

# Process Thought and Elisionism

60 Wikipedia Articles

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# Process philosophy

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**Process philosophy** (or **ontology of becoming**) identifies metaphysical reality with change and dynamism. Since the time of Plato and Aristotle, philosophers have posited true reality as "timeless", based on permanent substances, whilst processes are denied or subordinated to timeless substances. If Socrates changes, becoming sick, Socrates is still the same (the substance of Socrates being the same), and change (his sickness) only glides over his substance: change is accidental, whereas the substance is essential. Therefore, classic ontology denies any full reality to change, which is conceived as only accidental and not essential. This classical ontology is what made knowledge and a theory of knowledge possible, as it was thought that a science of something in becoming was an impossible feat to achieve.<sup>[1]</sup>

In opposition to the classical model of change as purely accidental and illusory (as by Aristotle), process philosophy regards change as the cornerstone of reality—the cornerstone of the Being thought as Becoming. Modern process philosophers include Charles Peirce, John Dewey, Alfred North Whitehead, Charles Hartshorne, and Nicholas Rescher. In physics Ilya Prigogine<sup>[2]</sup> distinguishes between the "physics of being" and the "physics of becoming".

## History

### In Ancient Greek thought

The formal development of this theory begins with Heraclitus's fragments in which he posits the nous, the ground of Becoming, as agon, or "strife of opposites" as the underlying basis of all reality defined by change. That balance and conflict were the foundations of change and stability in the flux of existence.

### Twentieth century

In early twentieth century philosophy of mathematics, it was undertaken to develop mathematics as an airtight axiomatic system, in which every truth could be derived logically from a set of axioms. In the foundations of mathematics, this project is variously understood as logicism or as part of the formalist program of David Hilbert. Alfred North Whitehead and Bertrand Russell attempted to complete, or at least greatly facilitate, this program with their seminal book *Principia Mathematica*, which purported to build a logically consistent set theory on which to found mathematics. This project may have been ultimately defeasible, and afterwards Whitehead intuited that the entire venture was an organ of an overarching ontological mistake. He saw that science and mathematics were struggling to overcome an ontology of substances, and thus could not engage phenomena whose nature are more properly understood as 'process'. This resulted in the most famous work of process philosophy, Alfred North Whitehead's *Process and Reality*, a work which continues that begun by Hegel but describing a more complex and fluid dynamic ontology. While process thought does describe truth as "movement" in and through determinates (Hegelian truth), and not these determinates as fixed concepts or "things" (Aristotelian truth), process thought since Whitehead is distinguished from Hegel in describing complexes of occasions of experience that arise or coalesce in becoming, rather than being simply dialectically determined from prior posited determinates. It is also distinguished in being not necessarily conflictual or oppositional in operation. Process may be integrative, destructive or both together, allowing for aspects of interdependence, influence, and confluence, and addressing coherence in universal as well as particular developments, which aspects are not condign to Hegel's system. Additionally, instances of determinate occasions of experience, while always ephemeral, are nonetheless seen as important to define the type and continuity of those occasions of experience that flow from or relate to them.



## Whitehead's *Process and Reality*

Whitehead's background was an unusual one for a speculative metaphysician. Educated as a mathematician, he became, through his coauthorship and 1913 publication of *Principia Mathematica* with Bertrand Russell, a major logician. Later he wrote extensively on physics and its philosophy, proposing a theory of relativity intended to rival Einstein's. He was conversant with the quantum mechanics that emerged in the 1920s. Whitehead did not begin teaching and writing on process and metaphysics until he joined Harvard at 63 years of age.

Whitehead's influences were not restricted to philosophers or physicists or mathematicians. He was influenced by the French philosopher Henri-Louis Bergson (1859–1941), who was awarded the Nobel Prize for Literature in 1927. Process philosophy is also believed to have influenced some 20th century modernists, such as D. H. Lawrence, William Faulkner and Charles Olson.

## Process metaphysics

The process metaphysics elaborated in *Process and Reality*<sup>[3]</sup> posits an ontology which is based on the notions of an actual entity and of an abstraction.

An **actual entity** is a general name for an utterly determinate and completely concrete individual particular of the world or universe of changeable entities considered in terms of singular causality, about which categorical statements can be made. Whitehead's most far-reaching and profound and radical contribution to metaphysics is his invention of a better way of choosing the actual entities. Whitehead chooses a way of defining the actual entities that makes them all alike, *qua* actual entities, with a single exception.

For example, for Aristotle, the actual entities were the substances, such as Socrates and Bucephalus. Besides Aristotle's ontology of substances, another example of an ontology that posits actual entities is in the monads of Leibniz, which are said to be 'windowless'.

## Whitehead's actual entities

For Whitehead, actual entities are of two kinds, temporal and atemporal. There is only one **atemporal** actual entity for Whitehead: God. All other actual entities for Whitehead are **temporal** and are **occasions of experience** (which are not to be confused with consciousness). According to this notion, what people commonly think of as concrete objects are actually composed of indefinitely many occasions of experience. A human being is thus composed of indefinitely many occasions of experience. God is at once an actual entity and an atemporal entity, and objectively immortal, as well as being immanent in the world, and He is objectified in each temporal actual entity; but He is not an eternal object.

According to Whitehead, the occasions of experience are of four grades. The zero grade comprises processes in a physical vacuum such as the propagation of an electromagnetic wave across empty space. The occasions of experience of the first grade involve just inanimate matter. The occasions of experience of the second grade involve living organisms. Occasions of experience of the third grade involve experience in the mode of presentational immediacy, which means more or less what are often called the qualia of subjective experience. So far as we know, experience in the mode of presentational immediacy occurs in only more evolved animals. That some occasions of experience involve experience in the mode of presentational immediacy is the one and only reason why Whitehead makes the occasions of experience his actual entities.

There is no mind-matter duality in this ontology, because "mind" is simply seen as an abstraction from an occasion of experience which has also a material aspect, which is of course simply another abstraction from it; thus the mental aspect and the material aspect are abstractions from one and the same concrete occasion of experience. The brain is part of the body. Though not recognized by Aristotle, there is biological evidence, written about by Galen,<sup>[4]</sup> that the human brain is an essential seat of human experience in the mode of presentational immediacy. We may say that the brain has a material and a mental aspect.

Each Whiteheadian occasion of experience is consequential on every other occasion of experience that precedes it in time, and has as its consequences every other occasion of experience that follows it in time; thus it has been said that Whitehead's occasions of experience are 'all window', in contrast to Leibniz's 'windowless' monads. Inherent in Whitehead's conception is the notion of time; all experiences are influenced by prior experiences, and will influence all future experiences. This process of influencing is never deterministic; an occasion of experience consists of a process of prehending other experiences, and then a reaction to it. This is the process in process philosophy. Because no process is ever deterministic, free will is essential and inherent to the universe.

The causal outcomes obey the usual well-respected rule that the causes precede the effects in time. Some pairs of processes cannot be connected by cause-and-effect relations, and they are said to be spatially separated. This in perfect agreement with the viewpoint of the Einstein theory of special relativity and with the Minkowski geometry of spacetime.<sup>[5]</sup> It is clear that Whitehead respected these ideas, as may be seen for example in his 1919 book *An Enquiry concerning the Principles of Natural Knowledge*<sup>[6]</sup> as well as in *Process and Reality*.

The actual entities of Whitehead, the occasions of experience, are **atomic** in the sense that an occasion of experience cannot be cut into two other occasions of experience. This is because they have some topological character, expressed in Whitehead's theory of extension. Fundamental to both Newtonian and to quantum theoretical mechanics is the concept of velocity. The measurement of a velocity requires a finite spatiotemporal extent. Because it has no finite spatiotemporal extent, a single point of Minkowski space cannot be an occasion of experience, but is an abstraction from an infinite set of occasions of experience, as explained in *Process and Reality*<sup>[3]</sup>. Whitehead did not define the topology of his actual entities in modern terms, but it seems that he envisaged them as convex or 'oval' sets in Minkowski space. The open sets of the path topology, explained by Naber<sup>[5]</sup>, cannot be occasions of experience because they are centred on a single point of an underlying Minkowski space in a way that makes them very far from 'oval'. In one view, the occasions of experience have a topology in which they are the open sets, each defined by two points with timelike separation in an underlying Minkowski space. The initial of the two points has a forward light cone and the final of them has a backward light cone; the intersection of these two light cones can be used as the extensive definition of an occasion of experience as an open set. Such an open set cannot be cut into two constituent open sets with the same structure. The essence here is that an occasion of experience comprises a finite extent of space time and can be the extensional 'receptacle' of a process. Though the occasions of experience are atomic, they are not necessarily separate in extension, spatiotemporally, from one another. Indefinitely many occasions of experience can **overlap** in Minkowski space. An example of a nexus of overlapping occasions of experience is what Whitehead calls an enduring physical object, which corresponds closely with an Aristotelian substance.

### Whitehead's abstractions

An **abstraction** is an idea that involves more than one single actual entity. Whitehead's ontology refers to importantly structured collections of actual entities as nexuses of actual entities. Collection of actual entities into a **nexus** emphasizes some aspect of those entities, and that emphasis is an abstraction, because it means that some aspects of the actual entities are de-emphasized or dragged away from their actuality. Whitehead's **ontological principle** is that whatever reality belongs to an abstraction is derived from the actual entities that comprise it. Many abstractions are potential ingredients of processes.

Whitehead admitted indefinitely many eternal objects. An example of an **eternal object** is a number, such as the number 'two'. Whitehead held that all eternal objects are abstractions. For Whitehead, a process may be considered as a concrescence of **ingredient** eternal objects or abstractions which is also a causal outcome from, or effect of, temporally previous processes. Many eternal objects are potential ingredients of actual entities. God is ingredient in every temporal actual entity.

## Further aspects

However, Whitehead is not an idealist in the strict sense. Whitehead's ideas were a significant development of the idea of panpsychism (also known as panexperientialism, because of Whitehead's emphasis on experience).

Process philosophy, for some, gives God a special place in the universe of occasions of experience. God encompasses all the other occasions of experience but also transcends them; thus Whitehead embraces panentheism. Since, it is argued, free will is inherent to the nature of the universe, God is not omnipotent in Whitehead's metaphysics. God's role is to offer enhanced occasions of experience. God participates in the evolution of the universe by offering possibilities, which may be accepted or rejected. Whitehead's thinking here has given rise to process theology, whose prominent advocates include Charles Hartshorne, John B. Cobb, Jr., and Hans Jonas, who was also influenced by the non-theological philosopher Martin Heidegger. However, other process philosophers have questioned Whitehead's theology, seeing it as a regressive Platonism.

Whitehead enumerated three essential **natures of God**. The **primordial** nature of God consists of all potentialities of existence for actual occasions, which Whitehead dubbed eternal objects. God can offer possibilities by ordering the relevance of eternal objects. The **consequent** nature of God prehends everything that happens in reality. As such, God experiences all of reality in a sentient manner. The last nature is the **superjective**. This is the way in which God's synthesis becomes a sense-datum for other actual entities. In some sense, God is prehended by existing actual entities.

## Process philosophy since Whitehead

Several fields of science and especially medicine seem to make liberal use of ideas in process philosophy, notably the theory of pain and healing of the late 20th century. The philosophy of medicine began to deviate somewhat from scientific method and an emphasis on repeatable results in the very late 20th century by embracing population thinking, and a more pragmatic approach to issues in public health, environmental health and especially mental health. In this latter field, R. D. Laing, Thomas Szasz and Michel Foucault were instrumental in moving medicine away from emphasis on "cures" and towards concepts of individuals in balance with their society, both of which are changing, and against which no benchmarks or finished "cures" were very likely to be measurable.

In psychology, the subject of imagination was again explored more extensively since Whitehead, and the question of feasibility or "eternal objects" of thought became central to the impaired theory of mind explorations that framed postmodern cognitive science. A biological understanding of the most eternal object, that being the emerging of similar but independent cognitive apparatus, led to an obsession with the process "embodiment", that being, the emergence of these cognitions. Like Whitehead's God, especially as elaborated in J. J. Gibson's perceptual psychology emphasizing affordances, by ordering the relevance of eternal objects (especially the cognitions of other such actors), the world becomes. Or, it becomes simple enough for human beings to begin to make choices, and toprehend what happens as a result. These experiences may be summed in some sense but can only approximately be shared, even among very similar cognitions with identical DNA. An early explorer of this view was Alan Turing who sought to prove the limits of expressive complexity of human genes in the late 1940s, to put bounds on the complexity of human intelligence and so assess the feasibility of artificial intelligence emerging. Since 2000, Process Psychology has progressed as an independent academic and therapeutic discipline.<sup>[7]</sup>

In the philosophy of mathematics, some of Whitehead's ideas re-emerged in combination with cognitivism as the cognitive science of mathematics and embodied mind theses.

Somewhat earlier, exploration of mathematical practice and quasi-empiricism in mathematics from the 1950s to 1980s had sought alternatives to metamathematics in social behaviours around mathematics itself: for instance, Paul Erdős's simultaneous belief in Platonism and a single "big book" in which all proofs existed, combined with his personal obsessive need or decision to collaborate with the widest possible number of other mathematicians. The process, rather than the outcomes, seemed to drive his explicit behaviour and odd use of language, e.g., he called

God the "Supreme Fascist", echoing the role Whitehead assigned, as if the synthesis of Erdős and collaborators in seeking proofs, creating sense-datum for other mathematicians, was itself the expression of a divine will. Certainly, Erdős behaved as if nothing else in the world mattered, including money or love, as emphasized in his biography *The Man Who Loved Only Numbers*.

In plant morphology, Rolf Sattler developed a process morphology (dynamic morphology) that overcomes the structure/process (or structure/function) dualism that is commonly taken for granted in biology. According to process morphology, structures such as leaves of plants do not have processes, they *are* processes.<sup>[8] [9]</sup>

## References

- [1] Anne Fagot-Largeau, 7 December 2006 course ([http://www.college-de-france.fr/default/EN/all/phi\\_sci/p1184676830986.htm](http://www.college-de-france.fr/default/EN/all/phi_sci/p1184676830986.htm)) at the College of France, first part of a series of courses on the "Ontology of Becoming" (**French**)
- [2] Ilya Prigogine, *From being to becoming*, W.H. Freeman and Company, San Francisco, 1980.
- [3] Whitehead, A.N. (1929). *Process and Reality*, Macmillan, New York.
- [4] Siegel, R.E. (1973). *Galen: On Psychology, Psychopathology, and Function and Diseases of the Nervous System. An Analysis of his Doctrines, Observations, and Experiments*, Karger, Basel, ISBN 978-3805514798.
- [5] Naber, G.L. (1992). *The Geometry of Minkowski Spacetime. An Introduction to the Mathematics of the Special Theory of Relativity*, Springer, New York, ISBN 978-0387978482
- [6] Whitehead, A.N. (1919). *An Enquiry concerning the Principles of Natural Knowledge*, Cambridge University Press, Cambridge UK.
- [7] Cobb, John B., Jr. "Process Psychotherapy: Introduction." *Process Studies* 29, no.1 (Spring-Summer 2000): 97-102.
- [8] Sattler, R. 1990. Towards a more dynamic plant morphology. *Acta Biotheoretica* 38: 303-315
- [9] Sattler, R. 1992. Process morphology: structural dynamics in development and evolution. *Canadian Journal of Botany* 70: 708-714.

## External links

- Whitehead Research Project (<http://whiteheadresearch.org/>)
- Process philosophy (<http://plato.stanford.edu/entries/process-philosophy>) entry in the *Stanford Encyclopedia of Philosophy* by Nicholas Rescher
- Chromatika website (<http://www.chromatika.org>)
- Process and Reality. Part V. Final Interpretation ([http://www.forizslaszlo.com/filozofia/folyamat\\_es\\_valosag/Whitehead\\_PR\\_Part5\\_Final\\_Interpratation.pdf](http://www.forizslaszlo.com/filozofia/folyamat_es_valosag/Whitehead_PR_Part5_Final_Interpratation.pdf))
- Wolfgang Sohst: Prozessontologie. Ein systematischer Entwurf der Entstehung von Existenz ([http://www.xenomoi.de/product\\_info.php/info/p180\\_NEU--Prozessontologie--Ein-systematischer-Entwurf-der-Entstehung-von-Existenz-.html](http://www.xenomoi.de/product_info.php/info/p180_NEU--Prozessontologie--Ein-systematischer-Entwurf-der-Entstehung-von-Existenz-.html)). (Berlin 2009)

# Process theology

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**Process theology** is a school of thought influenced by the metaphysical process philosophy of Alfred North Whitehead (1861–1947) and further developed by Charles Hartshorne (1897–2000). While there are process theologies that are similar, but unrelated to the work of Whitehead (such as Pierre Teilhard de Chardin) the term is generally applied to the Whiteheadian/Hartshornean school. Process theology is unrelated to the Process Church.

