

Contextual Dynamics

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How did you get here?



How did you get here?

this talk

breakfast

Dartmouth green

hotel



How did you get here?

MIND 2018

what's for lunch?

what's for breakfast?

this talk

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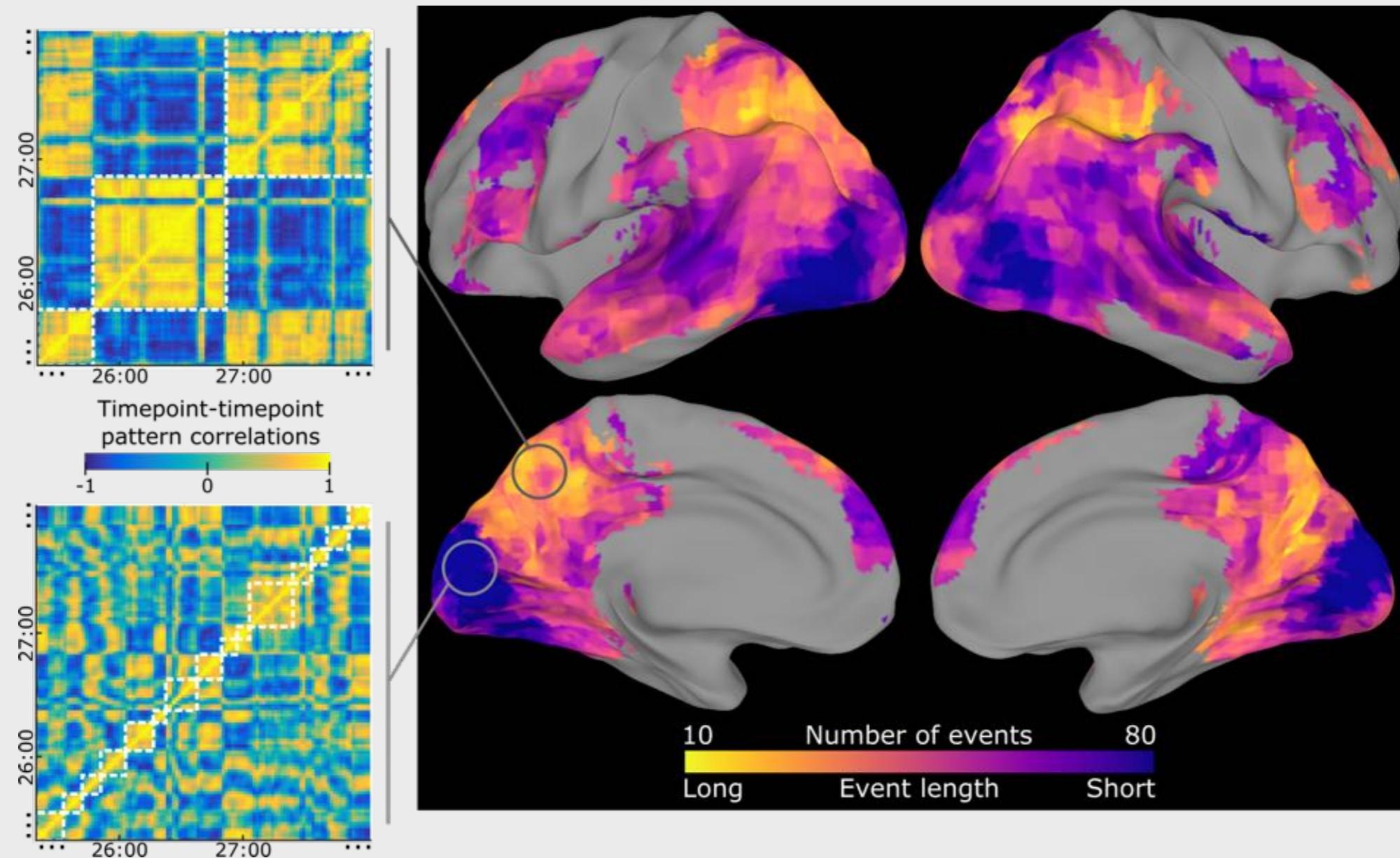
breakfast

