

# BRAIN AND MIND: REFLECTIONS BY A SCIENTIFIC REALIST

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# REFERENCES

- *Maailma, minä ja kulttuuri* (1990)
- "Scientific Realism and the Problem of Consciousness", in Revonsuo and Kamppinen (eds.), *Consciousness in Philosophy and Cognitive Neuroscience* (1994)
- *Critical Scientific Realism* (1999)
- "World 3: A Critical Defence", in *Karl Popper, A Centennial Assessment* (2006)

# SCIENTIFIC REALISM (I)

- ONTOLOGICAL
  - at least part of reality is ontologically independent of human minds
  - vs. subjective idealism, phenomenism, solipsism, social constructivism
- SEMANTICAL
  - truth is a semantical relation of correspondence between language and reality
  - vs. pragmatism, relativism, anti-realism, internal realism

# SCIENTIFIC REALISM (II)

- THEORETICAL
  - all scientific statements have a truth value
  - vs. positivism, descriptive empiricism, instrumentalism
  - vs. entity realism (existence claims)
  - vs. structural realism (theoretical laws)
- METHODOLOGICAL
  - truth is an essential aim of science
  - vs. constructive empiricism, axiological anti-realism

# SCIENTIFIC REALISM (III)

- **EPISTEMOLOGICAL**
  - it is possible to have knowledge about mind-independent reality
  - scientific inquiry is the best indicator of truth
  - vs. Kantianism, scepticism
- **CULTURAL**
  - science as a public institution has cultural value
  - scientific world view
  - vs. anti-science movements

# CRITICAL REALISM

- CONCEPTUAL PLURALISM: all inquiry is relative to some conceptual framework (KANT), but these frameworks can be revised and enriched
  - vs. myth of the given (SELLARS), metaphysical realism (PUTNAM),
- FALLIBILISM: all human knowledge is uncertain or corrigible (PEIRCE), the best results of science may be false, but they may nevertheless be probable, truthlike or approximately true
  - vs. naive realism

# POPPER: THREE WORLDS

- WORLD 1: physical entities, processes, matter, things, nature
- WORLD 2: subjective mental states and events, human mind, consciousness
- WORLD 3: abstract entities, languages, concepts, propositions, mathematical objects, public artefacts, cultural objects, social institutions

# PROBLEM

- scientific realists are typically ontological and epistemological realists about World 1, but they have different views about World 2 and World 3
- how could one be a realist about human mind or consciousness?



# COMMON SENSE vs. SCIENCE

- science confirms and explains many common sense or everyday views but may also correct or reject them
- naked observation and inductive generalizations
- BACON: idols, false preconceptions
- SELLARS: *scientia mensura*: the manifest image is epistemologically prior, but the scientific image is ontologically prior

# FOLK PHYSICS

- the world consists of ordinary physical objects (stones, trees, animals) which obey causal laws
- against naive realism: optical illusions, appearance vs. reality
- Copernican astronomy
- Galileo's and Newton's principle of continuity: forces needed to change location vs. to change motion
- observational Euclidean geometry replaced by non-Euclidean physical geometry, still approximately true

# FOLK PSYCHOLOGY

- living organisms: plants, animals
- man is the highest of the animals
- material body, senses
- mind, psyche: feelings (pain, pleasure), emotions (love, hate), volitions (desires, wants), thoughts (imagination, beliefs, memories)
- self-awareness (introspection)
- agent causality, free will

# MYTHS, RELIGION

- nature personalized
- Gods, angels, demons, witches, brownies
- man as the image of God
- Paradise, Golden Age
- Heaven, Hell
- Divine providence, eschatology
- immortal soul, reincarnation, resurrection

# EDUCATED COMMON SENSE

- LINNÉ: *Homo sapiens* as an animal species, primates
- DARWIN: human evolution from more primitive forms of life
- FREUD: subconsciousness, drives
- symbolic language and self-consciousness as marks of humanity (KAILA, cf. zoosemiotics)

# METAPHYSICS

- materialism, physicalism
  - everything belongs, or is reducible, to World 1
- subjective idealism
  - everything belongs, or is reducible, to World 2
- objective idealism
  - the ultimate reality is in World 3
  - PLATO's forms, God, HEGEL's objective spirit
- dualism (1&2, 1&3), trialism