## History

The original ideas of process thought are found in the philosophy of Alfred North Whitehead. Various theological and philosophical aspects have been expanded and developed by Charles Hartshorne (1897–2000), John B. Cobb, Jr., and David Ray Griffin. A characteristic of process theology each of these thinkers shared was a rejection of metaphysics that privilege "being" over "becoming," particularly those of Aristotle and Thomas Aquinas. Hartshorne was deeply influenced by French philosopher Jules Lequier and by Swiss philosopher Charles Secrétan who were probably the first ones to claim that in God liberty of becoming is above his substantiality.

Process theology soon influenced a number of Jewish theologians including Rabbis Max Kadushin, Milton Steinberg and Levi A. Olan, Harry Slominsky and, to a lesser degree, Abraham Joshua Heschel. Today some rabbis who advocate some form of process theology include Bradley Shavit Artson, Lawrence A. Englander, William E. Kaufman, Harold Kushner, Anton Laytner, Michael Lerner, Gilbert S. Rosenthal, Lawrence Troster, Donald B. Rossoff, Burton Mindick, and Nahum Ward.

Alan Anderson and Deb Whitehouse have attempted to integrate process theology with the New Thought variant of Christianity.

The work of Richard Stadelmann has been to preserve the uniqueness of Jesus in process theology.

## Major concepts

- God is not omnipotent in the sense of being coercive. The divine has a power of persuasion rather than coercion. Process theologians interpret the classical doctrine of omnipotence as involving force, and suggest instead a forbearance in divine power. "Persuasion" in the causal sense means that God does not exert unilateral control.<sup>[1]</sup>
  - Reality is not made up of material substances that endure through time, but serially-ordered events, which are experiential in nature. These events have both a physical and mental aspect. All experience (male, female, atomic, and botanical) is important and contributes to the ongoing and interrelated process of reality.
  - The universe is characterized by process and change carried out by the agents of free will. Self-determination characterizes everything in the universe, not just human beings. God cannot totally control any series of events or any individual, but God influences the creaturely exercise of this universal free will by offering possibilities. To say it another way, God has a will in everything, but not everything that occurs is God's will.<sup>[2]</sup>
  - God contains the universe but is not identical with it (panentheism, not pantheism or pandeism). Some also call this "theocosmocentrism" to emphasize that God has always been related to some world or another.
  - Because God interacts with the changing universe, God is changeable (that is to say, God is affected by the actions that take place in the universe) over the course of time. However, the abstract elements of God (goodness, wisdom, etc.) remain eternally solid.
  - Charles Hartshorne believes that people do not experience *subjective* (or personal) immortality, but they do have *objective* immortality because their experiences live on forever in God, who contains all that was. Other process theologians believe that people do have subjective experience after bodily death.<sup>[3]</sup>
  - Dipolar theism, is the idea that God has both a changing aspect (God's existence as a Living God) and an unchanging aspect (God's eternal essence).
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## Relationship to liberation theology

C. Robert Mesle, in his book *Process Theology*, outlines three aspects of a process theology of liberation.<sup>[4]</sup>

1. There is a relational character to the divine which allows God to experience both the joy and suffering of humanity. God suffers just as those who experience oppression and God seeks to actualize all positive and beautiful potentials. God must, therefore, be in solidarity with the oppressed and must also work for their liberation.
2. God is not omnipotent in the classical sense and so God does not provide support for the status quo, but rather seeks the actualization of greater good.
3. God exercises relational power and not unilateral control. In this way God cannot instantly end evil and oppression in the world. God works in relational ways to help guide persons to liberation.

## Relationship to pluralism

Process theology affirms that God is working in all persons to actualize potentialities. In that sense each religious manifestation is the Divine working in a unique way to bring out the beautiful and the good. Additionally, scripture and religion represent human interpretations of the divine. In this sense pluralism is the expression of the diversity of cultural backgrounds and assumptions that people use to approach the Divine.<sup>[5]</sup>

## Relationship to the doctrine of the incarnation

The Christ of process theology does not represent a hypostasis of divine and human persona. Rather God is incarnate in the lives of all humans when they act according to a call from God. Jesus fully and in every way responded to the call of God and so the person of Jesus is theologically understood to be “the divine Word in human form.” Jesus was not God-man in essence, but fully identified with God at all moments of life.<sup>[6]</sup>

Further information: Incarnation (Christianity)

## Process theologians

- |                         |                       |                            |
|-------------------------|-----------------------|----------------------------|
| • Bradley Shavit Artson | • Terence E. Fretheim | • Michael Lerner           |
| • Charles Birch         | • David Ray Griffin   | • C. Robert Mesle          |
| • Philip Clayton        | • Charles Hartshorne  | • Thomas Jay Oord          |
| • John B. Cobb          | • Nancy R. Howell     | • Blake Ostler             |
| • Bruce G. Epperly      | • William E. Kaufman  | • Norman Pittenger         |
| • Paul S. Fiddes        | • Catherine Keller    | • Marjorie Hewitt Suchocki |
| • Stephen T. Franklin   | • Harold Kushner      | • Alfred North Whitehead   |
|                         |                       | • Daniel Day Williams      |

## Further reading

- Marjorie Hewitt Suchocki's *God Christ Church: A Practical Guide to Process Theology*, new rev. ed. (New York: Crossroad, 1989, ISBN 0-8245-0970-6) demonstrates the practical integration of process philosophy with Christianity.
- C. Robert Mesle's *Process Theology: A Basic Introduction* (St. Louis: Chalice Press, 1993, ISBN 0-8272-2945-3) is an introduction to process theology written for the layperson.
- Jewish introductions to classical theism, limited theism and process theology can be found in *A Question of Faith: An Atheist and a Rabbi Debate the Existence of God* (Northvale, NJ: Jason Aronson, 1994, ISBN 1-56821-089-2) and *The Case for God* (St. Louis: Chalice Press, 1991, ISBN 0-8272-0458-2), both written by Rabbi William E. Kaufman. Jewish variations of process theology are also presented in Harold Kushner's *When Bad Things Happen*

to *Good People* (New York: Anchor Books, 2004, ISBN 1-4000-3472-8) and Sandra B. Lubarsky and David Ray Griffin, eds., *Jewish Theology and Process Thought* (Albany: State University of New York Press, 1995, ISBN 0-7914-2810-9).

- Christian introductions may be found in Schubert M. Ogden's *The Reality of God and Other Essays* (Dallas: Southern Methodist University Press, 1992, ISBN 0-87074-318-X); John B. Cobb, *Doubting Thomas: Christology in Story Form* (New York: Crossroad, 1990, ISBN 0-8245-1033-X); and Charles Hartshorne, *Omnipotence and Other Theological Mistakes* (Albany: State University of New York Press, 1984, ISBN 0-87395-771-7). In French, the best introduction may be André Gounelle, *Le Dynamisme Créateur de Dieu: Essai sur la Théologie du Process*, édition revue, modifiée et augmentée (Paris: Van Dieren, 2000, ISBN 2911087267).
- For essays exploring the relation of process thought to Wesleyan theology, see Bryan P. Stone and Thomas Jay Oord, *Thy Nature and Thy Name is Love: Wesleyan and Process Theologies in Dialogue* (Nashville: Kingswood, 2001, ISBN 0-687-05220-3).
- The most important work by Paul S. Fiddes is *The Creative Suffering of God* (Oxford: Oxford University Press, 1992); see also his short overview "Process Theology," in A. E. McGrath, ed., *The Blackwell Encyclopaedia of Modern Christian Thought* (Oxford: Blackwell, 1993), 472–76.
- Norman Pittenger's thought is exemplified in his *God in Process* (London: SCM Press, 1967, LCC BT83.6 .P5), *Process-Thought and Christian Faith* (New York: Macmillan Company, 1968, LCC BR100 .P615 1968), and *Becoming and Belonging* (Wilton, CT: Morehouse Publications, 1989, ISBN 0819214809).
- Constance Wise's *Hidden Circles in the Web: Feminist Wicca, Occult Knowledge, and Process Thought* (Lanham, Md.: AltaMira Press, 2008, ISBN 978-0-7591-1006-9) applies process theology to one variety of contemporary Paganism.

## References

- [1] Charles Hartshorne, *Omnipotence and Other Theological Mistakes* (Albany: State University of New York, 1984), 20-26.
- [2] John Cobb and David Griffin, *Process Theology: An Introductory Exposition* (Philadelphia: Westminster Press, 1976), 14-16, chapter 1.
- [3] Hartshorne, 32-36.
- [4] C. Robert Mesle, *Process Theology: A Basic Introduction* (St. Louis, MO: Chalice Press, 1993), 65-68, 75-80.
- [5] Mesle, 101.
- [6] Mesle, 106.

## External links

- The Center for Process Studies (<http://www.ctr4process.org>)
- Process and Faith (<http://www.processandfaith.org>)
- Anderson-Whitehouse Process New Thought (<http://web.archive.org/web/20070630172000/http://www.neweverymoment.com/index.html>)—a synthesis of New Thought and process theology

### Reference works

- Donald Viney, "Process Theism (<http://plato.stanford.edu/entries/process-theism/>)," *Stanford Encyclopedia of Philosophy*
- John B. Cobb, Jr., "Process Theology (<http://www.religion-online.org/showarticle.asp?title=1489>)," *Religion-Online*
- An encyclopedic-type article (<http://www.seop.leeds.ac.uk/entries/process-theism/>)

# Ephesian school

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**Ephesian school** sometimes refers to the philosophical thought of the ancient Greek philosopher Heraclitus of Ephesus, who considered that the being of all the universe is fire. According to him, the being is material and one, but at the same time he acknowledges that the world witnesses constant change. Motion of the archelement (fire) is discordant and unharmonious, even though harmony is the final result of the process.

Although there was never an official "Ephesian School," Diogenes Laërtius (ix. 6) mentions that his philosophy did have followers who called themselves "Heracliteans." Plato portrays Cratylus in his dialogue of the same name as a disciple of Heraclitus.

# Elisionism

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**Elisionism** is a philosophical standpoint encompassing various social theories. Elisionist theories are diverse, however they are unified in their adherence to process philosophy as well as their assumption that the social and the individual cannot be separated.<sup>[1]</sup> The term *elisionism* was coined by Margaret Archer in 1995 in the book *Realist Social Theory: The Morphogenetic Approach*.<sup>[2]</sup> Elisionism is often contrasted with holism, atomism, and emergentism.<sup>[3]</sup>

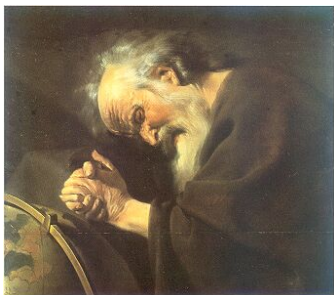
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# Heraclitus

## Heraclitus



Heraclitus by Johannes Moreelse. The image depicts him as "the weeping philosopher" wringing his hands over the world and "the obscure" dressed in dark clothing, both traditional motifs.

Full name	Heraclitus
Born	c. 535 BCE Ephesus
Died	c. 475 BCE (aged around 60)
Era	Ancient philosophy
Region	Western Philosophy
School	Not considered to belong to any school of thought, but later subscribers to the philosophy were "Heracliteans".
Main interests	Metaphysics, Epistemology, Ethics, Politics
Notable ideas	Logos, flow

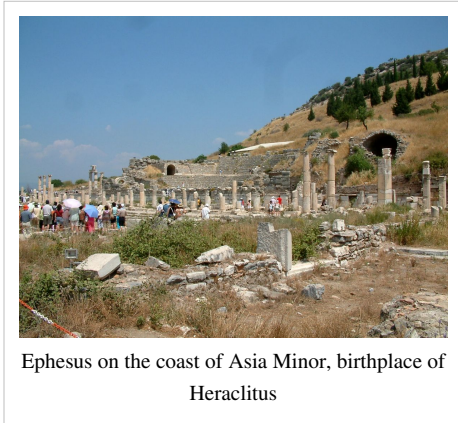
**Heraclitus** of Ephesus (Ancient Greek: Ἡράκλειτος ὁ Ἐφέσιος—*Hērákleitos ho Ephésios*; c. 535 – c. 475 BCE) was a pre-Socratic Greek philosopher, a native of the Greek city Ephesus, Ionia, on the coast of Asia Minor. He was of distinguished parentage. Little is known about his early life and education, but he regarded himself as self-taught and a pioneer of wisdom. From the lonely life he led, and still more from the riddling nature of his philosophy and his concept of humankind in general, he was called "The Obscure" and the "Weeping Philosopher".

Heraclitus is famous for his insistence on ever-present change in the universe, as stated in his famous saying, "You cannot step twice into the same stream". He believed in the unity of opposites, stating that "the path up and down are one and the same", all existing things being characterized by pairs of contrary properties. His cryptic utterance that "all things come to be in accordance with this *Logos*" (literally, "word", "reason", or "account") stands for reason, order, or law in an ever-shifting world.<sup>[1]</sup>

## Life

The main source for the life of Heraclitus is Diogenes Laërtius, although some have questioned the validity of his account as "a tissue of Hellenistic anecdotes, most of them obviously fabricated on the basis of statements in the preserved fragments."<sup>[2]</sup> Diogenes said that Heraclitus flourished in the 69th Olympiad,<sup>[3]</sup> 504-501 BCE. All the rest of the evidence – the people Heraclitus is said to have known, or the people who were familiar with his work – confirms the *floruit*. His dates of birth and death are based on a life span of 60 years, the age at which Diogenes says he died,<sup>[4]</sup> with the floruit in the middle.

Heraclitus was born to an aristocratic family in Ephesus, present-day Efes, Turkey. His father was named either Blosôn or Herakôn.<sup>[3]</sup> Diogenes says that he abdicated the kingship (*basileia*) in favor of his brother<sup>[5]</sup> and Strabo confirms that there was a ruling family in Ephesus descended from the Ionian founder, Androclus, which still kept the title and could sit in the chief seat at the games, as well as a few other privileges.<sup>[6]</sup> How much power the king had is another question. Ephesus had been part of the Persian Empire since 547 and was ruled by a satrap, a more distant figure, as the Great King allowed the Ionians considerable autonomy. Diogenes says that Heraclitus used to play knucklebones with the youths in the temple of Artemis and when asked to start making laws he refused saying that the constitution (*politeia*) was *ponêra*,<sup>[7]</sup> which can mean either that it was fundamentally wrong or that he considered it toilsome.



Ephesus on the coast of Asia Minor, birthplace of Heraclitus

With regard to education, Diogenes says that Heraclitus was "wondrous" (*thaumasios*, which, as Plato explains in the *Theaetetus* and elsewhere, is the beginning of philosophy) from childhood. Diogenes relates that Sotion said he was a "hearer" of Xenophanes, which contradicts Heraclitus' statement (so says Diogenes) that he had taught himself by questioning himself. Burnet states in any case that "... Xenophanes left Ionia before Herakleitos was born."<sup>[8]</sup> Diogenes relates that as a boy Heraclitus had said he "knew nothing" but later claimed to "know everything."<sup>[9]</sup> His statement that he "heard no one" but "questioned himself," can be placed alongside his statement that "the things that can be seen, heard and learned are what I prize the most."<sup>[10]</sup>

Diogenes relates that Heraclitus had a poor opinion of human affairs.<sup>[3]</sup> He believed that Hesiod and Pythagoras lacked understanding though learned<sup>[11]</sup> and that Homer and Archilochus deserved to be beaten.<sup>[12]</sup> Laws needed to be defended as though they were city walls.<sup>[13]</sup> Timon is said to have called him a "mob-reviler." Heraclitus hated the Athenians and his fellow Ephesians, wishing the latter wealth in punishment for their wicked ways.<sup>[14]</sup> Says Diogenes: "Finally, he became a hater of his kind (*misanthrope*) and wandered the mountains ... making his diet of grass and herbs."

