Virtual reality and the metaverse: ontology and ethics

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Virtual reality and the metaverse

- Single-user VR – usually offline

- Multi-user or shared VR
  - Immersive virtual environment: limited simulation
  - Immersive virtual world: massively multiplayer, persistent
  - Metaverse: network of interoperable virtual worlds with multiple functions (social, economic, gaming, work, etc.)

What is the metaverse?

The metaverse is a shared, persistent, multifunctional virtual world that is accessed through virtual reality, with a user base of millions

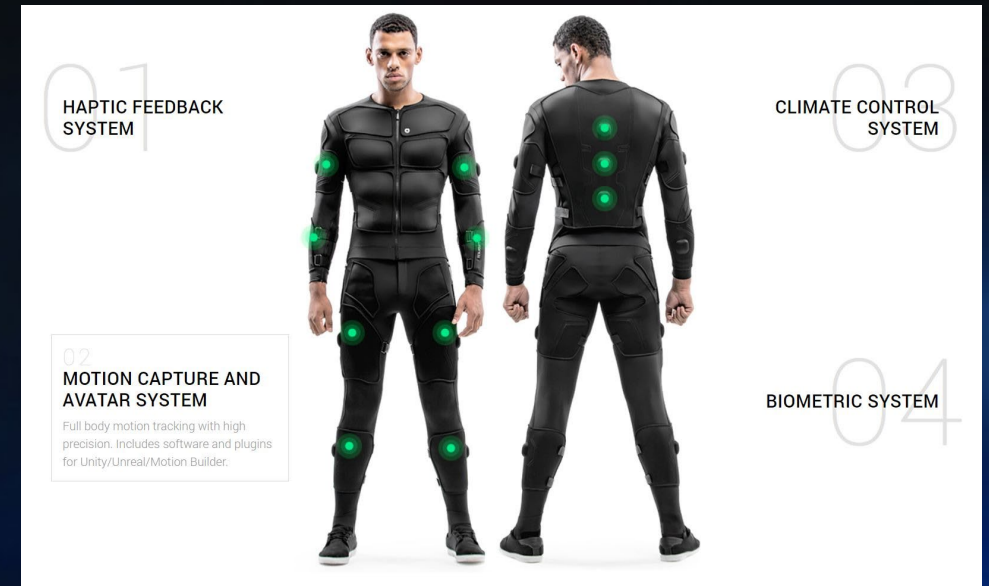Shared augmented reality can also be involved

It could consists of multiple interoperable virtual worlds

Stages of VR and the metaverse

Successive stages:

- Level 0 - Nonimmersive virtual worlds and environments

- Level 1 – The audiovisual metaverse

- Level 2 – The haptic metaverse

Stages of VR and the metaverse

- Level 3 – The pansensory metaverse
- Level 4 – The hyper-realistic metaverse

Prospects for VR and the metaverse

1. Popularity of VR among younger people

2. Popularity of proto-metaverses: Roblox, Second Life, Fortnite

3. Rapid advances, major technological barriers seem to be absent

4. Major investments - 10s of billions of euros (USA, China, others)

5. Big push for standards (Metaverse Standard Forum, IEEE)

Prospects for VR and the metaverse

6. Next step in human-computer interaction: progressively more natural interaction, from symbolic / hermeneutic to embodied: graphical user interface, mouse, touchscreen, GPS, sensors, acceloremeters, 3D and photorealistic graphics. VR/AR interaction as next step.

7. Next historical step in making people, places and goods available: transportation tech, electrical media, internet -> metaverse

Virtual ontology

Are entities in virtual reality and the metaverse real or not?

Three ontological stances

Virtual irrealism (or fictionalism): Everything in VR and the metaverse is fictional

Virtual realism (e.g., David Chalmers, Michael Heim): Everything in the metaverse is (or can be) real

Selective virtual realism (Brey): All entities in VR and the metaverse are real under some description, but the most relevant description is that of the entity that is simulated. The question is: is a simulated X also a real X? Selective virtual realism claims: sometimes yes, sometimes no.