# CARTESIAN BACKGROUND

- substance dualism: extensive matter, thinking mind
- transparency of the mind, external world
- interactionism: causal influences via the pineal gland
- mechanistic materialism: mind as a machine
- parallelism: two causally independent series
- panpsychism: matter contains mind-stuff
- epiphenomenalism: mind a causal product of the brain without causal powers

# PHILOSOPHY OF MIND

- C. D. BROAD: *The Mind and Its Place in Nature* (1925)
- materialism
  - radical, pure, eliminative: all is matter, mental terms do not refer to anything
  - reductive: mental phenomena reduced to physical things and processes
  - emergent: material complexes have new emergent properties
- idealism
  - radical, reductive, emergent



# IGNORAMUS THESIS

- DU BOIS-REYMOND: *ignoramus*, unsolvable riddle
- RORTY 1980: pseudo-problems created by Descartes
- scientific psychology, neuroscience, cognitive science
  - the same traditional issues arise in new forms, basic philosophical positions repeated

# EMPIRICIST PSYCHOLOGY

- WUNDT: experimental psychology
- criticism of vitalism
- empiricism, positivism: MACH's phenomenalism, world consists of sensations and their complexes, CARNAP's *Aufbau* 1928
- JAMES: introspective psychology, stream of consciousness

# BEHAVIORISM, PHYSICALISM

- behaviorism: external observation of bodily movements, no view inside the black box
- empiricist physicalism, CARNAP's 1931 logical behaviorism, translation of mental terms to bodily states and dispositions, no introspection
- instrumentalism as an alternative (RYLE, DENNETT): mental terms without interpretation

# REALISM IN PSYCHOLOGY

- Gestalt psychology
- cognitive processes, PIAGET, VYGOTSKI
- CHOMSKY's criticism of SKINNER 1959
  - competence, innateness hypothesis
- scientific realism: legitimate to postulate explanatory entities behind observable phenomena
- theory theory: children's realization that other persons have minds

# STRONG REALISM

- EDDINGTON: two tables
  - an observable solid wooden artefact
  - complex of unobservable subatomic particles and fields of force
- radical eliminative realists (SELLARS)
  - only the scientific objects are real
- modest realists, multi-level reality (BROAD, POPPER)
  - manifest objects are real as systems of scientific objects

# ELIMINATIVE MATERIALISM

- RORTY, STICH, CHURCHLAND
- folk psychology radically false
- terms like "belief", "desire", "pain"  
disappear from matured neuroscience
  
- but: elimination should operate also for  
advanced theories of scientific psychology

# REDUCTIONISM

- type identity theory (FEIGL, SMART)
  - mental states type-identical to brain states, like water = H<sub>2</sub>O
  - problem of localization: holism, multiple realizability
- supervenience (KIM)
  - mental depends on physical: no changes in mental level without changes in physical level, compatible with dualist parallelism

# FUNCTIONALISM

- functionalism (PUTNAM, DAVIDSON, FODOR)
  - mental terms defined by their causal role, not reductionist
- computer analogy, AI
  - brain as hardware, mind as software
  - computational model (FODOR)
  - connectionism, neural networks (KOHONEN)



# EMERGENT MATERIALISM

- mental states emergent, causally efficient properties of sufficiently complex material systems (like brain) (BROAD, POPPER)
  - a whole is more than the sum of its parts
- anti-reductionism, property dualism
- causal closure of the physical vs. autonomy of psychology, human agency
- mental causation between events or properties
  - M-M and M-B
- differs from parallelism (M-M and B-B) and epiphenomenalism (SEARLE: brains cause mind)

# AGAINST DUALISM

- ECCLES, SWINBURNE
- no reason to assume that mental events could exist independently of the physical
- cannot be conclusively refuted by scientific evidence, but not supported by the scientific world view

# OBSTACLES TO REDUCTION

- mental life (World 2) as subjective: unique inner perspective
  - HUME, MACH, Buddhism: bundle of impressions
  - KANT: transcendental ego
  - reflective awareness, self-identity
- qualia: mental experience has qualitative features
- intentionality, direction toward objects, thoughts have content and semantics
- human agency, mental causation, free will, moral responsibility

# AGAINST METHODOLOGICAL SOLIPSISM

- Marxism, pragmatism, phenomenology, AI: interaction with material reality
- psychological birth: constitution of the self or ego through cultural and social interaction, learning the first language, a human self as a World 3 entity
- fallible introspection
- against methodological solipsism (BURGE): reference to other social agents
- neurophysiological description cannot contain all features of my natural-cultural-social environment