Heraclitus' life as a philosopher was interrupted by dropsy. The physicians he consulted were unable to prescribe a cure. He treated himself with a liniment of cow manure and baking in the sun, believing that this method would remove the fluid. After a day of treatment he died and was interred in the marketplace.<sup>[15]</sup>

## Works

Diogenes states that Heraclitus' work was "a continuous treatise *On Nature*, but was divided into three discourses, one on the universe, another on politics, and a third on theology." Theophrastus says (in Diogenes) "... some parts of his work are half-finished, while other parts make a strange medley."<sup>[5]</sup>

Diogenes also tells us that Heraclitus deposited his book as a dedication in the great temple of Artemis, the Artemisium, one of the largest temples of the 6th century BCE and one of the Seven Wonders of the Ancient World. Ancient temples were regularly used for storing treasures, and were open to private individuals under exceptional circumstances; furthermore, many subsequent philosophers in this period refer to the work. Says Kahn:<sup>[2]</sup> "Down to the time of Plutarch and Clement, if not later, the little book of Heraclitus was available in its original form to any reader who chose to seek it out." Diogenes says:<sup>[5]</sup> "the book acquired such fame that it produced partisans of his philosophy who were called Heracliteans."

As with other pre-Socratics, his writings only survive in fragments quoted by other authors.



Heraclitus (figured by Michelangelo) sits apart from the other philosophers in Raphael's *School of Athens*

## Ancient characterizations

### The obscure

At some time in antiquity he acquired this epithet denoting that his major sayings were difficult to understand. Timon of Phlius calls him "the riddler" (*ainiktēs*) according to Diogenes Laërtius,<sup>[5]</sup> who had just explained that Heraclitus wrote his book "rather unclearly" (*asaphesteron*) so that only the "capable" should attempt it. By the time of Cicero he had become "the dark" (Ancient Greek ὁ σκοτεινός — *ho Skoteinós*)<sup>[16]</sup> because he had spoken *nimis obscurē*, "too obscurely", concerning nature and had done so deliberately in order to be misunderstood. The customary English translation of ὁ σκοτεινός follows the Latin, "the obscure."

### The weeping philosopher

Diogenes Laërtius ascribes to Theophrastus the theory that Heraclitus did not complete some of his works because of melancholia.<sup>[5]</sup> Later he was referred to as the "weeping philosopher," as opposed to Democritus, who is known as the "laughing philosopher."<sup>[17]</sup> If Stobaeus<sup>[18]</sup> writes correctly, Sotion in the early 1st century CE was already combining the two in the imaginative duo of weeping and laughing philosophers: "Among the wise, instead of anger, Heraclitus was overtaken by tears, Democritus by laughter." The view is expressed by the satirist Juvenal:<sup>[19]</sup>

The first of prayers, best known at all the temples, is mostly for riches .... Seeing this then do you not commend the one sage Democritus for laughing ... and the master of the other school Heraclitus for his tears?

The motif was also adopted by Lucian of Samosata in his "Sale of Creeds," in which the duo is sold together as a complementary product in the satirical auction of philosophers. Subsequently they were considered an indispensable feature of philosophic landscapes. Montaigne proposed two archetypical views of human affairs based on them, selecting Democritus' for himself.<sup>[20]</sup> The weeping philosopher makes an appearance in William Shakespeare's *The Merchant of Venice*.<sup>[21]</sup> Donato Bramante painted a fresco, "Democritus and Heraclitus," in Casa Panigarola in Milan.<sup>[22]</sup>

## Philosophy

### Logos

"The idea that all things come to pass in accordance with this *Logos*"<sup>[23]</sup> and "the *Logos* is common,"<sup>[24]</sup> is expressed in two famous but obscure fragments:

This *Logos* holds always but humans always prove unable to understand it, both before hearing it and when they have first heard it. For though all things come to be in accordance with this *Logos*, humans are like the inexperienced when they experience such words and deeds as I set out, distinguishing each in accordance with its nature and saying how it is. But other people fail to notice what they do when awake, just as they forget what they do while asleep. (DK 22B1)

For this reason it is necessary to follow what is common. But although the *Logos* is common, most people live as if they had their own private understanding. (DK 22B2)

The meaning of *Logos* also is subject to interpretation: "word", "account", "plan", "formula", "measure", "proportion", "reckoning."<sup>[25]</sup> Though Heraclitus "quite deliberately plays on the various meanings of *logos*",<sup>[26]</sup> there is no compelling reason to suppose that he used it in a special technical sense, significantly different from the way it was used in ordinary Greek of his time.<sup>[27]</sup>

The later Stoics understood it as "the account which governs everything,"<sup>[28]</sup> and Hippolytus, in the 3rd century CE, identified it as meaning the Christian *Word of God*.<sup>[29]</sup>

### Panta rhei, "everything flows"

Πάντα ῥεῖ (*panta rhei*) "everything flows" either was not spoken by Heraclitus or did not survive as a quotation of his. This famous aphorism used to characterize Heraclitus' thought comes from Simplicius,<sup>[30]</sup> a neoplatonist and Plato's Cratylus. The word *rhei*, adopted by rhe-o-logy, is the Greek word for "to stream, and to the etymology of Rhea according to Plato's Cratylus."<sup>[31]</sup>

The philosophy of Heraclitus is summed up in his cryptic utterance:<sup>[32]</sup>

ποταμοῖσι τοῖσιν αὐτοῖσιν ἐμβαίνουσιν, ἕτερα καὶ  
ἕτερα ὕδατα ἐπιρρεῖ.

Potamoisi toisin autoisin embainousin, hetera kai  
hetera hudata epirrei

"Ever-newer waters flow on those who step into the  
same rivers ."

The quote from Heraclitus appears in Plato's Cratylus twice; in 401,d as:<sup>[33]</sup>

τὰ ὄντα ἰέναι τε πάντα καὶ μένειν οὐδέν"

Ta onta ienai te panta kai menein ouden

"All things move and nothing remains still"

and in 402,a<sup>[34]</sup>

πάντα χωρεῖ καὶ οὐδέν μένει" καὶ "δὲς ἐς τὸν αὐτὸν  
ποταμὸν οὐκ ἂν ἐμβαίης"

Panta chōrei kai ouden menei ... kai ... dis es ton auton potamon ouk an embaies

"Everything changes and nothing remains still .... and ... you cannot step twice into the same stream"

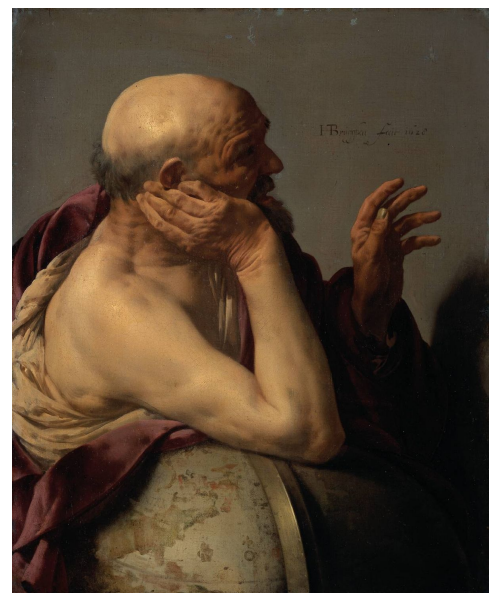
Instead of "flow" Plato uses *chōrei*, to change *chōros*.

The assertions of flow are coupled in many fragments with the enigmatic river image:<sup>[35]</sup>

"Ποταμοῖς τοῖς αὐτοῖς ἐμβαίνομεν τε καὶ οὐκ ἐμβαίνομεν, εἰμέν τε καὶ οὐκ εἰμεν."

"We both step and do not step in the same rivers. We are and are not."

Compare with the Latin adages *Omnia mutantur* and *Tempora mutantur* (8 CE) and the Japanese tale *Hōjōki*, (1200 CE) which contains the same image of the changing river.



Heraclitus by Hendrick ter Brugghen

## Hodos ano kato, "the way up and the way down"

In ὁδὸς ἄνω κάτω<sup>[36]</sup> the structure *anō katō* is more accurately translated as a hyphenated word: "the upward-downward path." They go on simultaneously and instantaneously and result in "hidden harmony".<sup>[37]</sup> A way is a series of transformations: the πυρὸς τροπαί, "turnings of fire,"<sup>[38]</sup> first into sea, then half of sea to earth and half to rarefied air.

The transformation is a replacement of one element by another: "The death of fire is the birth of air, and the death of air is the birth of water."<sup>[39]</sup>

This world, which is the same for all, no one of gods or men has made. But it always was and will be: an ever-living fire, with measures of it kindling, and measures going out.<sup>[40]</sup>

This latter phraseology is further elucidated:

All things are an interchange for fire, and fire for all things, just like goods for gold and gold for goods.<sup>[41]</sup>

Heraclitus considered fire as the most fundamental element. He believed fire gave rise to the other elements and thus to all things. He regarded the soul as being a mixture of fire and water, with fire being the noble part of the soul, and water the ignoble part. A soul should therefore aim toward becoming more full of fire and less full of water: a "dry" soul was best. According to Heraclitus, worldly pleasures made the soul "moist", and he considered mastering one's worldly desires to be a noble pursuit which purified the soul's fire.<sup>[42]</sup> Norman Melchert interpreted Heraclitus as using "fire" metaphorically, in lieu of *Logos*, as the origin of all things.<sup>[43]</sup>

## Dike eris, "strife is justice"

If objects are new from moment to moment so that one can never touch the same object twice, then each object must dissolve and be generated continually momentarily and an object is a harmony between a building up and a tearing down. Heraclitus calls the oppositional processes *eris*, "strife", and hypothesizes that the apparently stable state, *dikê*, or "justice," is a harmony of it:<sup>[44]</sup>

We must know that war (*polemos*) is common to all and strife is justice, and that all things come into being through strife necessarily.

As Diogenes explains:<sup>[45]</sup>

All things come into being by conflict of opposites, and the sum of things (*ta hola*, "the whole") flows like a stream.

In the bow metaphor Heraclitus compares the resultant to a strung bow held in shape by an equilibrium of the string tension and spring action of the bow:<sup>[46]</sup>

There is a harmony in the bending back (*palintropos*) as in the case of the bow and the lyre.

## Hepesthai to koino, "follow the common"

People must "follow the common (*hepesthai tō ksunō*)"<sup>[47]</sup> and not live having "their own judgement (*phronēsis*)". He distinguishes between human laws and divine law (*tou theiou* "of God").<sup>[48]</sup>

He removes the human sense of justice from his concept of God; i.e., humanity is not the image of God: "To God all things are fair and good and just, but people hold some things wrong and some right."<sup>[49]</sup> God's custom has wisdom but human custom does not,<sup>[50]</sup> and yet both humans and God are childish: "human opinions are children's toys"<sup>[51]</sup> and "Eternity is a child moving counters in a game; the kingly power is a child's."<sup>[52]</sup>

Wisdom is "to know the thought by which all things are steered through all things",<sup>[53]</sup> which must not imply that people are or can be wise. Only Zeus is wise.<sup>[54]</sup> To some degree then Heraclitus seems to be in the mystic's position of urging people to follow God's plan without much of an idea what that may be. In fact there is a note of despair: "The fairest universe (*kallistos kosmos*) is but a heap of rubbish (*sarma*, sweepings) piled up (*kechumenon*, poured



out) at random (*eikê*).<sup>[55]</sup>

## Influence

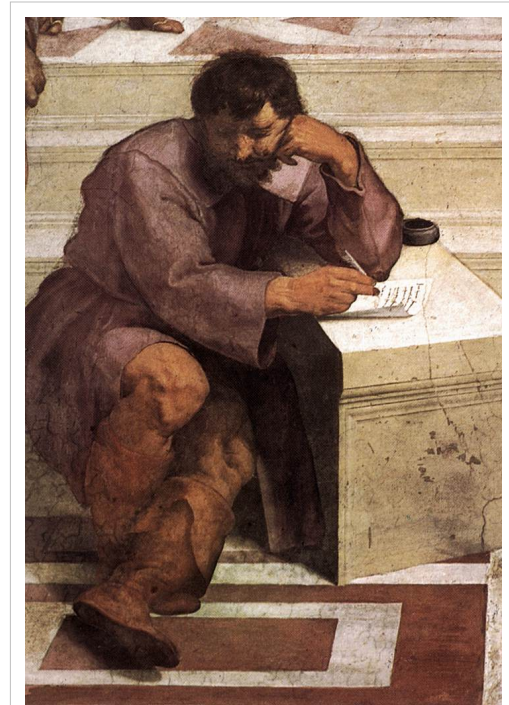
### Plato

In Heraclitus a perceived object is a harmony between two fundamental units of change, a waxing and a waning. He typically uses the ordinary word "to become" (*gignesthai* or *ginesthai*, root sense of being born), which led to his being characterized as the philosopher of becoming rather than of being. He recognizes the changing of objects with the flow of time.

Plato argues against Heraclitus as follows:<sup>[56]</sup>

How can that be a real thing which is never in the same state? ... for at the moment that the observer approaches, then they become other ... so that you cannot get any further in knowing their nature or state .... but if that which knows and that which is known exist ever ... then I do not think they can resemble a process or flux ....

In Plato one experienced unit is a state, or object existing, which can be observed. The time parameter is set at "ever"; that is, the state is to be presumed present between observations. Change is to be deduced by comparing observations, but no matter how many of those you are able to make, you cannot get through the mysterious gap between them to account for the change that must be occurring there.



Heraclitus - detail from *The School of Athens* by Raphael, 1510

### Stoics

Stoicism was a philosophical school which flourished between the 3rd century BCE and about the 3rd century CE. It began among the Greeks and became the major philosophy of the Roman Empire before declining with the rise of Christianity in the 3rd century.

Throughout their long tenure the Stoics believed that the major tenets of their philosophy derived from the thought of Heraclitus.<sup>[57]</sup> According to Long, "the importance of Heraclitus to later Stoics is evident most plainly in Marcus Aurelius."<sup>[58]</sup> Explicit connections of the earliest Stoics to Heraclitus showing how they arrived at their interpretation are missing but they can be inferred from the Stoic fragments. Long concludes to "modifications of Heraclitus."<sup>[59]</sup>

The Stoics were interested in Heraclitus' treatment of fire. In addition to seeing it as the most fundamental of the four elements and the one that is quantified and determines the quantity (*logos*) of the other three, he presents fire as the cosmos, which was not made by any of the gods or men, but "was and is and ever shall be ever-living fire."<sup>[60]</sup> Fire is both a substance and a motivator of change, it is active in altering other things quantitatively and performing an activity Heraclitus describes as "the judging and convicting of all things."<sup>[61]</sup> It is "the thunderbolt that steers the course of all things."<sup>[62]</sup> There is no reason to interpret the judgement, which is actually "to separate" (*krinein*), as outside of the context of "strife is justice" (see subsection above).

The earliest surviving Stoic work, the *Hymn to Zeus* of Cleanthes,<sup>[63]</sup> though not explicitly referencing Heraclitus, adopts what appears to be the Heraclitean logos modified. Zeus rules the universe with law (*nomos*) wielding on its behalf the "forked servant", the "fire" of the "ever-living lightning." So far nothing has been said that differs from the

Zeus of Homer. But then, says Cleanthes, Zeus uses the fire to "straighten out the common logos" that travels about (*phoitan*, "to frequent") mixing with the greater and lesser lights (heavenly bodies). This is Heraclitus' logos, but now it is confused with the "common *nomos*", which Zeus uses to "make the wrong (*perissa*, left or odd) right (*artia*, right or even)" and "order (*kosmein*) the disordered (*akosma*)."<sup>[64]</sup>

The Stoic modification of Heraclitus' idea of the Logos was also influential on Jewish philosophers such as Philo of Alexandria, who connected it to "Wisdom personified" as God's creative principle. Philo uses the term Logos throughout his treatises on Hebrew Scripture in a manner clearly influenced by the Stoics.

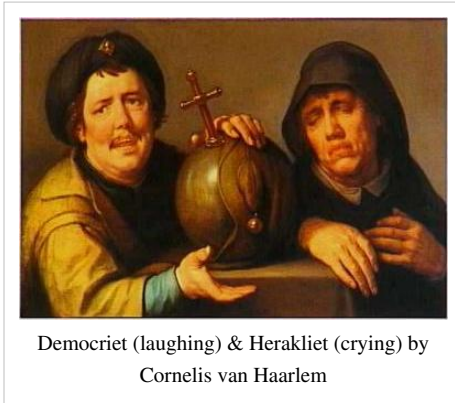
## Church fathers

The church fathers were the leaders of the early Catholic Church during its first five centuries of existence, roughly contemporaneous to Stoicism under the Roman Empire. The works of dozens of writers in hundreds of pages have survived.

