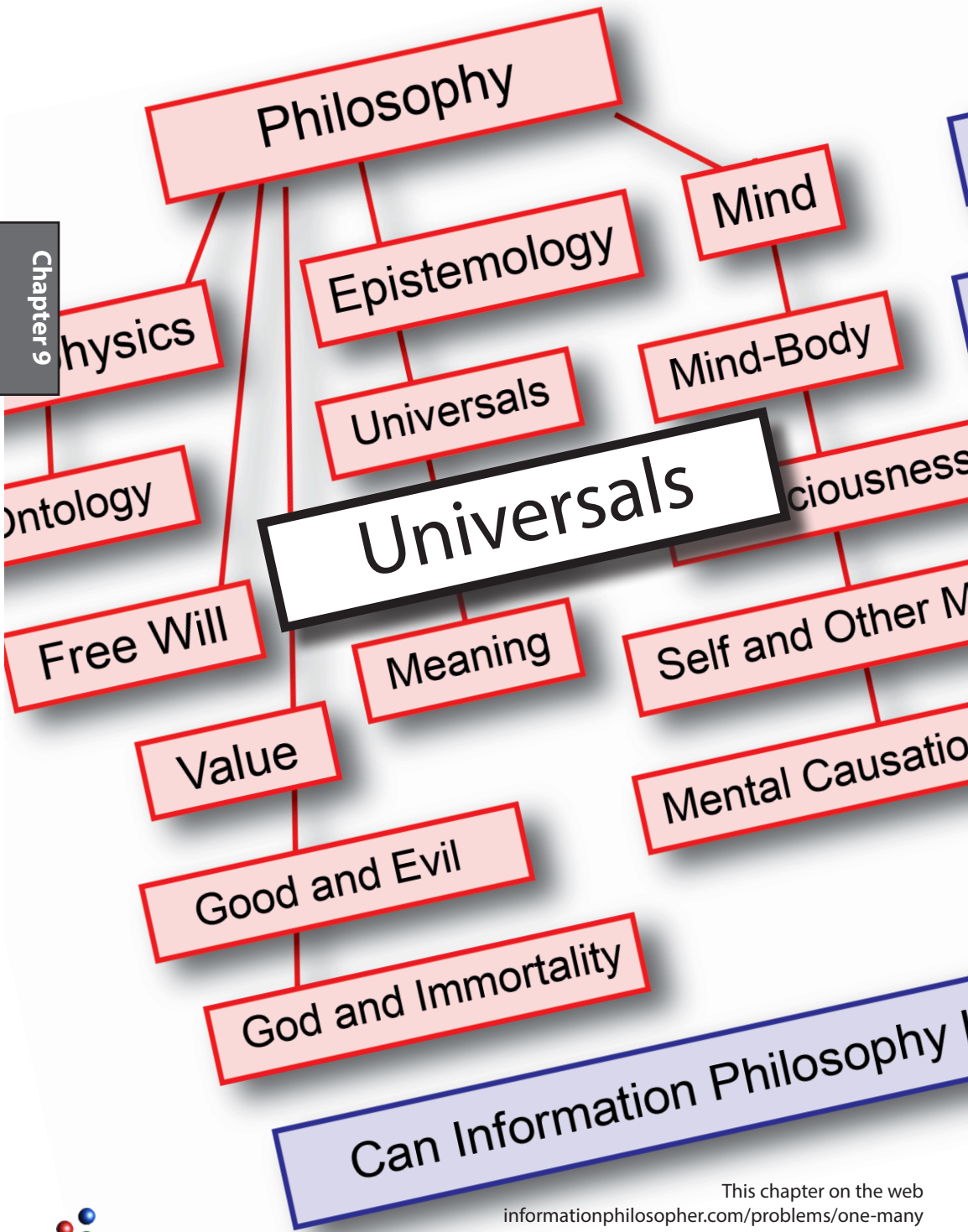

This chapter on the web
informationphilosopher.com/problems/one-many

Universals

A "universal" in metaphysics is a property or attribute that is shared by many particular objects (or concepts). It has a subtle relationship to the problem of the one and the many.

It is also the question of ontology.[1] What exists in the world? Ontology is intimately connected with epistemology - how can we know what exists in the world?

Knowledge about objects consists in describing the objects with properties and attributes, including their relations to other objects. Rarely are individual properties unique to an individual object. Although a "bundle of properties" may uniquely characterize a particular individual, most properties are shared with many individuals.

The "problem of universals" is the existential status of a given shared property. Does the one universal property exist apart from the many instances in particular objects? PLATO thought it does. ARISTOTLE thought it does not.