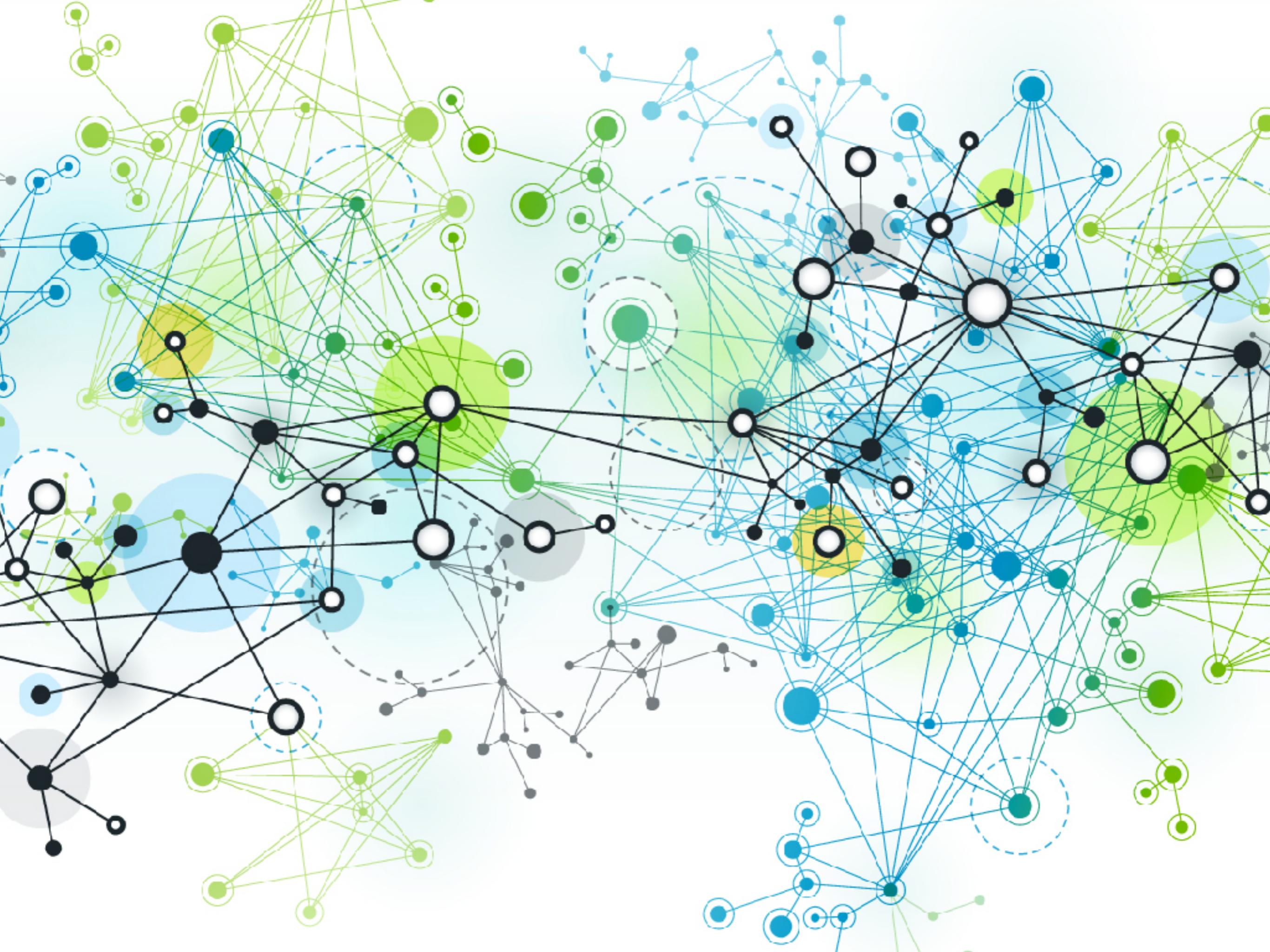
Dartmouth green

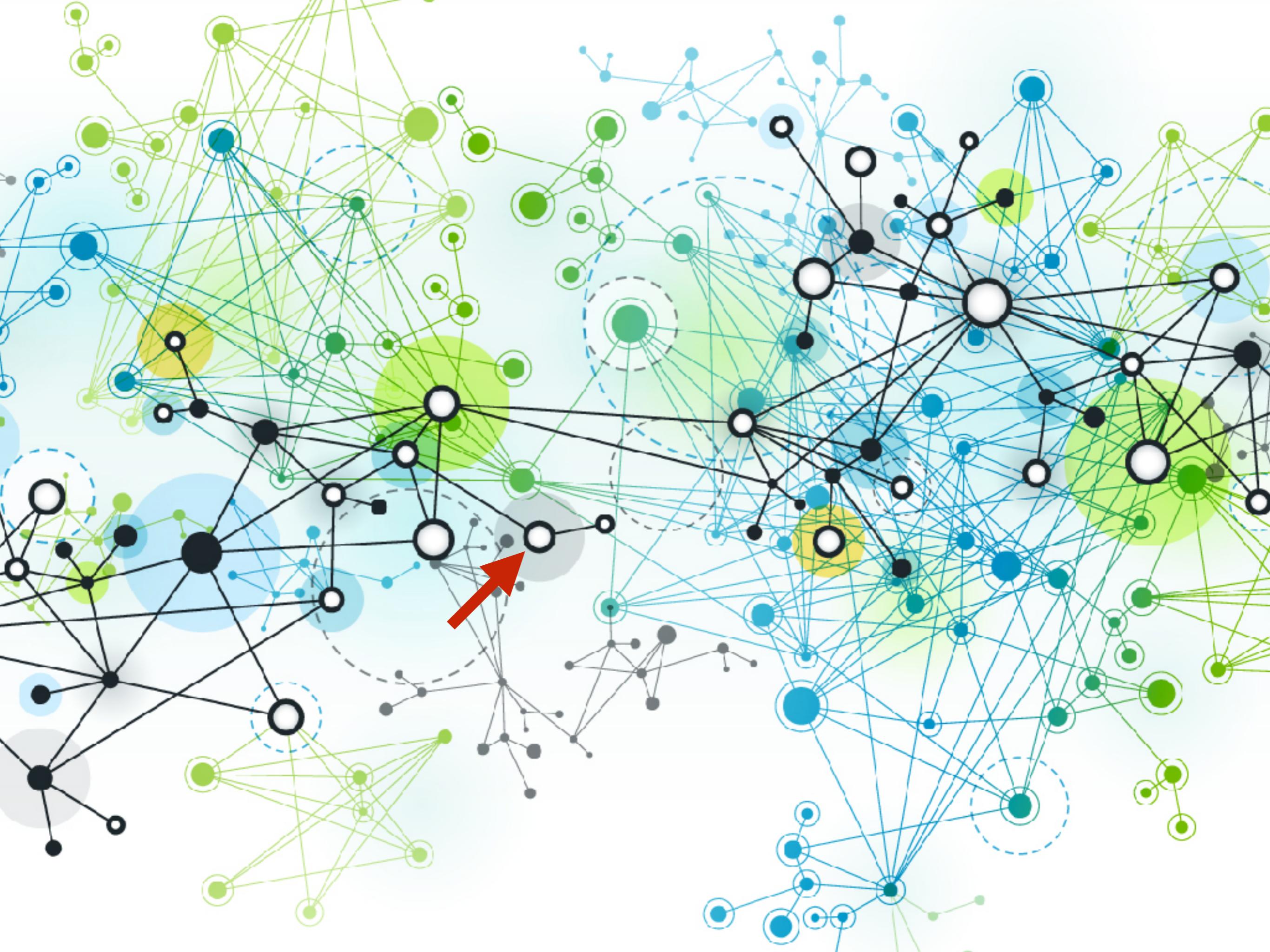