All of them had something to say about the Christian form of the Logos. The Catholic Church found it necessary to discriminate between the Christian logos and that of Heraclitus as part of its ideological distancing from paganism. The necessity to convert by defeating paganism was of paramount importance. Hippolytus of Rome therefore identifies Heraclitus along with the other Pre-Socratics (and Academics) as sources of heresy. Church use of the methods and conclusions of ancient philosophy as such was as yet far in the future, even though many were converted philosophers.

In *Refutation of All Heresies*<sup>[65]</sup> Hippolytus says: "What the blasphemous folly is of Noetus, and that he devoted himself to the tenets of Heraclitus the Obscure, not to those of Christ." Hippolytus then goes on to present the inscrutable DK B67: "God (*theos*) is day and night, winter and summer, ... but he takes various shapes, just as fire, when it is mingled with spices, is named according to the savor of each." The fragment seems to support pantheism if taken literally.

Hippolytus condemns the obscurity of it. He cannot accuse Heraclitus of being a heretic so he says instead: "Did not (Heraclitus) the Obscure anticipate Noetus in framing a system ...?" The apparent pantheist deity of Heraclitus (if that is what DK B67 means) must be equal to the union of opposites and therefore must be corporeal and incorporeal, divine and not-divine, dead and alive, etc., and the Trinity can only be reached by some sort of shape-shifting.<sup>[66]</sup>



Democriet (laughing) & Herakliet (crying) by  
Cornelis van Haarlem

## Notes

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[3] Diogenes Laërtius, ix. 1

[4] Diogenes Laërtius, ix. 3

[5] Diogenes Laërtius, ix. 6

[6] Strabo, Chapter 1, section 3.

[7] Diogenes Laërtius, ix. 2

[8] Chapter 3 beginning.

[9] Diogenes Laërtius, ix. 5

[10] DK B55.

[11] DK B40.

[12] DK B42.

[13] DK B44.

- [14] DK B125a.
- [15] Diogenes Laërtius, ix. 4
- [16] *De Finibus Bonorum et Malorum*, Chapter 2, Section 15.
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- [28] DK B72, from Marcus Aurelius, *Meditations* iv. 46
- [29] DK B2, DK B50, from Hippolytus, *Refutation of all Heresies*, ix. 9
- [30] Barnes page 65, and also Peters, Francis E. (1967). *Greek Philosophical Terms: A Historical Lexicon*. NYU Press. pp. 178. ISBN 081476552. Simplicius' commentary on Aristotle's *physica* 1313.11.
- [31] For the etymology see Watkins, Calvert (2000). "Appendix I: Indo-European Roots: sreus" (<http://www.bartleby.com/61/roots/IE493.html>). The American Heritage Dictionary of the English Language: Fourth Edition. . In pronunciation the -ei- is a diphthong sounding like the -ei- in reindeer. The initial r is aspirated or made breathy, which indicates the dropping of the s in \*sreus-.
- [32] DK22B12, quoted in Arius Didymus apud Eusebius, *Praeparatio Evangelica*, 15.20.2
- [33] *Cratylus* Paragraph Crat. 401 section d line 5 (<http://www.perseus.tufts.edu/hopper/text?doc=Perseus:text:1999.01.0171:text=Crat.:section=401d>).
- [34] *Cratylus* Paragraph 402 section a line 8 (<http://www.perseus.tufts.edu/hopper/text?doc=Plat.+Crat.+402&fromdoc=Perseus:text:1999.01.0171>).
- [35] DK B49a, Harris 110. Others like it are DK B12, Harris 20; DK B91, Harris 21.
- [36] DK B60
- [37] DK B54.
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- [39] DK B76.
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- [46] DK B51.
- [47] The initial part of DK B2, often omitted because broken by a note explaining that *ksunos* (Ionic) is *koinos* (Attic).
- [48] DK B114.
- [49] DK B102.
- [50] DK B78.
- [51] DK B70.
- [52] DK B52.
- [53] DK B41.
- [54] DK B32.
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- [57] Long, A.A. (2001). *Stoic Studies*. University of California Press. Chapter 2. ISBN 0520229746.
- [58] Long, page 56.
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- [60] DK B60.
- [61] DK B66.
- [62] DK B64.
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## On Nature (Heraclitus)

*For other philosophical literature of the same name see On Nature*



Heraclitus (figured by Michelangelo) sits apart from the other philosophers in Raphael's *School of Athens*

***On Nature*** is a philosophical treatise written by Heraclitus. According to Diogenes, it was divided into three discourses; one on the universe, another on politics, and one on theology. Theophrastus says (in Diogenes) "... some parts of his work are half-finished, while other parts make a strange medley."<sup>[1]</sup>

Diogenes also tells us that Heraclitus deposited his book as a dedication in the great temple of Artemis, the Artemisium, one of the largest temples of the 6th century BCE and one of the Seven Wonders of the Ancient World. Ancient temples were regularly used for storing treasures, and were open to private individuals under exceptional circumstances; furthermore, many subsequent philosophers in this period refer to the work. Says Kahn:<sup>[2]</sup> "Down to the time of Plutarch and Clement, if not later, the little book of Heraclitus was available in its original form to any reader who chose to seek it out." Diogenes says:<sup>[3]</sup> "the book acquired such fame that it produced partisans of his philosophy who were called Heracliteans."

As with other pre-Socratics, his writings only survive in fragments quoted by other authors.

[1] Diogenes Laërtius, ix. 6

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# Alfred North Whitehead

## Alfred North Whitehead

Full name	Alfred North Whitehead
Born	15 February 1861 Ramsgate, Kent, England
Died	30 December 1947 (aged 86) Cambridge, Massachusetts, United States
Era	20th century philosophy
Region	Western philosophy
School	Process philosophy
Main interests	Metaphysics, mathematics
Notable ideas	Process philosophy

**Alfred North Whitehead**, OM FRS<sup>[1]</sup> (15 February 1861 – 30 December 1947) was an English mathematician who became a philosopher. He wrote on algebra, logic, foundations of mathematics, philosophy of science, physics, metaphysics, and education. Whitehead supervised the doctoral dissertations of Bertrand Russell and Willard Van Orman Quine, thus influencing logic and virtually all of analytic philosophy. He co-authored the epochal *Principia Mathematica* with Russell.

### Life

Whitehead was born in Ramsgate, Kent, England. Although his grandfather, Thomas Whitehead, was known for having founded Chatham House Academy, a fairly successful school for boys, Alfred North was educated at Sherborne School, Dorset, then considered the best public school in the country. His childhood was described as over-protected, but when at school he excelled in sports, mathematics and was head prefect of his class.

In 1880, Whitehead matriculated at Trinity College, Cambridge, where he was fourth wrangler and gained his BA in 1884.<sup>[2]</sup> Elected a fellow of Trinity in 1884, Whitehead would teach and write mathematics at the college until 1910, spending the 1890s writing his *Treatise on Universal Algebra* (1898) and the 1900s collaborating with his former pupil, Russell, on the first edition of *Principia Mathematica*.<sup>[3]</sup>

In 1910, he resigned his position at Trinity College to protest the dismissal of a colleague because of an adulterous affair. He also ran afoul of a Cambridge by-law limiting the term of a Senior Lecturer to 25 years.

In 1890, Whitehead married Evelyn Wade, an Irish woman reared in France; they had a daughter and two sons. One son died in action while serving in the Royal Flying Corps during World War I. Meanwhile, Russell spent much of 1918 in prison because of his pacifist activities. Although Whitehead visited his co-author in prison, he did not take his pacifism seriously, while Russell sneered at Whitehead's later speculative Platonism and panpsychism. After the war, Russell and Whitehead seldom interacted, and Whitehead did not contribute to the 1925 second edition of *Principia Mathematica*.

Whitehead was always interested in theology, especially in the 1890s. His family was firmly anchored in the Church of England: his father and uncles were vicars, while his brother would become Bishop of Madras. Perhaps influenced by his wife and the writings of Cardinal Newman, Whitehead leaned towards Roman Catholicism. Prior to World War I, he considered himself an agnostic. Later he returned to religion, without formally joining any church.

Concomitantly, Whitehead developed a keen interest in physics: his fellowship dissertation examined James Clerk Maxwell's views on electricity and magnetism. His outlook on mathematics and physics was more philosophical than

purely scientific; he was more concerned about their scope and nature, rather than about particular tenets and theories.

He was president of the Aristotelian Society from 1922 to 1923.

The period between 1910 and 1926 was mostly spent at University College London and Imperial College London, where he taught and wrote on physics, the philosophy of science, and the theory and practice of education. He was a Fellow of the Royal Society since 1903 and was elected to the British Academy in 1931. In physics, Whitehead articulated a rival doctrine to Einstein's general relativity. His theory of gravitation is now discredited because its predicted variability of the gravitational constant **G** disagrees with experimental findings.<sup>[4]</sup> A more lasting work was his *Enquiry Concerning the Principles of Natural Knowledge* (1919), a pioneering attempt to synthesize the philosophical underpinnings of physics. It has little influenced the course of modern physics, however.

Whitehead's Presidential address in 1916 to the Mathematical Association of England *The Aims of Education* in the book of the same title (1929a) pointedly criticized the formalistic approach of modern British teachers who do not care about culture and self-education of their disciples: "Culture is activity of thought, and receptiveness to beauty and humane feeling. Scraps of information have nothing to do with it."

In 1924, Henry Osborn Taylor invited Whitehead, who was then 63, to implement his ideas and teach philosophy at Harvard University. This was a subject that fascinated Whitehead but that he had also not previously studied or taught. The Whiteheads spent the rest of their lives in the United States. He retired from teaching in 1937. When he died in 1947 in Cambridge, Massachusetts, U.S., there was no funeral, and his body was cremated.

Whitehead had opinions about a vast range of human endeavors. These opinions pepper the many essays and speeches he gave on various topics between 1915 and his death (1917, 1925a, 1927, 1929a, 1929b, 1933, 1938). His Harvard lectures (1924–37) are studded with quotations from his favourite poets, Wordsworth and Shelley. Most Sunday afternoons when they were in Cambridge, Massachusetts, the Whiteheads hosted an open house to which all Harvard students were welcome, and during which talk flowed freely. Some of the *obiter dicta* Whitehead spoke on these occasions were recorded by Lucien Price, a Boston journalist, who published them in 1954. That book also includes a remarkable picture of Whitehead as the aged sage holding court. It was at one of these open houses that the young Harvard student B.F. Skinner credits a discussion with Whitehead as providing the inspiration for his work *Verbal Behavior* in which language is analyzed from a behaviorist perspective.<sup>[5]</sup> Another student influenced by Whitehead was Charles Malik, the drafter of the Universal Declaration of Human Rights's preamble, and later president of the UN General Assembly. Malik wrote his PhD dissertation about Whitehead, in which Malik compared Whitehead's Metaphysics of Time to that of Martin Heidegger .

A two volume biography was written by Victor Lowe (1985) and Lowe and Schneewind (1990); Lowe studied under Whitehead at Harvard. A comprehensive appraisal of Whitehead's work is difficult because Whitehead left no Nachlass; his family carried out his instructions that all of his papers be destroyed after his death. There is also no critical edition of Whitehead's writings.

## Ideas

The genesis of Whitehead's process philosophy may be attributed to his having witnessed the shocking collapse of Newtonian physics, due mainly to Albert Einstein's work. His metaphysical views emerged in *The Concept of Nature* (1920) and were expanded in *Science and the Modern World* (1925), also an important study in the history of ideas and the role of science and mathematics in the rise of Western civilization. Indebted to Henri Bergson's philosophy of change, Whitehead was also a Platonist who "saw the definite character of events as due to the "ingression" of timeless entities."<sup>[6]</sup>

In 1927, Whitehead was asked to give the Gifford Lectures at the University of Edinburgh. These were published in 1929 as *Process and Reality*, the book that founded process philosophy, a major contribution to Western metaphysics. Proponents of process philosophy include Charles Hartshorne and Nicholas Rescher, and his ideas have

been taken up by French philosophers Maurice Merleau-Ponty and Gilles Deleuze. In poetry, the work and thought of American Charles Olson was strongly influenced by Whitehead's concepts. Olson referred to him variously as "the cosmologist"<sup>[7]</sup> and as the "constant companion of my poem."<sup>[8]</sup>

*Process and Reality* is famous for its defense of theism, although Whitehead's God differs essentially from the revealed God of Abrahamic religions. Whitehead's Philosophy of Organism gave rise to process theology, thanks to Charles Hartshorne, John B. Cobb, Jr, and David Ray Griffin. Some Christians and Jews find process theology a fruitful way of understanding God and the universe. Just as the entire universe is in constant flow and change, God, as source of the universe, is viewed as growing and changing. Whitehead's rejection of mind-body dualism is similar to elements in traditions such as Buddhism.

The main tenets of Whitehead's metaphysics were summarized in his most accessible work, *Adventures of Ideas* (1933), where he also defines his conceptions of beauty, truth, art, adventure, and peace. He believed that "there are no whole truths; all truths are half-truths. It is trying to treat them as whole truths that plays the devil."<sup>[9]</sup>

Whitehead's political views sometimes appear to be libertarian without the label. He wrote:

“Now the intercourse between individuals and between social groups takes one of two forms, force or persuasion. Commerce is the great example of intercourse by way of persuasion. War, slavery, and governmental compulsion exemplify the reign of force.”<sup>[10]</sup>

On the other hand, many Whitehead scholars read his work as providing a philosophical foundation for the social liberalism of the New Liberal movement that was prominent throughout Whitehead's adult life. Morris wrote that "...there is good reason for claiming that Whitehead shared the social and political ideals of the new liberals."<sup>[11]</sup>

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- [3] On Whitehead the mathematician and logician, see Grattan-Guinness (2000, 2002), and Quine's chapter in Schilpp (1941), reprinted in Quine (1995).
- [4] Y. Tanaka: The Comparison between Whitehead's and Einstein's Theories of Relativity (From the viewpoint of empirical tests) ([http://web.archive.org/web/20041204230632/http://www.asahi-net.or.jp/~sn2y-tnk/tanaka\\_4\\_4.htm](http://web.archive.org/web/20041204230632/http://www.asahi-net.or.jp/~sn2y-tnk/tanaka_4_4.htm))
- [5] Skinner, B.F. 1957. *Verbal Behavior*, appendix.
- [6] *Encyclopaedia Britannica*, 2006.
- [7] Von Hallberg, Robert. *Charles Olson: The Scholar's Art*. Cambridge: Harvard UP, 1978: p. 2.
- [8] *Polis is this: Charles Olson and the Persistence of Place*. Dir. Ferrini, Henry, and Ken Riaf.
- [9] *Dialogues of Alfred North Whitehead*, recorded by Lucien Price, p. 13, 2001
- [10] *Adventures of Ideas* p. 105, 1933 edition; p. 83, 1967 ed.
- [11] Morris, Randall C., *Journal of the History of Ideas* 51: 75-92. p. 92.