Consider the property having the color red. Is there an abstract concept of redness or "being red?" Granted the idea of a concept of redness, in what way and where in particular does it exist? Nominalists (sometimes called anti-realists) say that it exists only in the particular instances, and that redness is the name of this property. Conceptualists say that the concept of redness exists only in the minds of those persons who have grasped the concept of redness. They might exclude color-blind persons who cannot perceive red.

Realism is the view that a "reality" of physical objects, and possibly of abstract concepts like redness, exists in an external world independently of our minds and perceptions.

Platonic Realism is the view that abstract things like numbers, perfect geometric figures, and other things that Plato called the Forms or the Ideas, have a real and independent existence, though they are not material objects.

1 See chapter 3.

But for his student, Aristotle, these "universals" exist only in the concrete objects which share some property. For him, the universal idea of a perfect circle is a shared property of the many actual circles in nature.

Naive realists think that we can access concrete physical objects directly and fully with our perceptual sense data. This is sometimes called the "copy theory." Our perceptions are fully apprehending the physical objects, so that the content of a perception is the same as the object of perception. In information philosophy terms, naive realism mistakenly assumes that the information in the perceived sense data (or the representation in the mind) is (quantitatively) equal to (a copy of) the information in the physical object. In the case of the abstract concept of redness, it may be that the copy-theory is most tenable. The perception of a red object may in a strong sense bring the concept of redness into existence (at least in the observer's mind).

Historically, realism is a metaphysical claim about this independently existing world where redness might be found. Since Aristotle's Metaphysics, two kinds of metaphysical questions (ontological and epistemological) are raised - what exists, and how can we know what exists.

The ontological status of abstract concepts is a completely different question from the ontology of concrete material objects, though these questions have often been confounded in the history of philosophy.

Information philosophy provides distinct answers to these two ontological questions. Material objects exist in the world of space and time. They are information structures embodied in matter and interacting with energy. Abstract concepts (like redness) are pure information, neither matter nor energy, although they need matter for their embodiment and energy for their communication.

The contrast between physical objects and abstract concepts can be illustrated by the difference between invention and discovery.

We discover physical objects through our perceptions of them. To be sure, we invent our ideas about these objects, their descriptions, their names, theories of how they are structured and how they interact energetically - with one another and with us. But we cannot arbitrarily invent the natural world. We must test our theories with experiment. The experimental results select those theories that best fit the data, the information coming to us from the world. This makes our knowledge of an independent external world scientific knowledge.

By contrast, we humans invent abstract concepts like redness. We know that these cultural constructs exist nowhere in nature as physical structures. We create them. Cultural knowledge is relative to and dependent on the society that creates it.

However, some of our invented abstract concepts seem to clearly have an existence that is independent of us, like the numbers and the force of gravity.

Critical realists, like scientists, start with observations and sense data, but they add hypotheses and experiments to develop theories about the physical objects and the abstract concepts in the external world. Nevertheless, the abstract representation in the mind is (quantitatively) much less information than the information in the physical object represented.

The idea of an independent reality claims that the reality known exists independently of the knowledge of it.

The British empiricists John Locke and David Hume argued that what we were "given" in our perceptions of sense data is limited to so-called "secondary qualities." These are properties that produce the sensations in the observer's senses - color, taste, smell, sound, and touch. Knowledge that comes from secondary qualities does not provide objective facts about things "in themselves."

Immanuel Kant described these secondary qualities as "phenomena" that could tell us nothing about the "noumena," which the empiricists called the "primary qualities." These are properties the objects have that are independent of any observer, such as solidity, extension, motion, number and figure. These qualities exist in the thing itself (Kant's "*Ding an sich*"). Kant thought

that some of these qualities can be determined with certainty, as "*synthetic a priori*" truths. Some of these qualities are analytic truths, defined by the logical meanings of linguistic terms. For example, a round circle cannot be a square.

The One and the Many

Some philosophers are monists, arguing that the world must be a unity, one unchanging thing, and that all the multiplicity and change that we see is mere illusion.

Some are dualists, puzzled how the immaterial One (usually Mind or the Ideal) can possibly interact with the material Many (the Body or the World). There are other kinds of dualists, but the idealism/materialism divide has a long history in philosophy under dozens of different names through the ages.

Some philosophers prefer triads, triplicities, or trinities as their fundamental structures, and in these we may find the most sensible way to divide the world as we know it into "worlds," realms, or orders.

Those who divide their philosophy into four usually arrange it two by two (Schopenhauer, Heidegger, Derrida - who did it in jest, and against Christian trinities). There are a few who think a pentad has explanatory power. Another handful look to the mystical seven (the number of planets and thus days of the week) for understanding.