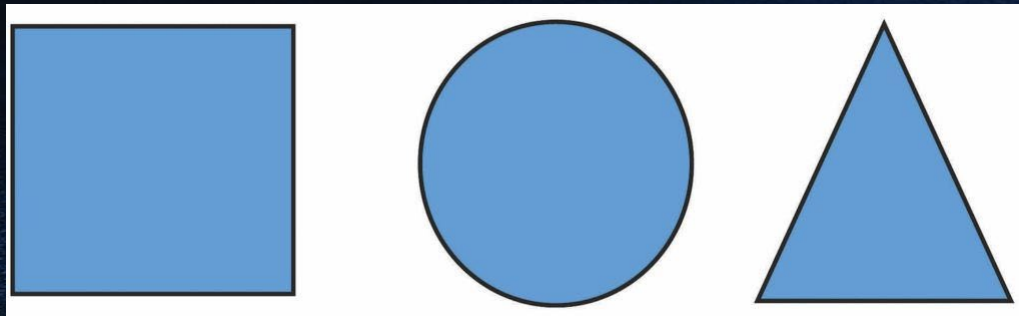E.g. a virtual apple is not a real apple but only a simulation

Virtual money is (or can be) real money

Perceptual objects
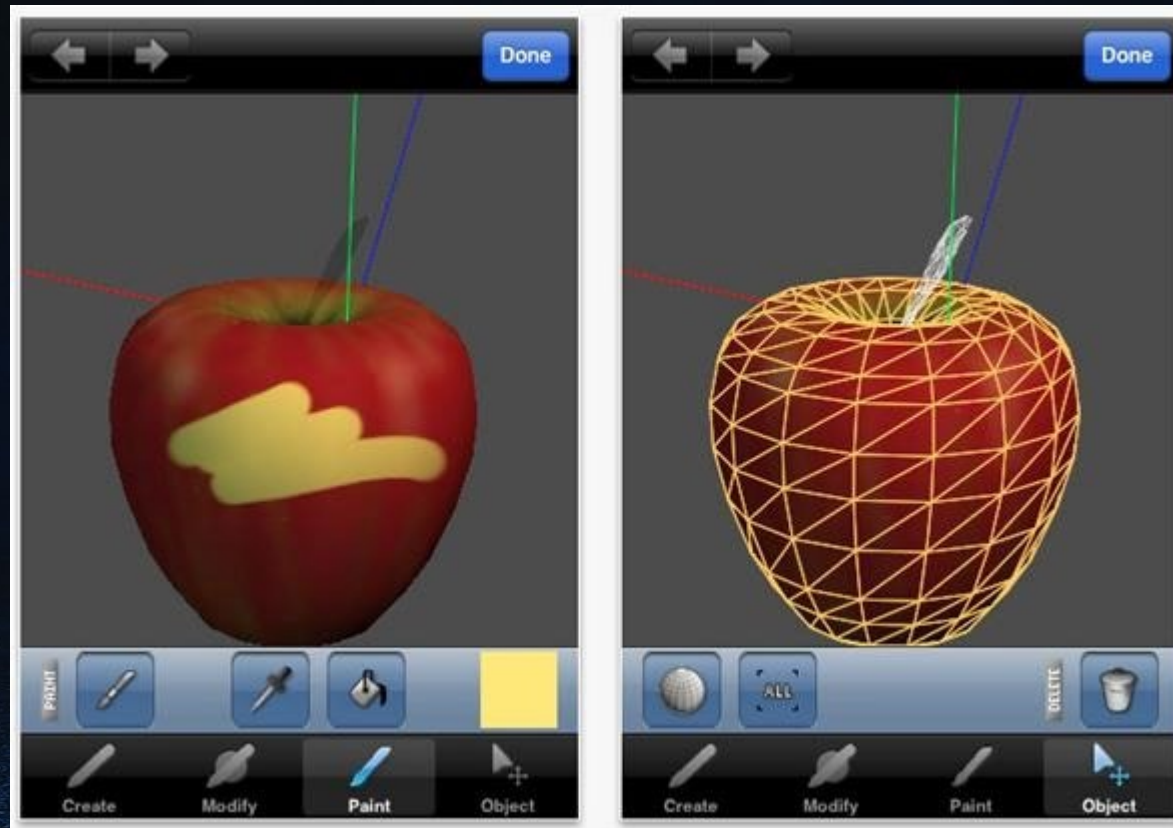
Perceptual objects are virtually realized digital objects

Not perceptions (subjective). Perceptual objects are objective.

Simple perceptual objects: shapes, patches of color, sounds, etc.
They are real. E.g., real patch of blue, real triangle.