## External links

- Whitehead Research Project (<http://whiteheadresearch.org/>), dedicated to the research of, and scholarship on, the texts, philosophy and life of Alfred North Whitehead; explores and analyzes the relevance of Whitehead's thought in dialogue with contemporary philosophies
- Center for Process Studies (<http://www.ctr4process.org>) at the Claremont School of Theology. Primarily concerned with the thought of Whitehead and Charles Hartshorne, and the various modes of thought that have emerged out of their work.
- Society for the Study of Process Philosophies (<http://www.processphilosophies.org>)
- Critical Edition of Whitehead (<http://whiteheadresearch.org/research/cew/>)
- Whitehead, Alfred N., *A Treatise on Universal Algebra with Applications* (<http://projecteuclid.org/DPubS?service=UI&version=1.0&verb=Display&handle=euclid.chmm/1263316509>), Cambridge University Press, 1898 (full text).
- Irvine, A. D. "Alfred North Whitehead" (<http://plato.stanford.edu/entries/whitehead/>), *Stanford Encyclopedia of Philosophy*
- O'Connor, John J.; Robertson, Edmund F., "Alfred North Whitehead" (<http://www-history.mcs.st-andrews.ac.uk/Biographies/Whitehead.html>), *MacTutor History of Mathematics archive*, University of St Andrews.
- A N Whitehead: New World Philosopher (<http://www.harvardsquarelibrary.org/unitarians/whitehead.html>)
- Centre de philosophie pratique « Chromatiques whiteheadiennes » (<http://www.chromatika.org/>)
- Works by Alfred North Whitehead (<http://www.gutenberg.org/author/Alfred+North+Whitehead>) at Project Gutenberg
- Synge, John L. " Whitehead's Principle of Relativity (<http://arxiv.org/abs/physics/0505027>)" on arXiv.org
- During, Elie. 2007. "Philosophical twins ? Bergson and Whitehead on Langevin's Paradox and the Meaning of 'Space-Time'" ([http://ciepfc.rhapsodyk.net/article.php3?id\\_article=136](http://ciepfc.rhapsodyk.net/article.php3?id_article=136)) in Durand, G. & Weber, M., eds., *Alfred North Whitehead's Principles of Natural Knowledge*. Frankfurt & Lancaster: Ontos Verlag.
- During, Elie. 2008. "Durations and Simultaneities : Temporal Perspectives and Relativistic Time in Whitehead and Bergson" ([http://ciepfc.rhapsodyk.net/article.php3?id\\_article=211](http://ciepfc.rhapsodyk.net/article.php3?id_article=211)) in M. Weber (ed.), *Handbook of Whiteheadian Process Thought*. Frankfurt & Lancaster: Ontos Verlag.

# Charles Sanders Peirce

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Charles Sanders Peirce Charles Sanders Peirce Born September 10, 1839 Cambridge, Massachusetts Died April 19, 1914 (aged 74) Milford, Pennsylvania Nationality American Fields Logic, Mathematics, Statistics, Ian Hacking Hacking, Ian (1990), "A Universe of Chance", *The Taming of Chance*, pp. 200–215, Cambridge U. Pr. Stephen Stigler Stigler, Stephen M. (1978), "Mathematical statistics in the early States", *Annals of Statistics*, v. 6, March, pp. 239–265, see p. 248. doi:10.1214/aos/1176344123 JSTOR 2958876 MR483118. Philosophy, Metrology, Crease, Robert P. (2009), "Charles Sanders Peirce and the first absolute measurement standard: In his brilliant but troubled life, Peirce was a pioneer in both metrology and philosophy", *Physics Today* v. 62, issue 12, December, pp. 39–44. Eprint. Chemistry, Experimental psychology Cadwallader, Thomas C. (1974), "Charles S. Peirce (1839-1914): The first American experimental psychologist", *Journal of the History of the Behavioral Sciences*, v. 10, issue 3, pp. 291–8, July. Economics, Wible, James R. (2008), "The Economic Mind of Charles Sanders Peirce", *Contemporary Pragmatism*, v. 5, n. 2, December, pp. 39-67 Linguistics, Nöth, Winfried (2000), "Charles Sanders Peirce, Pathfinder in Linguistics", *Digital Encyclopedia of Charles S. Peirce*. History of science Religious stance Episcopal Church (United States) Episcopal but unconventional C. S. Peirce articles General: Charles Sanders Peirce Charles Sanders Peirce bibliography Philosophical: Categories (Peirce) Semiotic elements and classes of signs (Peirce) Semiotic elements and classes of signs (Peirce) Pragmatic maxim • Pragmaticism Synechism • Tychism Classification of the sciences (Peirce) Biographical: Juliette Peirce Charles Santiago Sanders Peirce Abbreviations B:x Brent, Joseph (1998), *Charles Sanders Peirce: A Life*, 2nd edition, Bloomington and Indianapolis: Indiana University Press ( catalog page); also NetLibrary. page x CDPT#CDPT Commens Dictionary of Peirce's Terms CP x.y#CPCollected Papers volume x, paragraph y EP x:y#EP The Essential Peirce volume x, page y W x:y#WWritings of Charles S. Peirce volume x, page y Charles Sanders Peirce (/ˈpɜrs/ like "purse"; "Peirce", in the case of C.S. Peirce, always rhymes with the English-language word "terse" and so, in most dialects, is pronounced exactly like the English-language word "purse": Audio (US). See "Note on the Pronunciation of 'Peirce'", *Peirce Project Newsletter*, v. 1, nos. 3/4, Dec. 1994. September 10, 1839 – April 19, 1914) was an American philosopher, logician, mathematician, and sciencescientist, born at 3 Phillips Place in Cambridge, Massachusetts. Peirce was educated as a chemist and employed as a scientist for 30 years. Today he is appreciated largely for his contributions to logic, mathematics, philosophy, and semiotics, and for his founding of pragmatism. In 1934, the philosopher Paul Weiss (philosopher) Paul Weiss called Peirce "the most original and versatile of American philosophers and America's greatest logician". Paul Weiss (philosopher) Weiss, Paul (1934), "Peirce, Charles Sanders" in the *Dictionary of American Biography*. Arisbe Eprint. An innovator in mathematics, statistics, philosophy, research methodology, and various sciences, Peirce considered himself a logician first and foremost. He made major contributions to logic, but logic for him encompassed much of that which is now called epistemology and philosophy of science. He saw logic as the formal branch of semiotics, of which he is a founder. As early as 1886 he saw that logic gate logical operations could be carried out by electrical switching circuits, the same idea as was used decades later to produce digital computers. Peirce, C. S., "Letter, Peirce to Allan Marquand A. Marquand", dated 1886, W 5:541–3, Google Preview. See Arthur W. Burks Burks, Arthur W., "Review: Charles S. Peirce, *The new elements of mathematics*", *Bulletin of the American Mathematical Society* v. 84, n. 5 (1978), pp. 913–18, see 917. PDF Eprint. Also p. xlv in Houser, Nathan, Introduction, W 5. Life Peirce's birthplace at

3 Phillips Place Peirce's birthplace. Currently, Lesley University's Graduate School of Arts and Social Sciences

Charles Sanders Peirce was the son of Sarah Hunt Mills and Benjamin Peirce, himself a professor of astronomy and mathematics at Harvard University, perhaps the first serious research mathematician in America. At 12 years of age, Charles read an older brother's copy of Richard Whately's *Elements of Logic*, then the leading English-language text on the subject. Thus began his lifelong fascination with logic and reasoning. Fisch, Max, "Introduction", W 1:xvii, find phrase "One episode". He went on to obtain the Bachelor of Arts B.A. and Master of Arts (postgraduate) M.A. from Harvard; in 1863 the Lawrence Scientific School awarded him a B.Sc. that was Harvard's first summa cum laude chemistry degree; "Peirce, Charles Sanders" (1898), *The National Cyclopaedia of American Biography*, v. 8, p. 409. and otherwise his academic record was undistinguished (B:54–6). At Harvard, he began lifelong friendships with Francis Ellingwood Abbot, Chauncey Wright, and William James (B:363–4). One of his Harvard instructors, Charles William Eliot, formed an unfavorable opinion of Peirce. This opinion proved fateful, because Eliot, while President of Harvard 1869–1909—a period encompassing nearly all of Peirce's working life—repeatedly vetoed Harvard's employing Peirce in any capacity (B:19–20, 53, 75, 245). Peirce suffered from his late teens onward from a nervous facial condition then known as "facial neuralgia", which would today be diagnosed as trigeminal neuralgia. Brent says that when in the throes of its pain "he was, at first, almost stupefied, and then aloof, cold, depressed, extremely suspicious, impatient of the slightest crossing, and subject to violent outbursts of temper" (B:40). Its consequences may have led to the social isolation which made his life's later years so tragic. Early employment

Between 1859 and 1891, Peirce was intermittently employed in various scientific capacities by the U.S. National Geodetic Survey United States Coast Survey, Burch, Robert (2001, 2010), "Charles Sanders Peirce", *Stanford Encyclopedia of Philosophy*. where he enjoyed his highly influential father's protection (B:139) until the latter's death in 1880. That employment exempted Peirce from having to take part in the American Civil War Civil War; it would have been very awkward for him to do so, as the Boston Brahmin Peirces sympathized with the Confederate States of America Confederacy (B:61–2). At the Survey, he worked mainly in geodesy and gravimetry, refining the use of pendulums to determine small local variations in the strength of Earth's gravity. He was elected a resident fellow of the American Academy of Arts and Sciences in January 1867 (B:69). The Survey sent him to Europe five times (B:368), first in 1871, as part of a group sent to observe a solar eclipse; while there, he sought out Augustus De Morgan, William Stanley Jevons, and William Kingdon Clifford (B:79–81), British mathematicians and logicians whose turn of mind resembled his own. From 1869 to 1872, he was employed as an Assistant in Harvard's astronomical observatory, doing important work on determining the brightness of stars and the shape of the Milky Way. Moore, Edward C., and Robin, Richard S., eds., (1964), *Studies in the Philosophy of Charles Sanders Peirce*, Second Series, Amherst: U. of Massachusetts Press. On Peirce the astronomer, see Lenzen's chapter. On April 20, 1877 he was elected a member of the United States National Academy of Sciences National Academy of Sciences (B:367). Also in 1877, he proposed measuring the meter as so many wavelengths of light of a certain frequency, Fisch, Max (1983), "Peirce as Scientist, Mathematician, Historian, Logician, and Philosopher", #SIL Studies in Logic (new edition), see p. x. the kind of definition employed Metre #Standard wavelength of krypton-86 emission from 1960 to 1983. During the 1880s, Peirce's indifference to bureaucratic detail waxed while his Survey work's quality and timeliness waned. Peirce took years to write reports that he should have completed in months. Meanwhile, he wrote entries, ultimately thousands during 1883–1909, on philosophy, logic, science, and other subjects for the encyclopedic *Century Dictionary*. See "Peirce Edition Project (UQÀM) - in short" from #PEPPEP-UQÀM. In 1885, an investigation by the William B. Allison Allison Commission exonerated Peirce, but led to the dismissal of Superintendent Julius Hilgard and several other Coast Survey employees for misuse of public funds. Houser, Nathan, "Introduction", W 5:xxviii–xxix, find "Allison". In 1891, Peirce resigned from the Coast Survey at Superintendent Thomas Corwin Mendenhall's request (B:202). He never again held regular employment. Johns Hopkins University In 1879, Peirce was appointed Lecturer in logic at the new Johns Hopkins University, which was strong in a number of areas that interested him, such as philosophy (Josiah Royce Royce and John Dewey Dewey did their PhDs at Hopkins), psychology (taught by G. Stanley Hall and studied by Joseph Jastrow, who coauthored a landmark empirical study with Peirce), and mathematics (taught by J. J. Sylvester, who

came to admire Peirce's work on mathematics and logic). 1883 saw publication of his Charles Sanders Peirce bibliography#SILStudies in Logic by Members of the Johns Hopkins University containing works by himself and Allan Marquand, Christine Ladd-FranklinChristine Ladd, Benjamin Ives Gilman, and Oscar Howard Mitchell. They were among his graduate students.Houser, Nathan (1989), " Introduction", W 4:xxxviii, find "Eighty-nine". This nontenured position proved to be the only academic appointment Peirce ever held. Brent documents something Peirce never suspected, namely that his efforts to obtain academic employment, grants, and scientific respectability were repeatedly frustrated by the covert opposition of a major American scientist of the day, Simon Newcomb (B:150–4, 195, 279–80, 289). Peirce's efforts may also have been hampered by a difficult personality; Brent conjectures as to further psychological difficulty (B:xv). Peirce's personal life also handicapped him. His first wife, Harriet Melusina Fay ("Zina"), left him in 1875 (B:98–101). He soon took up with a woman, Juliette PeirceJuliette, whose maiden name, given variously as Froissy and Pourtalai (B:141) and nationality (she spoke French, B:148) remain uncertain,Houser, Nathan, " Introduction", W 6, first paragraph. but his divorce from Zina became final only in 1883, whereupon he married Juliette (B:123, 368). That year, Newcomb pointed out to a Johns Hopkins trustee that Peirce, while a Hopkins employee, had lived and traveled with a woman to whom he was not married; the ensuing scandal led to his dismissal in January 1884 (B:150–1, 368). Over the years Peirce sought academic employment at various universities without success.In 1885 (B:369); in 1890 and 1900 (B:215, 273); in 1891 (B:215–16); and in 1892 (B:151–2, 222). He had no children by either marriage (B:77). PovertyCambridge, where Peirce was born and raised, New York City, where he often visited and sometimes lived, and Milford, where he spent the later years of his life with his second wife Juliette.Juliette and Charles by the well at their home, Arisbe, in 1907. In 1887 Peirce spent part of his inheritance from his parents to buy 2000 acres (8 km<sup>2</sup>) of rural land near Milford, Pennsylvania, which never yielded an economic return.B:191-2, 217, 270, 318, 321, 337. There he had a 1854 farmhouse remodeled to his design (B:13). The Peirces named the property "Juliette Peirce#ArisbeArisbe". There they lived with a few interruptions for the rest of their lives (B:369–74), Charles writing prolifically, much of it unpublished to this day (see #WorksWorks). Living beyond their means soon led to grave financial and legal difficulties (B:191). He spent much of his last two decades unable to afford heat in winter and subsisting on old bread donated by the local baker. Unable to afford new stationery, he wrote on the verso side of old manuscripts. An outstanding warrant for assault and unpaid debts led to his being a fugitive in New York City for a while (B:246). Several people, including his brother James Mills Peirce (B:242) and his neighbors, relatives of Gifford Pinchot, settled his debts and paid his property taxes and mortgage (B:271). Peirce did some scientific and engineering consulting and wrote much for meager pay, mainly encyclopedic dictionary entries, and reviews for *The Nation* (U.S. periodical)*The Nation* (with whose editor, Wendell Phillips Garrison, he became friendly). He did translations for the Smithsonian Institution, at its director Samuel Langley's instigation. Peirce also did substantial mathematical calculations for Langley's research on powered flight. Hoping to make money, Peirce tried inventing (B:249–55). He began but did not complete a number of books (B:371). In 1888, President Grover Cleveland appointed him to the Assay Commission (B:189). From 1890 on, he had a friend and admirer in Judge Francis C. Russell of Chicago (B:370), who introduced Peirce to editor Paul Carus and owner Open Court Publishing CompanyEdward Hegeler of the pioneering American philosophy journal *The Monist*, which eventually published articles by Peirce (B:205–6), at least 14. He wrote many texts in James Mark Baldwin's Charles Sanders Peirce bibliography#Peirce's definitions in the BaldwinDictionary of Philosophy and Psychology (1901–5); half of those credited to him appear to have been written actually by Christine Ladd-Franklin under his supervision (B:374–6). He applied in 1902 to the newly formed Carnegie Institution for a grant to write a systematic book of his life's work. The application was doomed; his nemesis Newcomb served on the Institution's executive committee, and its President had been the President of Johns Hopkins at the time of Peirce's dismissal (B:279–89).The one who did the most to help Peirce in these desperate times was his old friend William James, dedicating his *Will to Believe* (1897) to Peirce, and arranging for Peirce to be paid to give two series of lectures at or near Harvard (1898 and 1903) (B:261–4, 290–2, 324). Most important, each year from 1907 until James's death in 1910, James wrote to his friends in the Boston intelligentsia to request financial aid for Peirce; the fund continued even after James died. Peirce reciprocated by designating James's eldest