Since the Pythagoreans drew their triangular diagram of the tetractus, ten has been a divine number for some. Aristotle found ten categories. The neo-Platonist Kabalists have ten sephiroth. In string theory, there are ten dimensions reflecting the components of Einstein's general relativity equations.

The most important philosopher since Aristotle, Kant, structured his architectonic into twelve categories, arranged four by three.

We will scrutinize these architectures to see if the thinkers divide their worlds the same way, whatever names they call their divisions. There is a surprising amount of agreement among them, considering their disagreements on terminology.

Over the centuries many philosophers have seen a fundamental dualism. Most have invented their own names for this dualism. Not all have meant the very same things, but the great similarities allow us to collect all these dualisms into a quasi-chronological table, where similarities and slight differences become more clear.

Of course many have claimed to be monists. "All is One," they said, as they generally reduce the physical world to the ideal world, or vice versa. "Neutral monists" argue that the ideal and physical worlds are somehow both something else. But the underlying dualism remains in these monistic claims.

Many philosophers saw the need for the two sides to work together.

Immanuel Kant wrote,

Gedanken ohne Inhalt sind leer.
Anschauungen ohne Begriffe sind blind.

Charles Sanders Peirce rewrote this as,

If Materialism without Idealism is blind,
Idealism without Materialism is void.

With a nod to Kant and Peirce, we can say,

Concepts without Percepts are empty.
Percepts without Concepts are blind.

And although freedom and values are not a dualism, they too require one another and we can observe

Freedom without Values is Absurd (as Continental Existentialists like Jean-Paul Sartre thought).
Values without Freedom are Worthless (as British Utilitarians and later Positivists may have thought).

The founder of quantum mechanics. Niels Bohr, saw the wave-particle dual nature of quantum mechanics as connected to many other "complementary" philosophical dualisms.

We have compiled a semi-chronological list of various philosophical terms used through the ages that seem highly correlated with the fundamental ideal-material duality.

The ONE	The MANY
Monism	Pluralism
IDEALISM	MATERIALISM
Being	Becoming
Necessity	Contingency
Plato's Divided Line	
Theories (*noesis*) Hypotheses (*dianoia*)	Techniques (*pistis*) Stories (*eikasia*)
Eternal	Ephemeral
ESSENCE	EXISTENCE
Universals	Accidentals / Particulars
Aristotle's Four Causes	
Final Cause Formal Cause	Efficient Cause Material Cause
Realism	Nominalism
Intelligible	Sensible
Form	Content
Universal	Particular
Absolute	Relative
RATIONALISM	EMPIRICISM
MIND	BODY
a priori	*a posteriori*
Certainty	Probability
Intellect - Innate	Tabula Rasa - Learned
Nature	Nurture
Analytic	Synthetic

Kant's Transcendental Critique	
Noumena	Phenomena
Concepts/Thoughts	Percepts/Senses
Freedom	Determinism
Subject	Object
Dialectical IDEALISM	Dialectical MATERIALISM
Superstructure	Base
Romanticism	Positivism
Transcendentalism	Pragmatism
Supernaturalism	Naturalism
Phenomenology	Behaviorism/Existentialism
Linguistic Analysis	
Ideal Language	Ordinary Language
Intension	Extension
Sense/Semantic	Meaning/Pragmatic
Autonomy	Mimesis
Deduction	Induction
Theory	Experiment
Consistency	Correspondence
Quantum Complementarity	
WAVE	PARTICLE
Possible	Actual
Thought	Action

Intension and Extension describe two ways of indicating the meaning of a word or name. Intension assumes the word has an intrinsic, essential meaning, perhaps simply by definition and thus "analytic."

Extension is the set of existing objects in the world to which the word corresponds. There is a special kind of definition called "ostensive" which defines a word by pointing to those objects. Because extension involves things in the world it is called "synthetic."

The mathematician Gottlob Frege distinguished intension and extension by the German words *Sinn und Bedeutung* (which usually translate as Sense and Reference, though Denotation is better).

Vienna Circle philosophers, notably Rudolf Carnap, described intension and extension as *semantisch* and *pragmatisch* (semantic and pragmatic).

Willard van Orman Quine used the terms Meaning and Reference for intension and extension, conflicting with Frege's terms. But note that Frege conflicts with the ancient intelligible/sensible distinction. Words are ambiguous tools to describe objects. And language should therefore not be the primary tool for philosophical analysis.

Philosophical Triads

After dualisms, the next most popular philosophical architectonic structures are triads, triplicities, or trinities.