Multisensory perceptual objects: cross-modal mapping of visual, auditory, tactile, kinesthetic perceptual objects

Multisensory perceptual objects are real simulated objects, but not real physical objects

Virtual beer: lack biochemical properties, cannot quench thirst, get one drunk

Complex perceptual objects can be real:

- digital photo is ontologically equivalent to visual photo
- digital words (spoken or written) can be real words

Most media can exist in the metaverse

Language and communication
can exist in the metaverse

Users are real (both mind and body – as mediated by avatar)

User actions and reactions that do not rely on the presence of physical objects are real.

E.g., making gestures, walking, working out, hugging another user, assaulting another user (with haptic suits). Depends on strength of mapping with avatar.
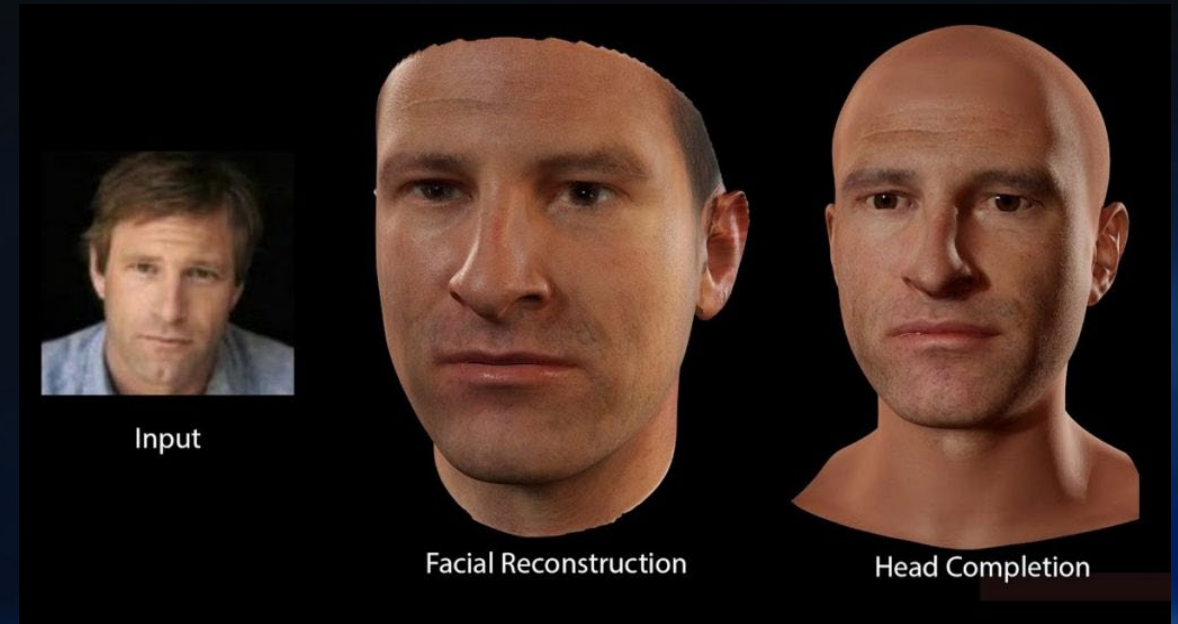
Reactions: being scared, reflecting, getting angry

Identification of avatars and users

Depends on:

-   Degree on embodiment and realism

-   Degree of control

-   Degree of self-identification and social identification

Institutional reality is often real

Institutional reality: things that are made real through collective assignment of a status.

E.g. money: we all agree that
pieces of paper with a certain shape
count as money

X counts as *Y* in context *C*
(John Searle, The Construction of Social Reality)

Institutional entities do not have to be physical if we agree that they do not have to be.

E.g. digital money

E.g. virtual wedding

WEDDING IN METAVERSE

Conclusion:

Many things, action and events in the metaverse are ontologically real and should be taken at face value

Other entities are mere simulations

REAL	UNREAL
Perceptual objects	Physical objects (natural kinds, functional kinds)
Media & communication	Media with a unique or physical identity (e.g., Mona Lisa, Gutenberg bible, oil painting)
Users	Non-user virtual personae (bots)
User behaviors (not defined over physical objects) and mental states	Physical actions and events
Institutional objects, actions and events	
(reality of some depends on collective assignment of status functions or collective interpretative acts or avatar mapping)	

The importance of virtual ontology for ethics

Ethical issues in the virtual domain are often unclear because of ontological uncertainty:

- Is virtual sexual assault real sexual assault?
- Is virtual theft of virtual objects real theft?
- Is discrimination in the metaverse real discrimination?
- Is virtual child porn real child porn

Which harms and wrongs can exist in the metaverse?