son as his heir should Juliette predecease him (B:306–7 & 315–6). It has been believed that this was also why Peirce used "Santiago" ("St. James" in Spanish) as a middle name, but he appeared in print as early as 1890 as Charles Santiago Peirce. (See Charles Santiago Sanders Peirce for discussion and references). Peirce died destitute in Milford, Pennsylvania, twenty years before his widow. Reception Bertrand Russell (1959) wrote, Russell, Bertrand (1959), *Wisdom of the West*, p. 276. "Beyond doubt [...] he was one of the most original minds of the later nineteenth century, and certainly the greatest American thinker ever." (Russell's *Principia Mathematica* does not mention Peirce; Peirce's work was not widely known till later.) Anellis, Irving H. (1995), "Peirce Rustled, Russell Pierced: How Charles Peirce and Bertrand Russell Viewed Each Other's Work in Logic, and an Assessment of Russell's Accuracy and Role in the Historiography of Logic", *Modern Logic* 5, 270–328. Arisbe Eprint. A. N. Whitehead, while reading some of Peirce's unpublished manuscripts soon after arriving at Harvard in 1924, was struck by how Peirce had anticipated his own "process" thinking. (On Peirce and process metaphysics, see Lowe 1964.) Karl Popper viewed Peirce as "one of the greatest philosophers of all times". Popper, Karl (1972), *Objective Knowledge: An Evolutionary Approach*, p. 212. Yet Peirce's achievements were not immediately recognized. His imposing contemporaries William James and Josiah Royce See Royce, Josiah, and Kernan, W. Fergus (1916), "Charles Sanders Peirce", *The Journal of Philosophy, Psychology, and Scientific Method* v. 13, pp. 701–9. Arisbe Eprint. admired him, and Cassius Jackson Keyser at Columbia and C. K. Ogden wrote about Peirce with respect, but to no immediate effect. The first scholar to give Peirce his considered professional attention was Royce's student Morris Raphael Cohen, the editor of an anthology of Peirce's writings titled *Charles Sanders Peirce bibliography#CLLChance, Love, and Logic* (1923) and the author of the first bibliography of Peirce's scattered writings. Ketner et al. (1986), *Charles Sanders Peirce bibliography#cbComprehensive Bibliography*, see p. iii. John Dewey studied under Peirce at Johns Hopkins and, from 1916 onwards, Dewey's writings repeatedly mention Peirce with deference. His 1938 *Logic: The Theory of Inquiry* is much influenced by Peirce. Hookway, Christopher (2008), "Pragmatism", *Stanford Encyclopedia of Philosophy*. The publication of the first six volumes of the *Collected Papers* (1931–35), the most important event to date in Peirce studies and one that Cohen made possible by raising the needed funds (B:8) did not prompt an outpouring of secondary studies. The editors of those volumes, Charles Hartshorne and Paul Weiss (philosopher) Paul Weiss, did not become Peirce specialists. Early landmarks of the secondary literature include the monographs by Buchler (1939), Feibleman (1946), and T. A. Goudge Goudge (1950), the 1941 Ph.D. thesis by Arthur W. Burks (who went on to edit volumes 7 and 8), and the studies edited by Wiener and Young (1952). The #CSPS Charles S. Peirce Society was founded in 1946. Its *Transactions*, an academic quarterly specializing in Peirce, pragmatism, and American philosophy, has appeared since 1965. In 1949, while doing unrelated archival work, the historian of mathematics Carolyn Eisele (1902–2000) chanced on an autograph letter by Peirce. So began her 40 years of research on Peirce the mathematician and scientist, culminating in Eisele (1976, 1979, 1985). Beginning around 1960, the philosopher and history of ideas historian of ideas Max Fisch (1900–1995) emerged as an authority on Peirce; Fisch (1986) Fisch, Max (1986), *Peirce, Semeiotic, and Pragmatism*, Kenneth Laine Ketner and Christian J. W. Kloesel, eds., Bloomington, Indiana: Indiana U. Pr. includes many of his relevant articles, including a wide-ranging survey (Fisch 1986: 422–48) of the impact of Peirce's thought through 1983. Peirce has gained a significant international following, marked by university research centers devoted to Peirce studies and pragmatism in Brazil (#CIEPCeneP/CIEP), Finland (#CDPTHPRC, including Commens), Germany (#IRGAIWirth's group, #RGSEMEHoffman's and Otte's group, and Deuser's and Härle's group Theological Research Group in C.S. Peirce's Philosophy (Hermann Deuser, Justus-Liebig-Universität Gießen; Wilfred Härle, Philipps-Universität Marburg, Germany).), France (#LIRSCEL'I.R.S.C.E.), Spain (#GEPGEP), and Italy (#CSPICSP). His writings have been translated into several languages, including German, French, Finnish, Spanish, and Swedish. Since 1950, there have been French, Italian, Spanish, British, and Brazilian Peirceans of note. For many years, the North American philosophy department most devoted to Peirce was the University of Toronto's, thanks in good part to the leadership of T. A. Goudge Thomas Goudge and David Savan. In recent years, U.S. Peirce scholars have clustered at IUPUI Indiana University - Purdue University Indianapolis, home of the #PEP Peirce Edition Project (PEP), and the Pennsylvania State University. Currently, considerable interest is being taken in Peirce's ideas by researchers wholly

outside the arena of academic philosophy. The interest comes from industry, business, technology, intelligence organizations, and the military; and it has resulted in the existence of a substantial number of agencies, institutes, businesses, and laboratories in which ongoing research into and development of Peircean concepts are being vigorously undertaken. —Robert Burch, 2001, updated 2010

Works Peirce's reputation rests largely on a number of academic papers published in American scientific and scholarly journals such as *Proceedings of the American Academy of Arts and Sciences*, the *Journal of Speculative Philosophy*, *The Monist*, *Popular Science Monthly*, the *American Journal of Mathematics*, *Memoirs of the United States National Academy of Sciences*, *National Academy of Sciences*, *The Nation* (U.S. periodical) *The Nation*, and others. See Charles Sanders Peirce bibliography#Articles by Peirce, published in his lifetime

Articles by Peirce, published in his lifetime for an extensive list with links to them online. The only full-length book (neither extract nor pamphlet) that Peirce authored and saw published in his lifetime

Arthur BurksBurks, Arthur, Introduction, CP 7, p. xi. was Charles Sanders Peirce bibliography#PR

Photometric Researches (1878), a 181-page monograph on the applications of spectrographic methods to astronomy. While at Johns Hopkins, he edited #SIL

Studies in Logic (1883), containing chapters by himself and his #GS

graduate students. Besides lectures during his years (1879–1884) as Lecturer in Logic at Johns Hopkins, he gave at least nine series of lectures, many now published; see Charles Sanders Peirce bibliography#Lectures by Peirce

Lectures by Peirce. Harvard University bought from Peirce's widow soon after his death the papers found in his study, but did not microfilm them until 1964. Only after Richard Robin (1967)

Robin, Richard S. (1967), *Annotated Catalogue of the Papers of Charles S. Peirce*. Amherst MA: University of Massachusetts Press. catalogued this Nachlass did it become clear that Peirce had left approximately 1650 unpublished manuscripts, totaling over 100,000 pages. "The manuscript material now (1997) comes to more than a hundred thousand pages. These contain many pages of no philosophical interest, but the number of pages on philosophy certainly number much more than half of that. Also, a significant but unknown number of manuscripts have been lost." — Joseph Ransdell (1997), "Some Leading Ideas of Peirce's Semiotic", end note 2, 1997 light revision of 1977 version in *Semiotica* 19:157–78. Most of it remains unpublished, except Charles Sanders Peirce bibliography#m

on microfilm. For more on the vicissitudes of Peirce's papers, see Houser (1989). Houser, Nathan, "The Fortunes and Misfortunes of the Peirce Papers", presented to the Fourth Congress of the IASS, Perpignan, France, 1989. Published in *Signs of Humanity*, v. 3., Berlin: Mouton de Gruyter, 1992, pp. 1259–68. Arisbe

Eprint

The first published anthology of Peirce's articles was the one-volume Charles Sanders Peirce bibliography#CLL

Chance, Love and Logic: Philosophical Essays, edited by Morris Raphael Cohen, 1923, still in print. Charles Sanders Peirce bibliography#Other collections

Other one-volume anthologies were published in 1940, 1957, 1958, 1972, 1994, and 2009, most still in print. The main posthumous editions

See for example "Collections of Peirce's Writings" at Commens, U. of Helsinki. of Peirce's works in their long trek to light, often multi-volume, and some still in print, have included: 1931–58: Charles Sanders Peirce bibliography#CPC

Collected Papers of Charles Sanders Peirce (CP), 8 volumes, includes many published works, along with a selection of previously unpublished work and a smattering of his correspondence. This long-time standard edition drawn from Peirce's work from the 1860s to 1913 remains the most comprehensive survey of his prolific output from 1893 to 1913. It is organized thematically, but texts (including lecture series) are often split up across volumes, while texts from various stages in Peirce's development are often combined, requiring frequent visits to editors' notes. See 1987 review by B. Kuklick (of Peirce by Christopher Hookway), in *British Journal for the Philosophy of Science* v. 38, n. 1, pp. 117–19. First page. Edited (1–6) by Charles Hartshorne and Paul Weiss (philosopher) Paul Weiss and (7–8) by Arthur Burks, in print from Harvard and online via IntelLex. 1975–87: Charles Sanders Peirce bibliography#CN

Charles Sanders Peirce: Contributions to *The Nation*, 4 volumes, includes Peirce's more than 300 reviews and articles published 1869–1908 in *The Nation*. Edited by Kenneth Laine Ketner and James Edward Cook, out of print except online via IntelLex. 1976: Charles Sanders Peirce bibliography#NEM

The New Elements of Mathematics by Charles S. Peirce, 4 volumes in 5, included many previously unpublished Peirce manuscripts on mathematical subjects, along with Peirce's important published mathematical articles. Edited by Carolyn Eisele, out of print. 1977: Charles Sanders Peirce bibliography#SSS

Semiotic and Significs: The Correspondence between C. S. Peirce and Victoria Lady Welby

(2nd edition 2001), included Peirce's entire correspondence (1903–1912) with Victoria, Lady Welby. Peirce's other published correspondence is largely limited to the 14 letters included in volume 8 of the Collected Papers, and the 20-odd pre-1890 items included so far in the Writings. Edited by Charles S. Hardwick with James Cook, out of print. 1981–now: Charles Sanders Peirce bibliography#WWritings of Charles S. Peirce, A Chronological Edition (W), Volumes 1–6 & 8, of a projected 30. The limited coverage, and defective editing and organization, of the Collected Papers led Max Fisch and others in the 1970s to found the Peirce Edition Project (PEP), whose mission is to prepare a more complete critical chronological edition. Only seven volumes have appeared to date, but they cover the period from 1859–1892, when Peirce carried out much of his best-known work. W 8 was published in November 2009; and work continues on W 7, 9, and 11. In print from Indiana U. and (1–6) online via IntelLex. 1985: Charles Sanders Peirce bibliography#HPHistorical Perspectives on Peirce's Logic of Science: A History of Science, 2 volumes. Auspitz has said, Auspitz, Josiah Lee (1994), "The Wasp Leaves the Bottle: Charles Sanders Peirce", *The American Scholar*, v. 63, n. 4, autumn, 602–18. Arisbe Eprint. "The extent of Peirce's immersion in the science of his day is evident in his reviews in the Nation [...] and in his papers, grant applications, and publishers' prospectuses in the history and practice of science", referring latterly to Historical Perspectives. Edited by Carolyn Eisele, out of print. 1992: Charles Sanders Peirce bibliography#RLTReasoning and the Logic of Things collects in one place Peirce's 1898 series of lectures invited by William James. Edited by Kenneth Laine Ketner, with commentary by Hilary Putnam, in print from Harvard. 1992–98: Charles Sanders Peirce bibliography#EPThe Essential Peirce (EP), 2 volumes, is an important recent sampler of Peirce's philosophical writings. Edited (1) by Nathan Hauser and Christian Kloesel and (2) by PEP editors, in print from Indiana U. 1997: Charles Sanders Peirce bibliography#PPMPragmatism as a Principle and Method of Right Thinking collects Peirce's 1903 Harvard "Lectures on Pragmatism" in a study edition, including drafts, of Peirce's lecture manuscripts, which had been previously published in abridged form; the lectures now also appear in EP 2. Edited by Patricia Ann Turisi, in print from SUNY. 2010: Charles Sanders Peirce bibliography#PMSWPhilosophy of Mathematics: Selected Writings collects important writings by Peirce on the subject, many not previously in print. Edited by Matthew E. Moore, in print from Indiana U. MathematicsThe Peirce quincuncial projection of a sphere conformal map keeps angles true except at several isolated points and results in less distortion of area than in other projections. Peirce's most important work in pure mathematics was in logical and foundational areas. He also worked on linear algebra, Matrix (mathematics)matrices, various geometries, topology and Listing numbers, Bell numbers, Graph theorygraphs, the four-color problem, and the nature of continuity. He worked on applied mathematics in economics, engineering, and map projections (such as the Peirce quincuncial projection), and was especially active in probability and statistics. Arthur W. BurksBurks, Arthur W., "Review: Charles S. Peirce, *The new elements of mathematics*", *Bulletin of the American Mathematical Society* v. 84, n. 5 (1978), pp. 913–18 (PDF). Discoveries Peirce made a number of striking discoveries in formal logic and foundational mathematics, nearly all of which came to be appreciated only long after he died: In 1860Peirce (1860 MS), "Orders of Infinity", *News from the Peirce Edition Project*, September 2010 (PDF), p. 6, with the manuscript's text. Also see logic historian Irving Anellis's November 11, 2010 comment at peirce-l. he suggested a cardinal arithmetic for infinite numbers, years before any work by Georg Cantor (who completed Georg Cantor#Teacher and researcherhis dissertation in 1867) and without access to Bernard Bolzano's 1851 (posthumous) *Paradoxien des Unendlichen*. ↓The Peirce arrow, symbol for "(neither)...nor...", also called the Quine dagger. In 1880–81Peirce (MS, winter of 1880–81), "A Boolean Algebra with One Constant", CP 4.12–20, W 4:218–21. Google Preview. See Roberts, Don D. (1973), *The Existential Graphs of Charles S. Peirce*, p. 131. he showed how Boolean algebra (logic)Boolean algebra could be done via a Functional completenessrepeated sufficient single binary operation (logical NOR), anticipating Henry M. Sheffer by 33 years. (See also De Morgan's Laws). In 1881Peirce (1881), "On the Logic of Number", *American Journal of Mathematics* v. 4, pp. 85–95. Reprinted (CP 3.252–88), (W 4:299–309). See Shields, Paul (1997), "Peirce's Axiomatization of Arithmetic", in Houser et al., eds., *Studies in the Logic of Charles S. Peirce*. he set out the Peano axiomsaxiomatization of natural number arithmetic, a few years before Richard Dedekind and Giuseppe Peano. In the same paper Peirce gave, years before Dedekind, the first purely cardinal definition of a finite set in the sense now

known as "Dedekind-finite", and implied by the same stroke an important formal definition of an infinite set (Dedekind-infinite), as a Set (mathematics) set that can be put into a one-to-one correspondence with one of its proper subsets. In 1885 Peirce (1885), "On the Algebra of Logic: A Contribution to the Philosophy of Notation", *American Journal of Mathematics* 7, two parts, first part published 1885, pp. 180–202 (see Houser in linked paragraph in "Introduction" in W 4). Presented, National Academy of Sciences, Newport, RI, 14–17 October 1884 (see EP 1, Headnote 16). 1885 is the year usually given for this work. Reprinted CP 3.359–403, W 5:162–90, EP 1:225–8, in part. he distinguished between first-order and second-order quantification. Putnam, Hilary (1982), "Peirce the Logician", *Historia Mathematica* 9, 290–301. Reprinted, pp. 252–60 in Putnam (1990), *Realism with a Human Face*, Harvard. Excerpt with article's last five pages. It was in Peirce's 1885 "On the Algebra of Logic". See Byrnes, John (1998), "Peirce's First-Order Logic of 1885", *Transactions of the Charles S. Peirce Society* v. 34, n. 4, pp. 949–76. In the same paper he set out what can be read as the first (primitive) axiomatic set theory, anticipating Zermelo by about two decades (Brady 2000, Brady, Geraldine (2000), *From Peirce to Skolem: A Neglected Chapter in the History of Logic*, North-Holland/Elsevier Science BV, Amsterdam, Netherlands. pp. 132–3). In 1886 he saw that Boolean calculations could be carried out via electrical switches, anticipating Claude Shannon by more than 50 years. Existential graphs: Alpha graphs By the later 1890s See Peirce (1898), Lecture 3, "The Logic of Relatives" (not the 1897 Monist article), *Reasoning and the Logic of Things*, pp. 146–64, see 151. he was devising existential graphs, a diagrammatic notation for the predicate calculus. Based on them are John F. Sowa's conceptual graphs and Sun-Joo Shin's diagrammatic reasoning. The New Elements of Mathematics Peirce wrote drafts for an introductory textbook, with the working title *The New Elements of Mathematics*, that presented mathematics from an original standpoint. Those drafts and many other of his previously unpublished mathematical manuscripts finally appeared in *The New Elements of Mathematics* by Charles S. Peirce (1976), edited by mathematician Carolyn Eisele. Nature of mathematics Peirce agreed with Auguste Comte in regarding mathematics as more basic than philosophy and the special sciences (of nature and mind). Peirce Classification of the sciences (Peirce) classified mathematics into three subareas: (1) mathematics of logic, (2) discrete series, and (3) pseudo-continua (as he called them, including the real numbers) and continua. Influenced by his father Benjamin Peirce Benjamin, Peirce argued that mathematics studies purely hypothetical objects and is not just the science of quantity but is more broadly the science which draws necessary conclusions; that mathematics aids logic, not vice versa; and that logic itself is part of philosophy and is the science about drawing conclusions necessary and otherwise. Peirce (1898), "The Logic of Mathematics in Relation to Education" in *Educational Review* v. 15, pp. 209–16 (via Internet Archive). Reprinted CP 3.553–62. See also his "The Simplest Mathematics" (1902 MS), CP 4.227–323. Mathematics of logic Mathematical logic and foundations, some noted articles On an Improvement in Boole's Calculus of Logic (1867) Description of a Notation for the Logic of Relatives (1870) On the Algebra of Logic (1880) A Boolean Algebra with One Constant (1880 MS) On the Logic of Number (1881) Note B: The Logic of Relatives (1883) On the Algebra of Logic: A Contribution to the Philosophy of Notation (1884/1885) The Logic of Relatives (1897) The Simplest Mathematics (1902 MS) Prolegomena To an Apology For Pragmaticism (1906, on existential graphs) Beginning with his first paper on the Charles Sanders Peirce bibliography #LOR1870 "Logic of Relatives" (1870), Peirce extended the theory of relations that Augustus De Morgan had just recently awakened from its Cinderella slumbers. Much of the mathematics of relations now taken for granted was "borrowed" from Peirce, not always with all due credit; on that and on how the young Bertrand Russell, especially his *Principles of Mathematics* and *Principia Mathematica*, did not do Peirce justice, see Anellis (1995). In 1918 the logician Clarence Irving Lewis C. I. Lewis wrote, "The contributions of C.S. Peirce to symbolic logic are more numerous and varied than those of any other writer — at least in the nineteenth century." Lewis, Clarence Irving (1918), *A Survey of Symbolic Logic*, see ch. 1, §7 "Peirce", pp. 79–106, see p. 79 (Internet Archive). Note that Lewis's bibliography lists works by Frege, tagged with asterisks as important. Beginning in 1940, Alfred Tarski and his students rediscovered aspects of Peirce's larger vision of relational logic, developing the perspective of relational algebra. Relational logic gained applications. In mathematics, it influenced the abstract analysis of E. H. Moore and the Lattice (order) lattice theory of Garrett Birkhoff. In computer science, the relational model for databases was developed with Peircean ideas in work of