hotel



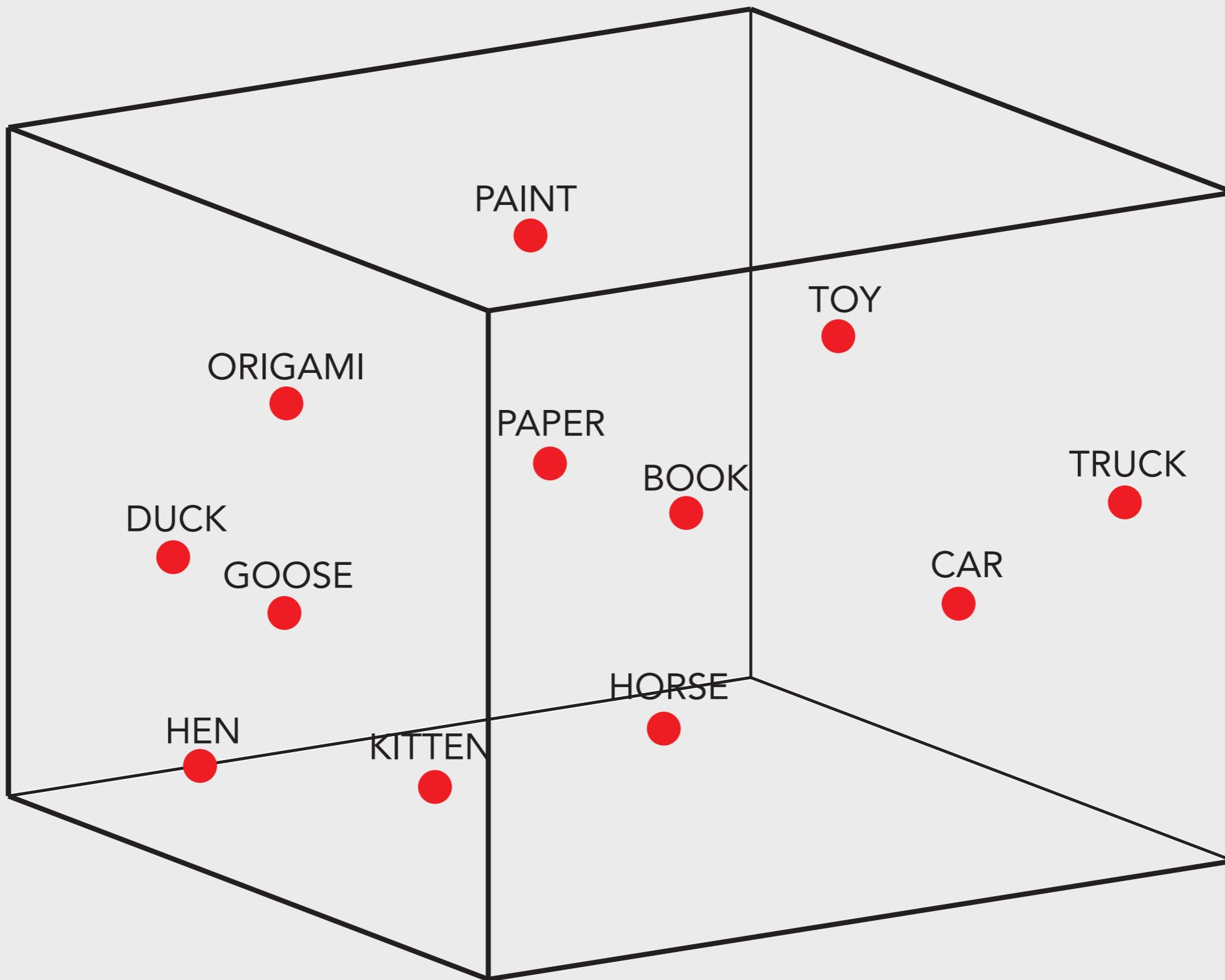
Our brains are sensitive to this structure



