



Abstract Entities

Rather than simply ask “Do abstract entities like numbers and properties exist,” a metaphysicist prefers to ask in what way they might exist that is different from the way in which “concrete” objects exist.

Concrete objects can be seen and touched by our senses. They are material, with causal relations that obey the physical laws of nature.

Abstract entities are *immaterial*, but some of them can still play a causal role, for example when agents use them to decide on their actions, or when chance events (particularly at the quantum level) go this way instead of that.

Just as the mind is like software in the brain hardware, the abstract information in a material object is the same kind of immaterial stuff as the information in an abstract entity, a concept or a “non-existent object.” Some philosophers say that such immaterial things “subsist,” rather than exist.

Broadly speaking, the distinction between concrete and abstract objects corresponds to the distinction between the material and the ideal. Ideas in minds are *immaterial*. They need the matter of the brain to be embodied and some kind of energy to be communicated to other minds. But they are not themselves matter or energy. “Eliminativists,” who believe the natural world contains only material things, deny the existence of ideas, of immaterial information, and of the mind itself.

Some ideas may be wholly fictitious and nonsensical, whether mere possibles or even impossibles, but most ideas correspond to actual objects or processes going on in the world. In either case, we can usually specify the information content of the idea.

Metaphysicists identify abstract entities with the information contained in them. They may be concepts that did not exist in the world until they were *invented*. Or the information may have pre-existed in material structures and so we say they were *discovered*. For example, the idea of the moon includes the concepts of a distinct shape, color, and even the appearance of a face.



Many such ideas are mind-independent. Consider properties of the moon. Most observers agree the shape is round and the color is white. (Actually, the moon is blacker than most any terrestrial black object. It only appears white compared to the blackness of space.) Some metaphysicians deny the existence of a universal property such as roundness or whiteness. But metaphysicists see the information needed to specify circularity and the wavelengths of radiation that correspond to whiteness. And that information is embodied in the moon, just as a software program is embodied in computer hardware, and a mental idea is embodied in a brain.

Many ideas or concepts are created by human minds by “picking out” some of the information in physical objects. Whether such concepts “carve nature at the joints”¹ depends on their usefulness in understanding the world.

Plato’s Theory of the Forms held that Ideas like the circle pre-exist material beings, whereas Aristotle argued that the Ideas are abstractions from the general properties in all the actual circles.

Information philosophy restores so-called “non-existent objects” to our ontology. They consist of the same kind of information that provides the structure and process information of a concrete object. What we call a “concept” about an object is some subset of the information in the object, accurate to the extent that the concept is *isomorphic* to that subset. By “picking out” different subsets, we can sort objects, classifying and categorizing them.

Information philosophy can then defend the claim that all this abstract information that represents our knowledge about both material and immaterial objects is itself a collection of abstract entities, mere concepts about objects and other concepts.

The abstract vs. concrete dichotomy maps well onto the ancient dichotomy between idealism and materialism. But in modern times, many philosophers distinguish a third realm beyond the ancient dualism of idealism and materialism. The apparently mind-independent ideas are described as “objective” or “intersubjective” by contrast with the purely “subjective.”

1 Plato, *Phaedrus*, 265e



Consider the “triads” of GOTTLOB FREGE, KARL POPPER, CHARLES SANDERS PEIRCE.

Gottlob Frege’s Three Realms

An External Realm of Public Physical Things and Events

An Internal Subjective Realm of Private Thoughts

An “Objective” Platonic Realm of Ideal “Senses” (to which sentences refer, providing their meaning)

Karl Popper’s Three Worlds (clearly influenced by Frege)

World I - “the realm of physical things and processes”

World II - “the realm of subjective human experience”

World III - “the realm of culture and objective knowledge” - of human artifacts (our *Sum*)

C. S. Peirce’s triad of Objects, Percepts, and Concepts is in the same order as Frege and Popper.

In information philosophy, we also divide the world into three fundamental parts, the material, the ideal (ideas are the same kind of abstraction as pure information), and the biological/human, a middle world that combines ideality and materiality, essentially mind and body, where we find the realm of subjective thoughts and actions - human experience.

We could also widen the definition of the middle human realm to include the biological realm. It would include the genetic content of all living things, the product of four billion years of evolution. The genetic information is not the nucleotides of DNA that embody it. Both kinds of knowledge, human and biological, are abstract entities.

Human knowledge (information) and biological knowledge are created, stored, and communicated by similar means. The creation of new information requires chance events. Its storage requires the embodiment of abstract symbols or patterns in material information structures.

Communication of those symbols requires transmission through a medium, via sound and sight at a distance, or touch, smell, and taste by contact. These all are evolutionary refinements



of the chemical interactions inside living things. Assembled from arbitrary symbols, the syntax and semantics of messages from a cell nucleus to the ribosomes, or messages between cells, even signaling from the amygdala to the prefrontal cortex, are the progenitors of human prose and poetry.

Many centuries ago, the neoplatonist philosopher Porphyry asked what some called his “fateful question, “what is the existential status of the Platonic ideas?” Metaphysicists see our ideas as the information they contain. They have no existence as material, although they might be embodied in material. Our knowledge can be communicated in the form of energy or matter to other beings and to material things. But it is neither matter nor energy.

Information as a Physical Cause

Abstract entities are generally thought to be causally inert. Information philosophy demonstrates that abstract information (ideas) can initiate new causal chains starting in the minds of agents. Although the ideas are embodied in the material brains of the agents, their content is not material. New immaterial information generates new possibilities that are “free creations of the human mind,” as Albert Einstein described them.