Edgar F. Codd, who was a doctoral student of Peirce, John (2003) *Information theory and evolution*, p. 167; also Mitchell, Melanie, "My Scientific Ancestry". of Arthur W. Burks, a Peirce scholar. In economics, relational logic was used by Frank P. Ramsey, John von Neumann, and Paul Samuelson to study preferences and utility and by Kenneth J. Arrow in *Social Choice and Individual Values*, following Arrow's association with Tarski at City College of New York. On Peirce and his contemporaries Ernst Schröder and Gottlob Frege, Hilary Putnam (1982) documented that Frege's work on the logic of quantifiers had little influence on his contemporaries, although it was published four years before the work of Peirce and his student Oscar Howard Mitchell. Putnam found that mathematicians and logicians learned about the logic of quantifiers through the independent work of Peirce and Mitchell, particularly through Peirce's "On the Algebra of Logic: A Contribution to the Philosophy of Notation" (1885), published in the premier American mathematical journal of the day, and cited by Peano and Schröder, among others, who ignored Frege. They also adopted and modified Peirce's notations, typographical variants of those now used. Peirce apparently was ignorant of Frege's work, despite their overlapping achievements in logic, philosophy of language, and the foundations of mathematics. Peirce's work on formal logic had admirers besides Ernst Schröder: Philosophical algebraist William Kingdon Clifford (1845–1905), Ralph G. and Ketner, Kenneth (2003), "Peirce, Clifford, and Quantum Theory", *International Journal of Theoretical Physics* v. 42, n. 9, pp. 1957–1972. and logician William Ernest Johnson, both British; The Polish school of logic and foundational mathematics, including Alfred Tarski; Arthur Prior, who praised and studied Peirce's logical work in a 1964 paper and in *Formal Logic* (saying on page 4 that Peirce "perhaps had a keener eye for essentials than any other logician before or since."). Jean Van Heijenoort (1967), van Heijenoort (1967), "Logic as Language and Logic as Calculus" in *Synthese* 17: 324–30. Jaakko Hintikka (1997), Hintikka (1997), "The Place of C. S. Peirce in the History of Logical Theory" in Brunning and Forster (1997), *The Rule of Reason: The Philosophy of C. S. Peirce*, U. of Toronto. and Geraldine Brady (2000) divide those who study formal (and natural) languages into two camps: the model theory model-theorists / semantics semanticists, and the proof theory proof theorists / universalists. Hintikka and Brady view Peirce as a pioneer model theorist. A philosophy of logic, grounded in his categories and semiotic, can be extracted from Peirce's writings and, along with Peirce's logical work more generally, is exposit and defended in Hilary Putnam (1982); the Introduction in Nathan Houser et al. (1997); Houser, Roberts, and Van Evra, eds. (1997), *Studies in the Logic of Charles Sanders Peirce*, Indiana U., Bloomington, IN. and Randall Dipert's chapter in Cheryl Misak (2004). Misak, ed. (2004), *The Cambridge Companion to Peirce*, Cambridge U., UK. Continua Continuity and synechism are central in Peirce's philosophy. He embraced infinitesimals and worked long on the mathematics of continua. He long held that the real numbers constitute a pseudo-continuum; Peirce (1903 MS), CP 6.176: "But I now define a pseudo-continuum as that which modern writers on the theory of functions call a continuum. But this is fully represented by [...] the totality of real values, rational and irrational [...]" that a true continuum is the real subject matter of analysis situs (topology); and that a true continuum of instants exceeds—and within any lapse of time has room for—any Aleph number (any infinite multitude as he called it) of instants. Peirce (1902 MS) and Joseph Morton Ransdell (Ransdell, Joseph, ed. (1998), "Analysis of the Methods of Mathematical Demonstration", *Memoir* 4, Draft C, MS L75.90–102, see 99–100. (Once there, scroll down). In 1908 Peirce wrote that he found that a true continuum might have or lack such room. Jérôme Havenel (2008): "It is on May 26, 1908, that Peirce finally gave up his idea that in every continuum there is room for whatever collection of any multitude. From now on, there are different kinds of continua, which have different properties." See: Peirce (1908), "Some Amazing Mazes (Conclusion), Explanation of Curiosity the First", *The Monist*, v. 18, n. 3, pp. 416–64, see 463–4. Reprinted CP 4.594–642, see 642. Havenel, Jérôme (2008), "Peirce's Clarifications on Continuity", *Transactions* Winter 2008 pp. 68–133, see 119. Abstract. Probability and statistics Peirce held that science achieves statistical probabilities, not certainties, and that spontaneity (absolute chance) is real (see Tychism on his view). Most of his statistical writings promote the Frequency probability frequency interpretation of probability (objective ratios of cases), and many of his writings express skepticism about (and criticize the use of) statistical model probability when such models are not based on objective randomization. Peirce condemned the use of "certain likelihood function likelihoods" (EP 2:108–9) even more strongly than he criticized Bayesian statistics Bayesian methods. Indeed Peirce used a bit of Bayesian inference in

criticizing parapsychology (W 6:76). Though Peirce was largely a frequentist, his possible world semantics introduced the propensity probability "propensity" theory of probability before Karl Popper. Miller, Richard W. (1975), "Propensity: Popper or Peirce?", *British Journal for the Philosophy of Science* (site), v. 26, n. 2, pp. 123–32. doi:10.1093/bjps/26.2.123. Eprint. Susan Haack Haack, Susan and Kolenda, Konstantin (1977), "Two Fallibilists in Search of the Truth", *Proceedings of the Aristotelian Society, Supplementary Volumes*, v. 51, pp. 63–104. JSTOR 4106816 Peirce (sometimes with Joseph Jastrow) investigated the Bayesian probability probability judgments of experimental subjects, "perhaps the very first" elicitation and estimation of subjective probability subjective probabilities in experimental psychology and (what came to be called) Bayesian statistics. Peirce was one of the founders of statistics. He formulated modern statistics in "Charles Sanders Peirce bibliography#illus Illustrations of the Logic of Science" (1877–8) and "Charles Sanders Peirce bibliography#SILA Theory of Probable Inference" (1883). With a repeated measures design, he introduced Blind experiment blinded, Randomized controlled trial controlled randomized experiments in 1884 (Hacking 1990:205) (before Ronald A. Fisher). He invented optimal design for experiments on gravity, in which he "analysis of variance corrected the means". He used logistic regression, correlation, and smoothing. Peirce extended the work on Peirce's criterion outliers by Benjamin Peirce, his father. He introduced terms "Confidence interval confidence" and "Likelihood function likelihood" (before Jerzy Neyman and Ronald A. Fisher Fisher). (See Stephen Stigler's historical books and Ian Hacking 1990). Philosophy It is not sufficiently recognized that Peirce's career was that of a scientist, not a philosopher; and that during his lifetime he was known and valued chiefly as a scientist, only secondarily as a logician, and scarcely at all as a philosopher. Even his work in philosophy and logic will not be understood until this fact becomes a standing premise of Peircean studies. —Max Fisch 1964, p. 486. Peirce was a working scientist for 30 years, and arguably was a professional philosopher only during the five years he lectured at Johns Hopkins. He learned philosophy mainly by reading, each day, a few pages of Kant's *Critique of Pure Reason*, in the original German, while a Harvard undergraduate. His writings bear on a wide array of disciplines, including mathematics, logic, philosophy, statistics, astronomy, metrology, geodesy, experimental psychology, economics, linguistics, and the history and philosophy of science. This work has enjoyed renewed interest and approval, a revival inspired not only by his anticipations of recent scientific developments but also by his demonstration of how philosophy can be applied effectively to human problems. Peirce's philosophy includes (see below in related sections) a pervasive three-category system, belief that truth is immutable and is both independent from actual opinion (fallibilism) and discoverable (no radical skepticism), logic as formal semiotic on signs, on arguments, and on inquiry's ways—including philosophical pragmatism (which he founded), #Critical common-sensism critical common-sensism, and scientific method—and, in metaphysics: Philosophical realism Scholastic realism, belief in God, freedom, and immortality, objective idealism, and belief in the reality of continuity and of absolute chance, mechanical necessity, and creative love. In his work, fallibilism and pragmatism may seem to work somewhat like skepticism and positivism, respectively, in others' work. However, for Peirce, fallibilism is balanced by an Pragmatism#antiskepanti-skepticism and is a basis for belief in the reality of absolute chance and of continuity, Peirce (1897) "Fallibilism, Continuity, and Evolution", CP 1.141–75 (Eprint), placed by the CP editors directly after "F.R.L." (1899, CP 1.135–40). and pragmatism commits one to anti-nominalist belief in the reality of the general (CP 5.453–7). For Peirce, First Philosophy, which he also called cenoscopy, is less basic than mathematics and more basic than the special sciences (of nature and mind). It studies positive phenomena in general, phenomena available to any person at any waking moment, and does not settle questions by resorting to special experiences. Peirce (1903), CP 1.180–202 Eprint and (1906) "The Basis of Pragmaticism", EP 2:372–3, see "Philosophy" at CDPT. He Classification of the sciences (Peirce) divided such philosophy into (1) phenomenology (which he also called phaneroscopy or categorics), (2) normative sciences (esthetics, ethics, and logic), and (3) metaphysics; his views on them are discussed in order below. Theory of categories On May 14, 1867, the 27-year-old Peirce presented a paper entitled "On a New List of Categories" to the American Academy of Arts and Sciences, which published it the following year. The paper outlined a theory of predication, involving three universal categories that Peirce developed in response to reading Aristotle, Kant, and Hegel, categories that Peirce applied throughout philosophy and elsewhere for the rest of his life. Most students of

Peirce will readily agree on their prevalence in his philosophical work. Peirce scholars generally regard the "New List" as foundational or breaking the ground for Peirce's "architectonic", his blueprint for a pragmatic philosophy. In the categories one will discern, concentrated, the pattern that one finds formed by the three grades of clearness in "How To Make Our Ideas Clear" (1878 paper foundational to pragmatism), and in numerous other trichotomies in his work. "On a New List of Categories" is cast as a Kantian deduction; it is short but dense and difficult to summarize. The following table is compiled from that and later works. See in "Firstness", "Secondness", and "Thirdness" in CDPT. In 1893, Peirce restated most of it for a more general audience. Peirce (1893), "The Categories" MS 403. Arisbe EprintPDF (177 KibibyteKiB), edited by Joseph Morton Ransdell. Joseph Ransdell, with information on the re-write, and interleaved with the 1867 "New List" for comparison. Peirce's Categories (technical name: the cenopythagorean categories "Minute Logic", CP 2.87, c.1902 and A Letter to Lady Welby, CP 8.329, 1904. See relevant quotes under "Categories, Cenopythagorean Categories" in Commens Dictionary of Peirce's Terms (CDPT), Bergman & Paalova, eds., U. of Helsinki.) Name: Typical characterization: As universe of experience: As quantity: Technical definition: Valence, "adicity": Firstness. See quotes under "Firstness, First [as a category]" in CDPT. Quality of feeling. Ideas, chance, possibility. Vagueness, "some". Reference to a ground (a ground is a pure abstraction of a quality). The ground blackness is the pure abstraction of the quality black which in turn amounts to—which embodies blackness. The quality amounts to reference to its own pure abstraction, the ground. The question is not merely of noun (the ground) versus adjective (the quality), but rather of whether we are considering the black(ness) as abstracted away from application to an object, or instead as so applied (for instance to a stove). Yet note that Peirce's distinction here is not that between a property-general and a property-individual (a Trope (philosophy) trope). See "On a New List of Categories" (1867), in the section appearing in CP 1.551. Regarding the ground, cf. the Scholastic conception of a relation's foundation, Google limited preview Deely 1982, p. 61. Essentially monadic (the quale, in the sense of the such, A quale in this sense is a such, just as a quality is a suchness. Cf. under "Use of Letters" in §3 of Peirce's "Description of a Notation for the Logic of Relatives", *Memoirs of the American Academy*, v. 9, pp. 317–78 (1870), separately reprinted (1870), from which see p. 6 via Google books, also reprinted in CP 3.63: Now logical terms are of three grand classes. The first embraces those whose logical form involves only the conception of quality, and which therefore represent a thing simply as "a —." These discriminate objects in the most rudimentary way, which does not involve any consciousness of discrimination. They regard an object as it is in itself as such (quale); for example, as horse, tree, or man. These are absolute terms. (Peirce, 1870. But also see "Quale-Consciousness", 1898, in CP 6.222–37.) which has the quality). Secondness. See quotes under "Secondness, Second [as a category]" in CDPT. Reaction, resistance, (dyadic) relation. Brute facts, actuality. Singularity, discreteness, "Haecceity this". Reference to a correlate (by its relate). Essentially dyadic (the relate and the correlate). Thirdness. See quotes under "Thirdness, Third [as a category]" in CDPT. Representation, mediation. Habits, laws, necessity. Generality, continuity, "all". Reference to an interpretant\*. Essentially triadic (sign, object, interpretant\*). \*Note: An interpretant is an interpretation (human or otherwise) in the sense of the product of an interpretive process. Esthetics and ethics Peirce did not write extensively in esthetics and ethics," Charles S. Peirce on Esthetics and Ethics: A Bibliography" (PDF) by Kelly A. Parker in 1999. but came by 1902 to hold that esthetics, ethics, and logic, in that order, comprise the normative sciences. Peirce (1902 MS), Carnegie Application, edited by Joseph Ransdell, Memoir 2, see table. He defined esthetics as the study of good and bad, and thus of the ends governing all conduct. See Esthetics at CDPT. Philosophy: logic, or semiotic Logic as philosophical Peirce regarded logic per se as a division of philosophy, as a normative science after esthetics and ethics, as more basic than metaphysics, Peirce (1899 MS), "F.R.L." [First Rule of Logic], CP 1.135–40, Eprint and as "the art of devising methods of research". Peirce (1882), "Introductory Lecture on the Study of Logic" delivered September 1882, Johns Hopkins University Circulars, v. 2, n. 19, pp. 11–12 (via Google), November 1882. Reprinted (EP 1:210–14; W 4:378–82; CP 7.59–76). The definition of logic quoted by Peirce is by Peter of Spain. More generally, as inference, "logic is rooted in the social principle", since inference depends on a standpoint that, in a sense, is unlimited. Peirce (1878), "The Doctrine of Chances", *Popular Science Monthly*, v. 12, pp. 604–15 (CP 2.645–68, W 3:276–90, EP 1:142–54). ...death makes the number of our risks, the number of our inferences, finite,