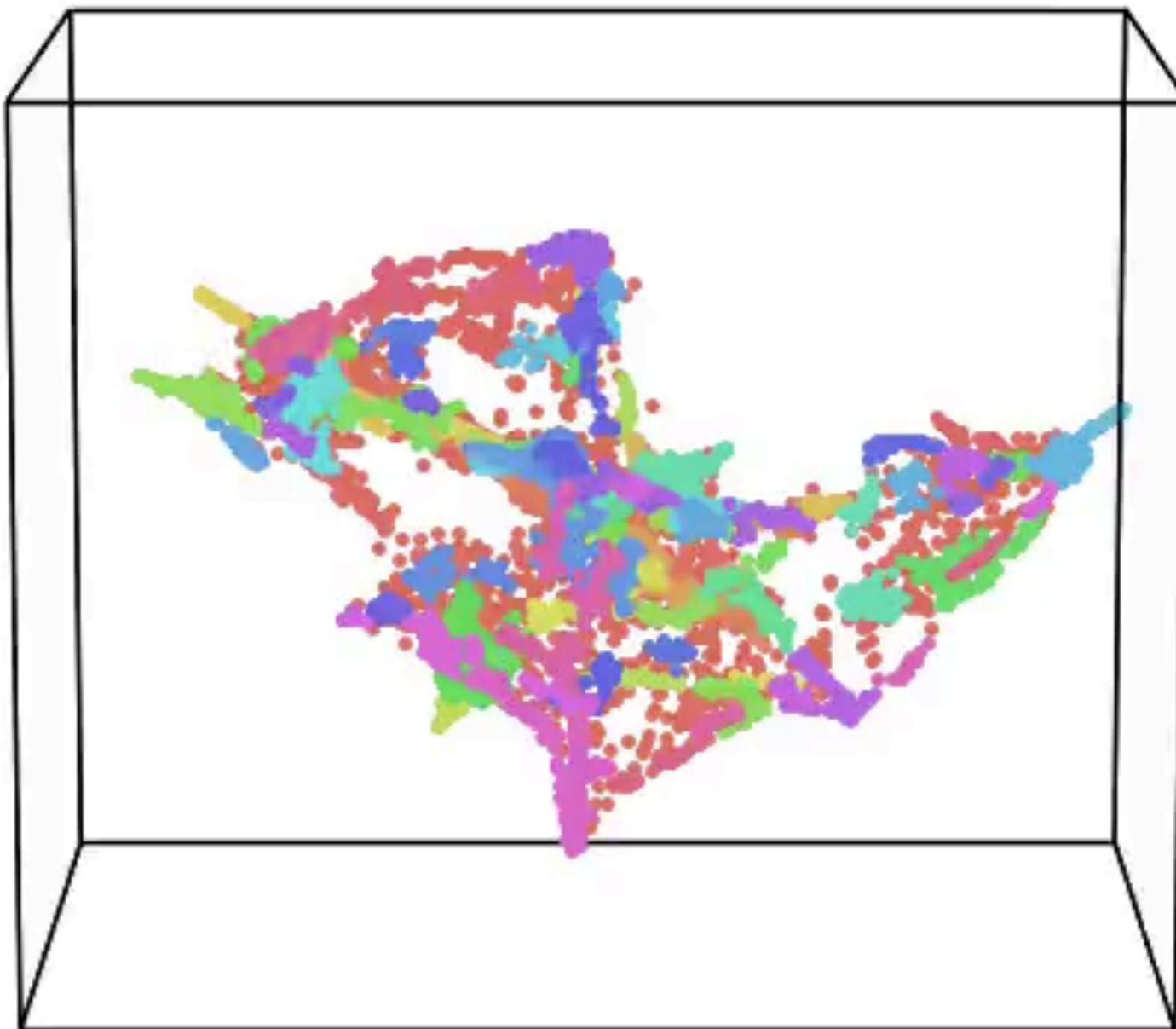




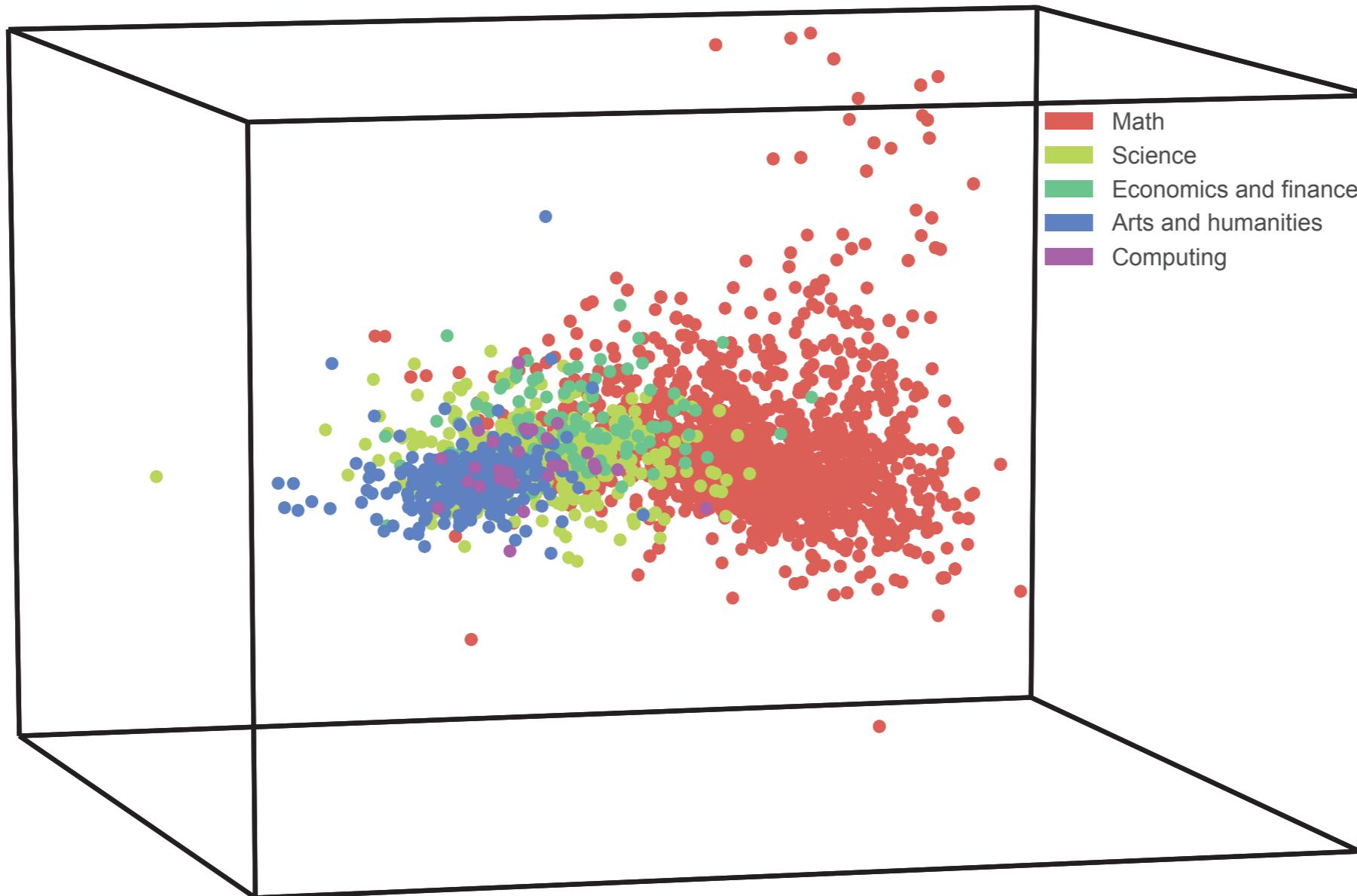
Thought space



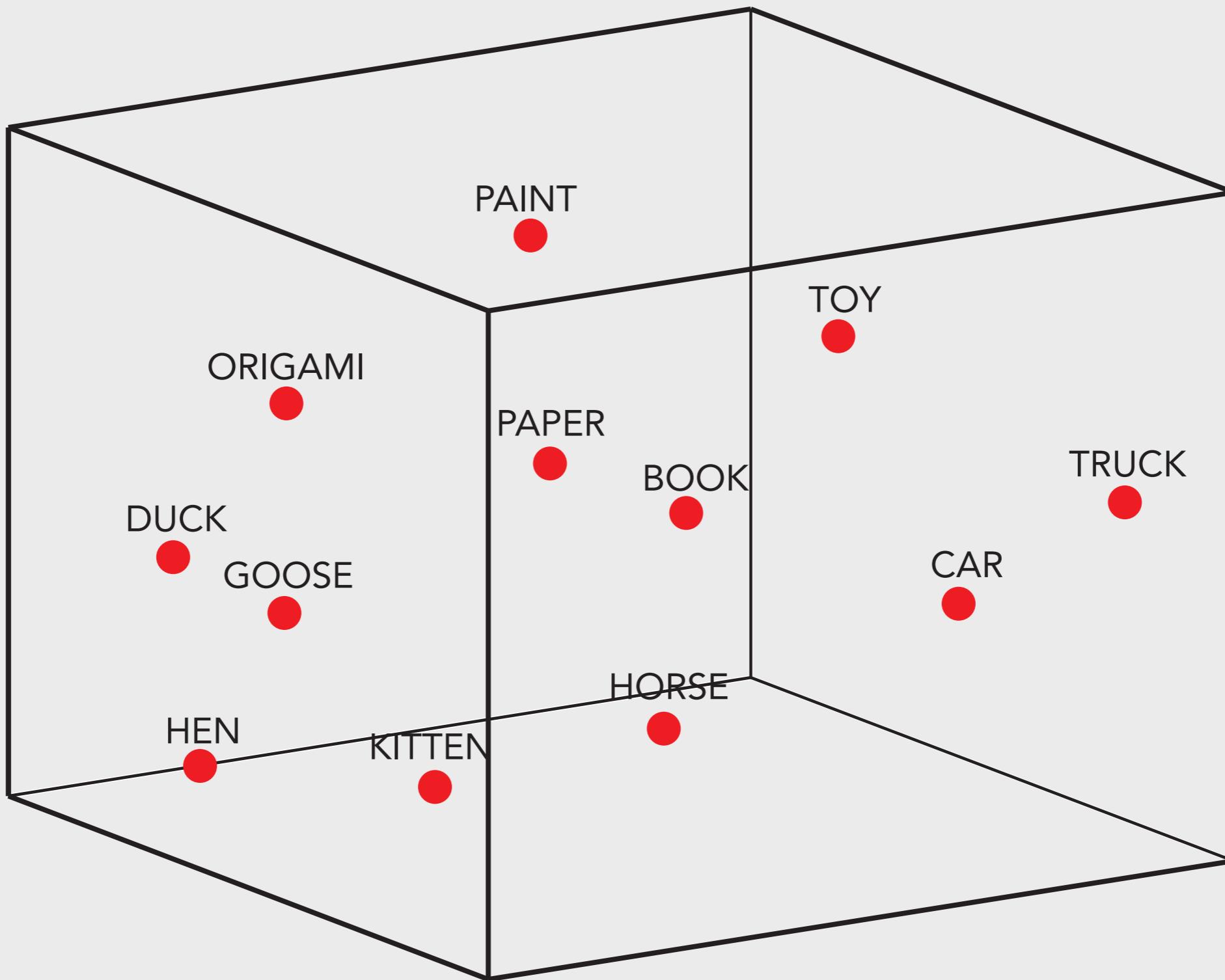