Some philosophers describe their triads as three "worlds," just as dualism is often described in terms of an Ideal World and a Material World. The deep philosophical (and scientific) question is - do these divisions "carve nature at the joints," as Plato put it in the *Phaedrus*, (265e)?

We analyze examples, and find that the three worlds are most often simply the canonical Ideal/Material dualism with an interpolated third world corresponding to a human world (or more broadly, the biological world), with its obvious connection to the world of "subjective?" ideas above and the "objective" material world below.

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)

Charles Sanders Peirce's triad of Objects - Percepts - Concepts is in the same order as Frege and Popper.

In information philosophy, we 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. In these three worlds, information emerges in different ways. They are symbolized in our tri-color I-Phi logo.

•The Physical/Material World (lower/green) - Ilya Prigogine's "order out of chaos," when the matter in the universe spontaneously forms information structures.

•The Biological/Material World (middle/red) - Erwin Schrödinger's "order out of order," when the biological information structures form purposeful ("teleonomic") self-replicating organisms that depend on or "feed on" a negative entropy stream from the sun.

•The Mental/Immaterial/Ideal World (upper/blue) - Bob Doyle's abstract "information out of order," when organisms with minds process and externalize information, communicating it to other minds and storing it in the environment.

Merlin Donald's three levels of Culture Emergence.

•Mimetic: the "copycat" or "monkey see, monkey do" ability of primates facilitated transfer of learning, ritual

•Mythic: language in humans, mental/brain development is influenced by social network of speakers generating symbols for ideas

•Informatic: External storage of knowledge - writing, printing, computers, Internet

Three Sources for Authoritative Knowledge

•The Tradition - Knowledge is inherited, handed down, from the great thinkers of the past (compare Frege's "Objective" Platonic Realm of Ideal "Senses" to which sentences "refer," providing their meaning)

•The Modern - Knowledge is created by Reason, by providing a rational account (logos) of how things are, augmented by modern empirical science since the Enlightenment

•The Post-Modern - all knowledge is "relative" to the culture that invented it. For conservative post-moderns, science can establish knowledge about an objective external world. For radical post-moderns, "anything goes", even science "invents or creates reality." There are no grounds/foundations for cultural knowledge that can "justify true beliefs."

Types of Triads

Levels: Material - Biological/Human - Ideal

(physis - bios/nomos - logos)

Inner Levels: Body - Brain - Mind/Spirit

Plato: Truth - Goodness - Beauty

Aristotle/Kant: Epistemology - Ethics - Aesthetics

Number: One - Two/Many - All (unity - duality/plurality - totality)

Person: I - You - We (self - other - society/community)

Truth: Correspondence - Coherence - Consistency

(empirical - conventional/pragmatic - logical)

Time: Past - Present - Future

Family: Father - Mother (chauvinists changed to Spirit) - Son

Dialectic: Thesis - Antithesis - Synthesis (Aufhebung new Thesis)

Hume's Relations: Similarity - Contiguity - Causality

(form - space - time)

Medieval Trivium: Grammar - Rhetoric - Logic

Rhetoric: Simile - Metonym - Metaphor

Language - Syntax - Semantics - Pragmatics

Peirce: Objects - Percepts - Concepts

Peirce's Semiotics: Icon - Index - Symbol

Peirce's Symbol: Ground - Object - Interpretant

Peirce's Science: Abduction (hypothesis) - Induction - Deduction

Grounds: Tradition - Modern - Postmodern

Beliefs: Naturalism - Humanism - Spiritualism

Matter: Solid - Liquid - Gas (earth - water - air)

Time: Beginning - Middle - End (archos - physis/nomos - telos)

Journey: Eden - Fall - Atonement (home - travels - homecoming)

Life: Birth - Life - Death

A Few Tetrads

Classical kinds of matter: Earth - Water - Air - Fire

(anticipating today's solid - liquid - gas - plasma)

Plato's Divided Line: Stories - Techniques - Hypotheses - Theories (eikasia - pistis - dianoia - noesis)

Aristotle's Causes: Material cause - Efficient cause - Formal cause - Final cause (He considered chance to be a possible fifth cause.)

Graeco-Roman Four Temperaments (or humors): Choleric (yellow bile), Melancholic (black bile), Sanguine (blood), and Phlegmatic (phlegm)

Medieval cosmology: Earth (below us) - Water (with us) - Air (above us) - Stars (beyond us)

The medieval scholastic Quadrivium: Math - Geometry - Music - Astronomy (number - space - time - motion)

Schopenhauer's Fourfold Root of Sufficient Reason

Heidegger's Geviert (2x2): Earth - Mortals - Heavens - Gods

Derrida's *Jeu des Cartes*