Many philosophers of mind are “physicalists” or “eliminative materialists.” The mind and mental events are described as redundant causes that can be excluded, since they think that the material brain already provides physical events as the cause.

Since abstract entities lack any spatial or temporal positions, they are believed to be causally inert by eliminative materialists.

By contrast, some philosophers of mind hold “Platonist” views, for example that ideas such as sets and numbers have a place in our physical universe, if only a metaphysical place.

One approach that attempts to give causal power to knowledge is the so-called “causal theory of knowledge” associated with FRANK RAMSEY, ALVIN GOLDMAN, DAVID ARMSTRONG, HILARY KORNBLITH, and others. Their goal is to avoid the infinite regress of justifications that are implicit in the original Platonic idea that



knowledge is “justified true belief.” They argue that a causal connection explains why we have “reliable” knowledge, that is to say knowledge that can inform and affect our actions in a pragmatic sense.

This so-called causality can become trapped in an epistemological circle. Information philosophy hopes to breakout of that circle by showing how mere ideas, especially newly created ideas, have causal power over future events.

Pragmatic philosophers since C. S. Peirce have had a similar view, that knowledge is “true” when applying it to the world is efficacious. True knowledge has “cash value” as WILLIAM JAMES put it.

This is the ordinary common sense view, that ideas have changed material things, facts and events, in the physical world, not just ideas themselves or our knowledge of the world.

The Idea of Abstraction

An abstraction is literally something that can be drawn out of something else as its *essence*. Despite the fundamental abstract/concrete dichotomy of philosophical discourse, an abstract can be material that stimulates a particular sensation, like a smell that is the essence of a perfume or a “color” that is the essential “quale” of redness. The first is a molecule that elicits an olfactory response, the second photons of light of a particular wavelength.

Of course the essence of an abstract entity has no material content. It is just more pure information.

Metaphysicians think that words can list the “properties” of an entity, but these are poor and often vague and ambiguous approximations to the total information in an entity.

A metaphysicist says that the essence, the essential and metaphysical nature of all ideas is the information that they contain.

Of course, any concrete object that is discriminable from a background *contains* information. That information is the arrangement of the matter that embodies the information, the ship not its planks, the statue not the clay. And an arrangement of matter is pure form, pure abstract information.



Colors as Abstract Entities

Colors are thought to present some philosophical puzzles as well as raise deep metaphysical issues about both a mind-independent physical reality and about the philosophy of mind. Information philosophy can clarify these issues.

The puzzles include questions about the ontological property of color. Are the colors properties of physical objects or only visual perceptions? Are colors “real” or merely phenomenal illusions? Is the “quale” that we call “red” in the world or only in the mind.

Eliminativists and materialists who deny the “mind” may accept colors as “primary qualities” that are “really” possessed by physical objects. On the other hand, if colors are dependent on the perceiver, merely projected onto experience, they would be subjective. Puzzles then concern whether two persons might be having different internal experiences when looking at the same color.

Today we know that the eyes may perceive or interpret some light from an object as red when it actually contains no red photons, but only that the photons from the object are relatively longer wavelength than other objects in the scene. So there is definitely what some might regard as a subjective element. But this is mistaken.

In Edwin Land’s demonstrations of his famous two-color theory of vision, he showed pictures of apples that were perceived as red when only green and yellow light was used.

The mind’s *experience recorder and reproducer* is replaying information about past experiences of apples in varying light conditions to aid in this interpretation. But it is not just “subjective,” because all observers experience the same non-intuitive phenomenon. It is “intersubjective” when there is agreement between observers.

Photons coming from a Macintosh apple, a cherry tomato, and a strawberry in ordinary daylight all have the standard wavelengths of red light. But the mind/brain can make up for drastically changed lighting conditions in which the photons landing on our retinas do not have the wavelength property of normal “red” light.



Philosophical theories of colors provide powerful examples of the confusions that arise when we assign words as names of abstract entities. Conceptual analyses of ordinary language and “folk-concepts” of color are mostly a lot of verbal quibbling.

The spectrum of colors sensible to human eyes is in fact a continuum of changing wavelengths (or frequencies) of light that is a tiny part of the spectrum of electromagnetic radiation. Animal eyes have evolved sensitivity to these wavelengths because they are the part of solar radiation that penetrates the earth’s atmosphere.

Boundaries of the division into three primary and three secondary colors are as arbitrary and vague as many word or name definitions. There are no precise “color truths” to be found by a critical analysis of “color concepts.”

Color science brings precision to a theory of colors by assigning quantitative meaning to “hue” (the wavelength of the predominant color), “saturation” (the amount of the dominant wavelength compared to all other wavelengths), and “intensity” (the total number of all photons). The very real perception of “whiteness” is in fact a combination of all visible colors in amounts that approximate their relative amounts in everyday sunlight. “Blackness” is the absence of any light.

When a metaphysicist examines a color as an abstract entity, the information content of the color provides a quantitative starting point for what is happening in the physical world.

But an objective or intersubjective description of what is being experienced by a specific observer is much more complex, dependent on all the past experiences of the individual and any physiological differences, such as color vision deficiencies in the photo-pigments of the three types of cones that respond to red, green, and blue light.

The author, for example, is red-green color blind, the most common deficiency and has never seen the color green.