The geometry of human knowledge: research articles



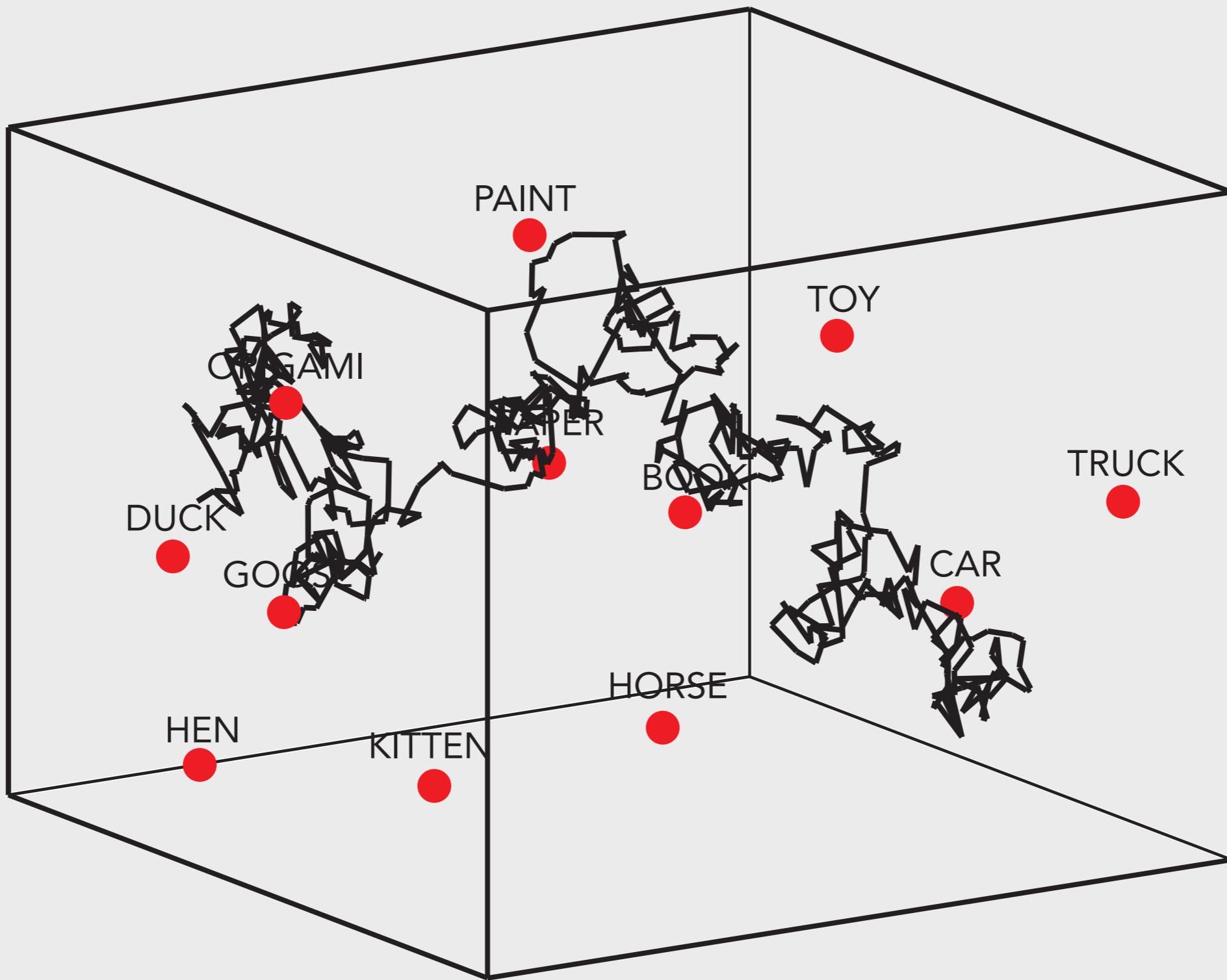
The geometry of human knowledge: online courses