1. Infliction of harm

Physical harm to persons: Limited

Harm to property: Yes, digital and virtual properties and money

Psychological harm: Yes
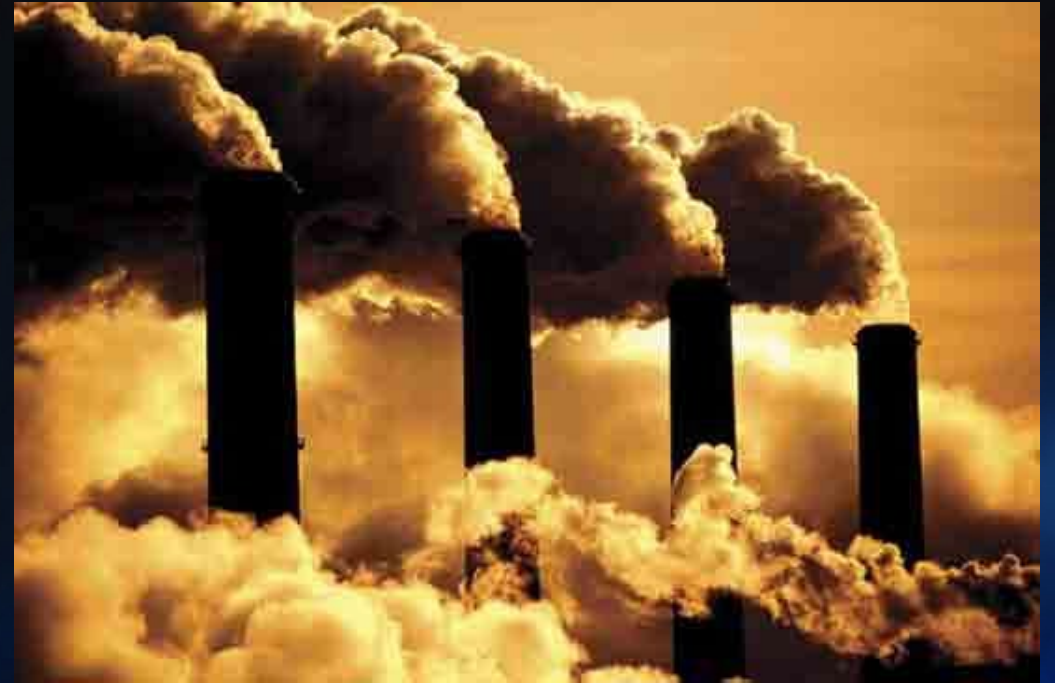
Sexual harm: Yes, with limitations

Reputational harm: Yes

Social harm: Yes

Psychological harm: Yes

Economic harm: Yes

Environmental harm: No, not in metaverse (but outside)

2. Violations of rights

Life:	No
Security of person:	Yes
Freedom:	Yes, most freedoms
Privacy:	Yes
Equality :	Yes
Property:	Yes

3. Other wrongs

Justice   Yes

Ethical issues in the metaverse

Security - Not just cybersecurity but security of persons and virtual and digital property:

(sexual) assault, (sexual) harassment, human trafficking, robbery, extortion, damage to virtual property, etc.

Ethical issues in the metaverse

Privacy – Not just information and communication privacy, but also bodily privacy, behavioral privacy, mental privacy, associational privacy. New, very invasive forms of profiling and tracking, virtual product placement, ChatGPT-powered bots who collect your data and then persuade you.

Ethical issues in the metaverse

Liberty – New forms of censorship (oral speech, nonverbal speech, 3D content creation), freedom of movement/assembly, new types of nudges/dark patterns, physical restraints, personalized realities

Equity, Fairness, Inclusion – New access barriers (economic, educational, persons with disabilities), different types of user bias, user-on-user discrimination

Ethical issues in the metaverse

Well-being – Risk of negative implications for mental health, metaverse addiction, displacement of offline with online personal relationships, including friend bots, love bots and sex bots

Conclusion

- Selective realism: the following objects, action and events in VR and the metaverse are ontologically real:

    - perceptual objects
    - media & communication
    - users and many of their behaviors, utterances and mental states
    - institutional entities and events

Conclusion

- Ethical issues in VR and the metaverse need to be defined over ontologically real entities that have a real impact on human beings

- Virtual ethics: physical harm is largely absent in VR and the metaverse, but there are serious risks of nonphysical harms, rights violations, and injustices