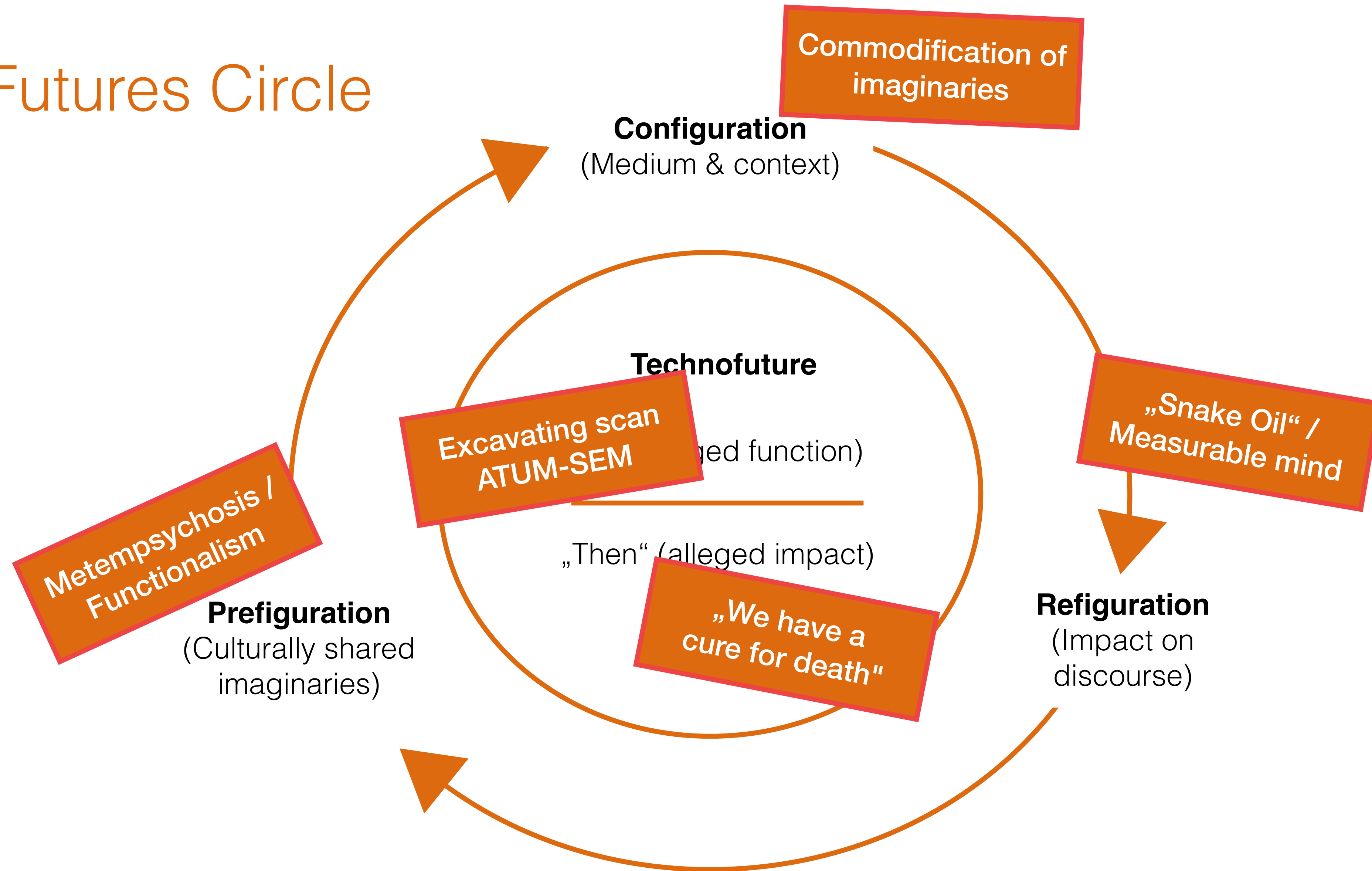
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Wrap Up and Take Away

- ▶ This approach ...
 - ▶ ... structures a hermeneutic technology assessment
 - ▶ (1) prefiguration, (2) configuration and (3) reconfiguration
 - ▶ ... reflects the preconceptions, the cultural context, the wishes and hopes - not the technology
 - ▶ ... helps to refute techno-hypes

Vielen Dank

- ▶ 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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