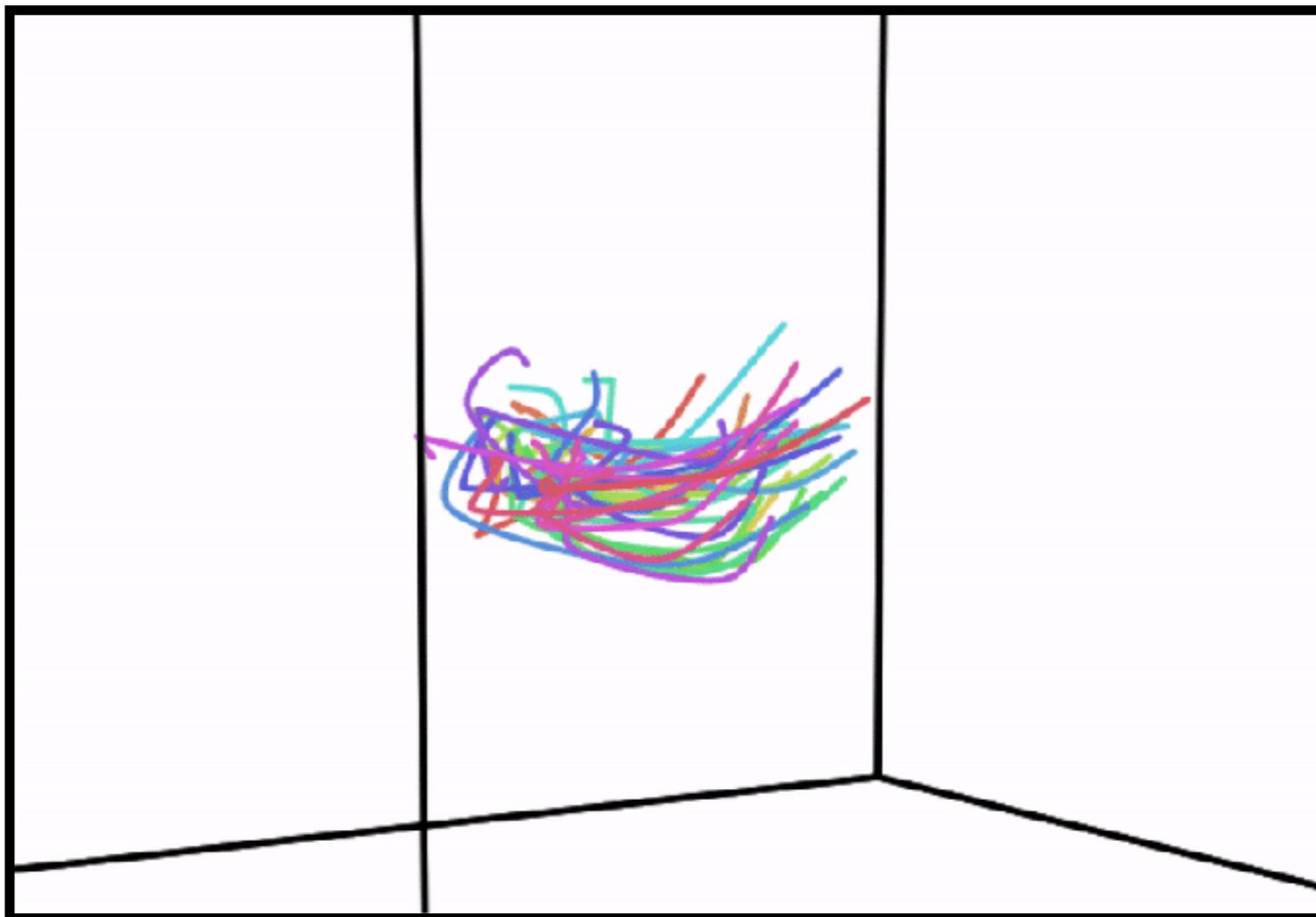
Thought space



Thought trajectory

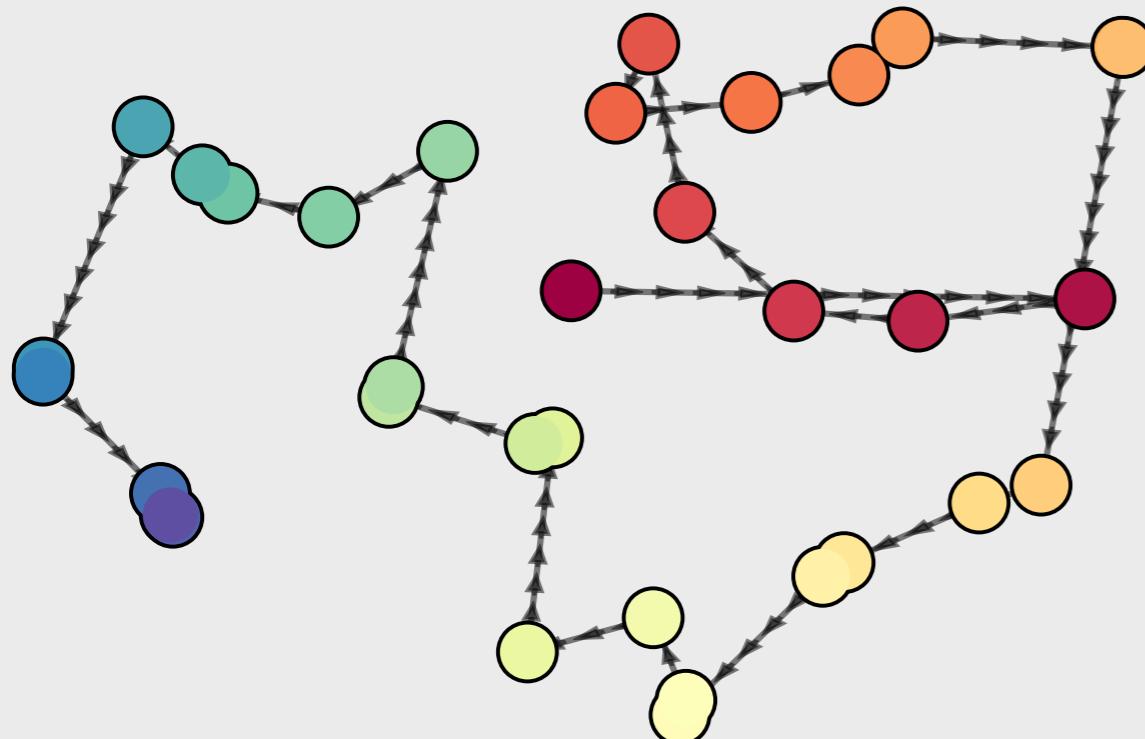


Thought trajectories during story listening

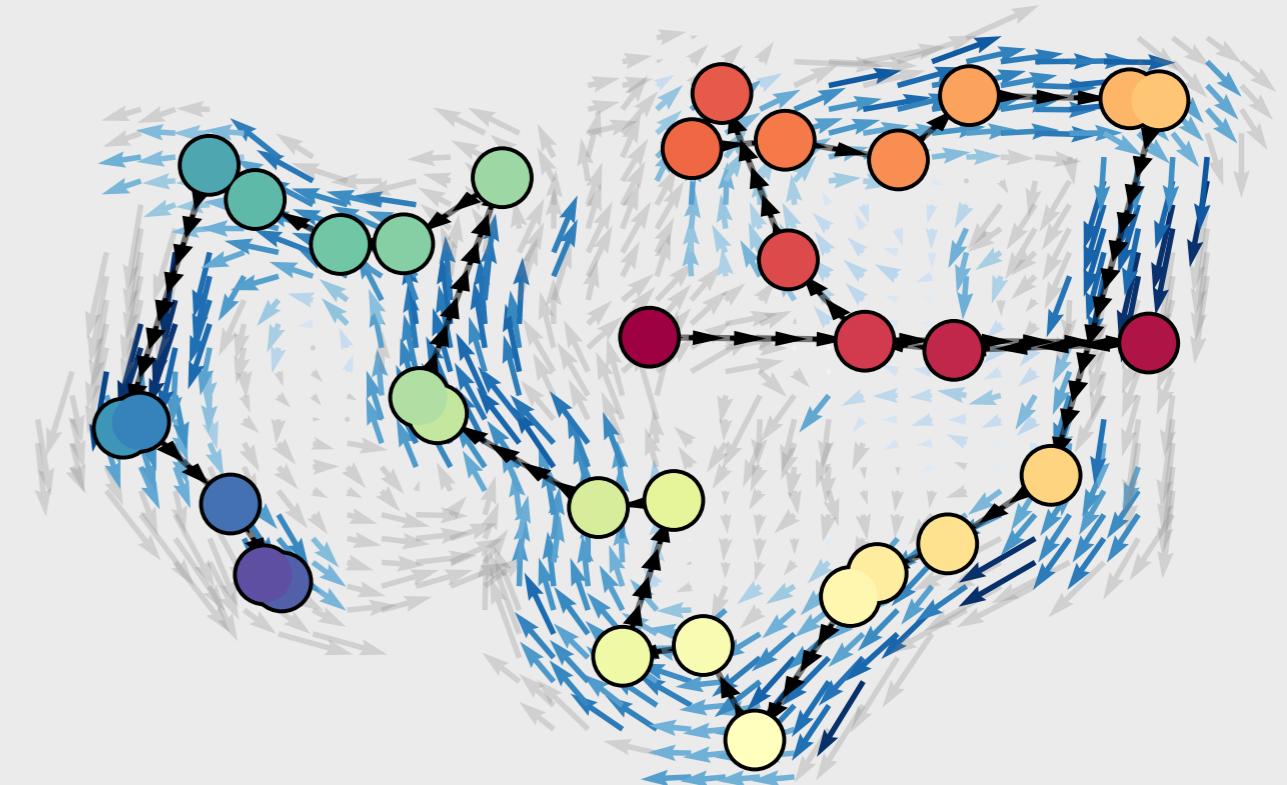


Thought trajectories while watching and recounting a movie

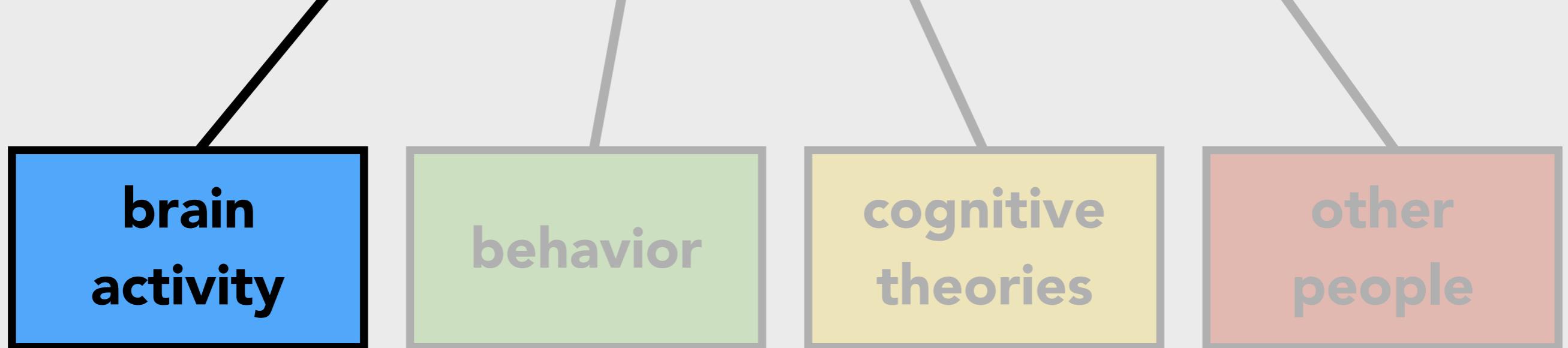
Video trajectory



Recall trajectory



**thoughts during
an experiment**



**thoughts during
an experiment**

**brain
activity**

behavior

**cognitive
theories**

**other
people**

