

The fusion view of mental combination (and how IIT can help)

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Analysis of mind vs. analysis of matter

- Russell in *Analysis of Mind* (1921)
 - Physical objects are logical constructions out of sense-data
 - Sense-data = what we usually think of as appearances to human consciousness (but neutral not mental)
 - Resembles phenomenalism
- Russell in *Analysis of Matter* (1927)
 - Physical objects are relations between relata with no known intrinsic properties
 - Mental properties (“percepts”) are intrinsic and the only intrinsic properties we know.
 - All physical relata may be mental or protomental
 - Suggests dual-aspect monism (now known as Russellian monism)

Overview

- Russellian (=dual-aspect) monism offers solution to the mind/body-problem
 - Avoids main problems of physic(S)alism and dualism (Strawson 2006, Alter/Nagasawa 2012, Chalmers 2013)
- Main objection: the combination problem
 - Constitutive account inherits main problem of physicalism
 - Emergent account inherits main problem of dualism
- The fusion view
 - Emergent account that avoids problems of standard version
- Main problem for the fusion view + possible solution in terms of the Integrated Information Theory (IIT) (Tononi)

Russellian monism

- Physical properties are all structural (relational, dispositional).
- Structure requires intrinsic realizers
- Phenomenal (i.e., conscious) properties are intrinsic (categorical)
- Therefore, (proto)phenomenal properties could be the intrinsic realizer of all physical structure
 - I will focus on Russellian panpsychism rather than panprotopsychism

Russellian monism and the mind/body-problem

- Main problem of physicalism
 - The epistemic gap (i.e., knowledge, conceivability + explanatory gap)
- Main problems of dualism
 - Causal exclusion of consciousness (given physical causal closure)
 - Conservation (no radical emergence)
 - No creation of new stuff/being *ex nihilo* (Parmenides, Aristotle)
 - Dualist emergentism: consciousness is created *ex nihilo* (Strawson 2006, Nagel 1979)

Russellian monism and the mind/body-problem

- Russellian monism
 - Compatible with the epistemic gap
 - Consciousness is not realized/constituted by the physical; rather the other way around
 - Offers consciousness an explanatory role (compatible with physical causal closure)
 - Realizes physical causes, rather than interacting with them
 - Consciousness does not emerge *ex nihilo*
 - Constructed out of more basic consciousness

The combination problem

- How does macroconsciousness arise from putting simple microconsciousness together in the right way?
- Constitutive panpsychism
 - Macroconsciousness is constituted by microconsciousness
- Problem:
 - Epistemic gap from microconsciousness to macroconsciousness
 - Panpsychist zombies, panpsychist Mary...

The combination problem

- Emergent panpsychism
 - Macroconsciousness is causally produced by microconsciousness
- Problem:
 - Macroconsciousness would be causally excluded by microconsciousness
 - Physical microstructure is already realized by microconsciousness
 - No physical macrostructure distinct from microstructure
 - Therefore, no physical structure for macroconsciousness to realize
 - Macroconsciousness would arise *ex nihilo*, break conservation

Best option for constitutive panpsychism

- Phenomenal bonding (Goff, Roelofs)
 - Relations have their own intrinsic nature
 - There is some physical relation whose intrinsic nature is co-consciousness
 - No epistemic gap from microphenomenal properties standing in relations with this intrinsic nature to combined consciousness
- Problem: which physical relation?
 - No fundamental physical relation exclusively connecting particles in the brain
 - Goff: the spatial relation is the phenomenal bonding relation
 - Implies universal combination: every thinkable object, including arbitrary sums, have combined (unified) consciousness
 - Seems very implausible!

Best option for emergent panpsychism

- The fusion view
 - Sprigge 1983, Seager 2010, 2016, Mørch 2014, 2018, 2020
 - When micro-conscious particles come together in particular ways, their experiences fuse or blend into a single macro-experience
 - The particles lose their individual consciousness
 - After fusion, only the whole is conscious
 - Happens according to a fundamental law (or power) – a causal process

Avoids problems of standard emergent panpsychism

- Exclusion problem
 - Macroconsciousness excluded as realizer by microconsciousness
- Fusion view
 - Macroconsciousness replaces microconsciousness; cannot be explanatorily excluded by it
 - Can rather take over their explanatory role as realizer of microphysical properties.
- Conservation problem
 - Macroconsciousness would emerge *ex nihilo*, break conservation
- Fusion view
 - Microconsciousness is transformed into macroconsciousness—no new stuff

Problem: No physical fusion in the brain

- Particles in the brain don't fuse and lose their identity
- According to mainstream physics, particles inside and outside the brain behave the same – have the same structure.
 - No irreducible laws of biology, chemistry, etc.
 - No quantum entanglement confined to the brain
- According to the fusion view, particles inside and outside the brain have different realizers.
 - Part of fusion vs. unfused microexperience
- Shouldn't new realizers result in new structure?

Possible response: Integrated Information Theory

- Integrated Information theory (IIT):
 - One of the leading theories of neuroscience
- Consciousness is correlated with maximal integrated information (*max phi*)
 - Information
 - To causally constrain its own past and future state
 - Integration:
 - To constrain past/future states by virtue of interconnectivity of one's parts
 - Maximality:
 - To have more integrated information than any overlapping system

IIT and the fusion view

- Even subatomic particles have some *phi*, therefore some consciousness
 - Unless they are parts of larger systems with higher *phi*
- Maximality requirement → no overlap; macroconsciousness replaces previous microconsciousness
 - Panpsychism + fusion
- But:
 - Particles follow same physical laws on nature inside max *phi* systems as outside
 - No new structure

IIT and phenomenal bonding?

- IIT identifies phenomenal bonding relation that avoids universal combination
 - Co-consciousness can be the intrinsic nature of max *phi* causal relations
 - Gives non-universal, non-overlapping combination
- Problem:
 - Why does the intrinsic nature of causal relations change into co-consciousness when they become part of max *phi* systems?
 - Would be a kind of strong emergence
 - Transformative (rather than additive) emergence of new intrinsic nature – more like the fusion view
 - Co-consciousness not excluded as realizer of causal relations
 - But why does transformation occur?

Speculative idea

- Consciousness comes in unities – just like energy comes in quanta, or water comes in droplets (that need a surface)
- Maybe max *phi* causal relations somehow form “paths of least resistance” or outline “maximal surface tension” for conscious unity/co-consciousness
- These paths/lines have to go somewhere – might as well sometimes be at macrolevel
 - No less natural than paths always being located at basic level (delineating fundamental micro-entities)
- Max *phi* relations hold between entities that interact more strongly with each other than anything else – maybe “easier” for co-consciousness to go where the strongest interaction is.

Summary

- Russellian (dual-aspect) monism avoids problems of physicalism and dualism (+accounts for intrinsic nature of the physical) but faces the combination problem.
- The fusion view
 - Combined consciousness strongly emerges, replaces base
 - Avoids problems of standard emergent panpsychism
 - Exclusion + conservation
- Problem
 - No physical fusion in the brain
- Fusion and IIT
 - Fusion happens in systems connected by max *phi* (or other maximal) relations
 - Max *phi* (or other maximal) relations form “path of least resistance” for unity of consciousness