**thoughts during
an experiment**

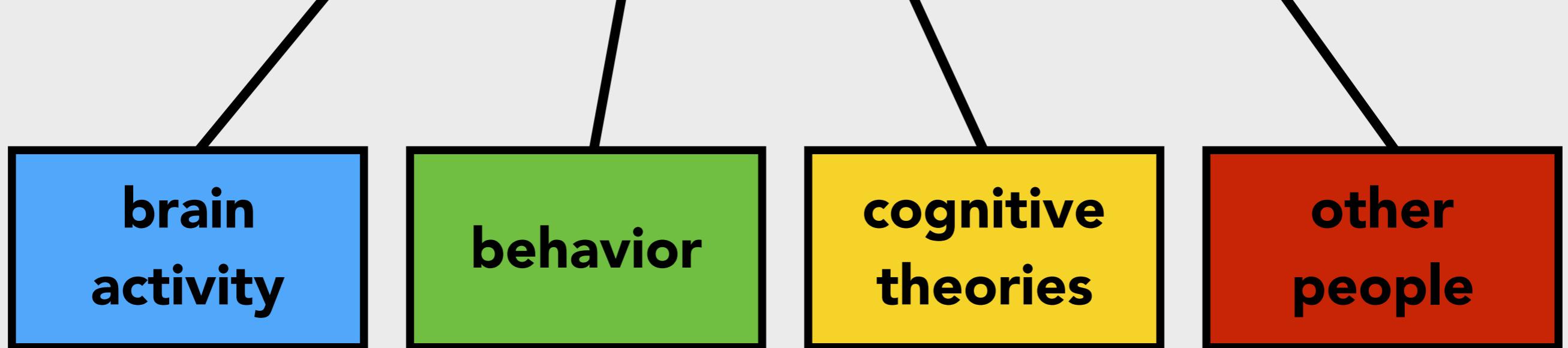
**brain
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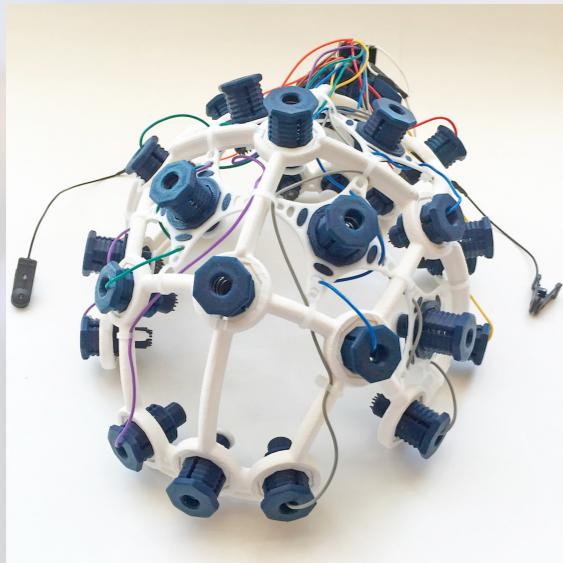


Optimizing learning

- Build models of how people learn
- Improve the models as people interact with our experiments
- Continually adjust the experiment using the current best model

Optimizing learning

OpenBCI headset



Raspberry Pi



Touchscreen



Brain models

- **Topographic Factor Analysis**: identify “hubs” in brain networks
- **TimeCorr**: measure dynamic connectivity patterns [invite-only BETA]
- **SuperEEG**: infer what every piece of brain is doing from a small number of measurements

Other tools

- **HyperTools**: plot and wrangle high-dimensional data, fit semantic models to text data
- **Quail**: analyze and plot memory dynamics data, speech-to-text
- And more...

The Contextual Dynamics Lab

www.context-lab.com



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