and so makes their mean result uncertain. The very idea of probability and of reasoning rests on the assumption that this number is indefinitely great. ....logicality inexorably requires that our interests shall not be limited. .... Logic is rooted in the social principle. Peirce called (with no sense of deprecation) "mathematics of logic" much of the kind of thing which, in current research and applications, is called simply "logic". He was productive in both (philosophical) logic and logic's mathematics, which were connected deeply in his work and thought. Peirce argued that logic is formal semiotic, the formal study of signs in the broadest sense, not only signs that are artificial, linguistic, or symbolic, but also signs that are semblances or are indexical such as reactions. Peirce held that "all this universe is perfused with signs, if it is not composed exclusively of signs", Peirce, CP 5.448 footnote, from "The Basis of Pragmaticism" in 1906. along with their representational and inferential relations. He argued that, since all thought takes time, all thought is in signs Peirce, (1868), "Questions concerning certain Faculties claimed for Man", *Journal of Speculative Philosophy* v. 2, n. 2, pp. 103-14. On thought in signs, see p. 112. Reprinted CP 5.213-63 (on thought in signs, see 253), W 2:193-211, EP 2:11-27. Arisbe Eprint. and sign processes ("semiosis") such as the inquiry process. He Classification of the sciences (Peirce) divided logic into: (1) speculative grammar, or stochiology, on how signs can be meaningful and, in relation to that, what kinds of signs there are, how they combine, and how some embody or incorporate others; (2) logical critic, or logic proper, on the modes of inference; and (3) speculative rhetoric, or methodeutic, the philosophical theory of inquiry, including pragmatism. Presuppositions of logic In his "F.R.L." [First Rule of Logic] (1899), Peirce states that the first, and "in one sense, this sole", rule of reason is that, to learn, one needs to desire to learn and desire it without resting satisfied with that which one is inclined to think. So, the first rule is, to wonder. Peirce proceeds to a critical theme in research practices and the shaping of theories:...there follows one corollary which itself deserves to be inscribed upon every wall of the city of philosophy: Do not block the way of inquiry. Peirce adds, that method and economy are best in research but no outright sin inheres in trying any theory in the sense that the investigation via its trial adoption can proceed unimpeded and undiscouraged, and that "the one unpardonable offence" is a philosophical barricade against truth's advance, an offense to which "metaphysicians in all ages have shown themselves the most addicted". Peirce in many writings holds that Classification of the sciences (Peirce) logic precedes metaphysics (ontological, religious, and physical). Peirce goes on to list four common barriers to inquiry: (1) Assertion of absolute certainty; (2) maintaining that something is absolutely unknowable; (3) maintaining that something is absolutely inexplicable because absolutely basic or ultimate; (4) holding that perfect exactitude is possible, especially such as to quite preclude unusual and anomalous phenomena. To refuse absolute theoretical certainty is the heart of fallibilism, which Peirce unfolds into refusals to set up any of the listed barriers. Peirce elsewhere argues (1897) that logic's presupposition of fallibilism leads at length to the view that chance and continuity are very real (tychism and synechism). The First Rule of Logic pertains to the mind's presuppositions in undertaking reason and logic, presuppositions, for instance, that truth and the real do not depend on yours or my opinion of them but do depend on representational relation and consist in the destined end in investigation taken far enough (see below). He describes such ideas as, collectively, hopes which, in particular cases, one is unable seriously to doubt. Peirce (1902), *The Carnegie Institute Application*, Memoir 10, MS L75.361-2, Arisbe Eprint. Four incapacities *The Journal of Speculative Philosophy* series (1868-69), including *Questions concerning certain Faculties claimed for Man* (1868) *Some Consequences of Four Incapacities* (1868) *Grounds of Validity of the Laws of Logic: Further Consequences of Four Incapacities* (1869) In three articles in 1868-69, Peirce (1868), "Some Consequences of Four Incapacities", *Journal of Speculative Philosophy* v. 2, n. 3, pp. 140-57. Reprinted CP 5.264-317, W 2:211-42, EP 1:28-55. Arisbe Eprint. Peirce, "Grounds of Validity of the Laws of Logic: Further Consequences of Four Incapacities", *Journal of Speculative Philosophy* v. II, n. 4, pp. 193-208. Reprinted CP 5.318-357, W 2:242-272 (PEP Eprint), EP 1:56-82. Peirce rejected mere verbal or hyperbolic doubt and first or ultimate principles, and argued that we have (as he numbered them): No power of introspection. All knowledge of the internal world comes by hypothetical reasoning from known external facts. No power of intuition (cognition without logical determination by previous cognitions). No cognitive stage is absolutely first in a process. All mental action has the form of inference. No power of thinking without signs. A cognition must be interpreted in a subsequent cognition in order to be a cognition at all. No conception of the absolutely incognizable.

(The above sense of the term "intuition" is almost Kant's, said Peirce. It differs from the current looser sense that encompasses instinctive or anyway half-conscious inference.) Peirce argued that those incapacities imply the reality of the general and of the continuous, the validity of the modes of reasoning, and the falsity of philosophical René DescartesCartesianism (#Against Cartesianismsee below). Peirce rejected the conception (usually ascribed to Kant) of the unknowable thing-in-itself and later said that to "dismiss make-believes" is a prerequisite for pragmatism. Peirce (1905), "What Pragmatism Is", *The Monist*, v. XV, n. 2, pp. 161-81, see 167. Reprinted CP 5.411-37, see 416. Arisbe Eprint. Logic as formal semiotic Peirce sought, through his wide-ranging studies through the decades, formal philosophical ways to articulate thought's processes, and also to explain the workings of science. These inextricably entangled questions of a dynamics of inquiry rooted in nature and nurture led him to develop his semiotic with very broadened conceptions of signs and inference, and, as its culmination, a theory of inquiry for the task of saying 'how science works' and devising research methods. This would be logic by the medieval definition taught for centuries: art of arts, science of sciences, having the way to the principles of all methods. Influences radiate from points on parallel lines of inquiry in Aristotle's work, in such loci as: the basic terminology of psychology in *On the Soul*; the founding description of sign relations in *On Interpretation*; and the differentiation of inference into three modes that are commonly translated into English as Abductive reasoningabduction, Deductive reasoningdeduction, and Inductive reasoninginduction, in the *Prior Analytics*, as well as inference by analogy (called *paradeigma* by Aristotle), which Peirce regarded as involving the other three modes. Peirce began writing on semiotic in the 1860s, around the time when he devised his system of three categories. He called it both semiotic and semeiotic. Both are current in singular and plural. On the evolution of the word "semiotic", see *Semeiotic#Literature*. He based it on the conception of a triadic sign relation, and defined semiosis as "action, or influence, which is, or involves, a cooperation of three subjects, such as a sign, its object, and its interpretant, this tri-relative influence not being in any way resolvable into actions between pairs". Peirce 1907, CP 5.484. Reprinted, EP 2:411 in "Pragmatism" (398–433). As to signs in thought, Peirce emphasized the reverse: To say, therefore, that thought cannot happen in an instant, but requires a time, is but another way of saying that every thought must be interpreted in another, or that all thought is in signs. —Peirce 1868. Peirce held that all thought is in signs, issuing in and from interpretation, where 'sign' is the word for the broadest variety of conceivable semblances, diagrams, metaphors, symptoms, signals, designations, symbols, texts, even mental concepts and ideas, all as determinations of a mind or quasi-mind, that which at least functions like a mind, as in the work of crystals or bees. See "Quasi-mind" in CDPT. — the focus is on sign action in general rather than on psychology, linguistics, or social studies (fields which he also pursued). Inquiry is a kind of inference process, a manner of thinking and semiosis. Global divisions of ways for phenomena to stand as signs, and the subsumption of inquiry and thinking within inference as a sign process, enable the study of inquiry on semiotics' three levels: Conditions for meaningfulness. Study of signficatory elements and combinations, their grammar. Validity, conditions for true representation. Critique of arguments in their various separate modes. Conditions for determining interpretations. Methodology of inquiry in its mutually interacting modes. Peirce uses examples often from common experience, but defines and discusses such things as assertion and interpretation in terms of philosophical logic. In a formal vein, Peirce said: On the Definition of Logic. Logic is formal semiotic. A sign is something, A, which brings something, B, its interpretant sign, determined or created by it, into the same sort of correspondence (or a lower implied sort) with something, C, its object, as that in which itself stands to C. This definition no more involves any reference to human thought than does the definition of a line as the place within which a particle lies during a lapse of time. It is from this definition that I deduce the principles of logic by mathematical reasoning, and by mathematical reasoning that, I aver, will support criticism of Weierstrassian severity, and that is perfectly evident. The word "formal" in the definition is also defined. —Peirce, "Carnegie Application", #NEM *The New Elements of Mathematics* v. 4, p. 54. Signs A list of noted writings by Peirce on signs and sign relations is at *Semiotic elements and classes of signs* (Peirce)#References and further reading. Sign relation Anything is a sign — not absolutely as itself, but instead in some relation or other. The sign relation is the key. It defines three roles encompassing (1) the sign, (2) the sign's subject matter, called its object, and (3) the sign's meaning or ramification as formed into a kind of effect called its interpretant (a further sign, for example a

translation). It is an irreducible triadic relation, according to Peirce. The roles are distinct even when the things that fill those roles are not. The roles are but three; a sign of an object leads to one or more interpretants, and, as signs, they lead to further interpretants.  $\text{Extension} \times \text{intension} = \text{information}$ . Two traditional approaches to sign relation, necessary though insufficient, are the way of Extension (semantics) extension (a sign's objects, also called breadth, denotation, or application) and the way of intension (the objects' characteristics, qualities, attributes referenced by the sign, also called depth, Comprehension (logic) comprehension, significance, or connotation). Peirce adds a third, the way of Logic of information information, including change of information, to integrate the other two approaches into a unified whole. Peirce (1867), "Upon Logical Comprehension and Extension" (CP 2.391–426), (W 2:70–86). For example, because of the equation above, if a term's total amount of information stays the same, then the more that the term 'intends' or signifies about objects, the fewer are the objects to which the term 'extends' or applies. Determination. A sign depends on its object in such a way as to represent its object — the object enables and, in a sense, determines the sign. A physically causal sense of this stands out when a sign consists in an indicative reaction. The interpretant depends likewise on both the sign and the object — an object determines a sign to determine an interpretant. But this determination is not a succession of dyadic events, like a row of toppling dominoes; sign determination is triadic. For example, an interpretant does not merely represent something which represented an object; instead an interpretant represents something as a sign representing the object. The object (be it a quality or fact or law or even fictional) determines the sign to an interpretant through one's collateral experience. See pp. 404–9 in "Pragmatism" in EP 2. Ten quotes on collateral experience from Peirce provided by Joseph Ransdell can be viewed here at [peirce-l's Lyris archive](#). Note: Ransdell's quotes from CP 8.178–9 are also in EP 2:493–4, which gives their date as 1909; and his quote from CP 8.183 is also in EP 2:495–6, which gives its date as 1909. with the object, in which the object is found or from which it is recalled, as when a sign consists in a chance semblance of an absent object. Peirce used the word "determine" not in a strictly deterministic sense, but in a sense of "specializes," *bestimmt*, Peirce, letter to William James, dated 1909, see EP 2:492. involving variable amount, like an influence. See "76 definitions of the sign by C.S. Peirce", collected by Robert Marty (U. of Perpignan, France). Peirce came to define representation and interpretation in terms of (triadic) determination. Peirce, A Letter to Lady Welby (1908), #SSSemiotic and Significs, pp. 80–1: I define a Sign as anything which is so determined by something else, called its Object, and so determines an effect upon a person, which effect I call its Interpretant, that the latter is thereby mediately determined by the former. My insertion of "upon a person" is a sop to Cerberus, because I despair of making my own broader conception understood. The object determines the sign to determine another sign — the interpretant — to be related to the object as the sign is related to the object, hence the interpretant, fulfilling its function as sign of the object, determines a further interpretant sign. The process is logically structured to perpetuate itself, and is definitive of sign, object, and interpretant in general. Semiotic elements Peirce held there are exactly three basic elements in semiosis (sign action): A sign (or representamen) "Representamen", properly with the 'a' long and stressed (*/rɛprəzən'teɪmən/* *rep-rə-zen-tay-mən*), was adopted (not coined) by Peirce as his technical term for the sign as covered in his theory, in case a divergence should come to light between his theoretical version and the popular senses of the word "sign". He eventually stopped using "representamen". See EP 2:272–3 and #SSSemiotic and Significs p. 193, quotes in "Representamen" at CDPT. represents, in the broadest possible sense of "represents". It is something interpretable as saying something about something. It is not necessarily symbolic, linguistic, or artificial. As Peirce sometimes put it (he defined sign at least 76 times), the sign stands for the object to the interpretant. An object (or semiotic object) is a subject matter of a sign and an interpretant. It can be anything thinkable, a quality, an occurrence, a rule, etc., even fictional, such as Prince Hamlet. Peirce (1909), A Letter to William James, EP 2:492–502. Fictional object, 498. Object as universe of discourse, 492. See "Dynamical Object" at CDPT. All of those are special or partial objects. The object most accurately is the universe of discourse to which the partial or special object belongs. For instance, a perturbation of Pluto's orbit is a sign about Pluto but ultimately not only about Pluto. An object either (i) is immediate to a sign and is the object as represented in the sign or (ii) is a dynamic object, the object as it really is, on which the immediate object is founded "as on bedrock". See "Immediate Object", etc., at CDPT. An interpretant (or interpretant sign) is a sign's meaning or ramification as formed into a kind

of idea or effect, an interpretation, human or otherwise. An interpretant is a sign (a) of the object and (b) of the interpretant's "predecessor" (the interpreted sign) as a sign of the same object. An interpretant either (i) is immediate to a sign and is a kind of quality or possibility such as a word's usual meaning, or (ii) is a dynamic interpretant, such as a state of agitation, or (iii) is a final or normal interpretant, a sum of the lessons which a sufficiently considered sign would have as effects on practice, and with which an actual interpretant may at most coincide. Some of the understanding needed by the mind depends on familiarity with the object. To know what a given sign denotes, the mind needs some experience of that sign's object, experience outside of, and collateral to, that sign or sign system. In that context Peirce speaks of collateral experience, collateral observation, collateral acquaintance, all in much the same terms.

**Classes of signs** Among Peirce's many sign typologies, three stand out, interlocked. The first typology depends on the sign itself, the second on how the sign stands for its denoted object, and the third on how the sign stands for its object to its interpretant. Also, each of the three typologies is a three-way division, a Trichotomy (philosophy) trichotomy, via Peirce's three phenomenological categories: (1) quality of feeling, (2) reaction, resistance, and (3) representation, mediation. Peirce (1903 MS), "Nomenclature and Divisions of Triadic Relations, as Far as They Are Determined", under other titles in *Collected Papers* (CP) v. 2, paragraphs 233–72, and reprinted under the original title in *Essential Peirce* (EP) v. 2, pp. 289–99. Also see image of MS 339 (August 7, 1904) supplied to peirce-I by Bernard Morand of the Institut Universitaire de Technologie (France), Département Informatique.

**I. Qualisign, sinsign, legisign** (also called tone, token, type, and also called potisign, actisign, famisign): On the varying terminology, look up in CDPT. This typology classifies every sign according to the sign's own phenomenological category—the qualisign is a quality, a possibility, a "First"; the sinsign is a reaction or resistance, a singular object, an actual event or fact, a "Second"; and the legisign is a habit, a rule, a representational relation, a "Third".

**II. Icon, index, symbol**: This typology, the best known one, classifies every sign according to the category of the sign's way of denoting its object—the icon (also called semblance or likeness) by a quality of its own, the index by factual connection to its object, and the symbol by a habit or rule for its interpretant.

**III. Rheme, dicisign, argument** (also called sumisign, dicisign, suadisign, also seme, pHEME, delome, and regarded as very broadened versions of the traditional term, proposition, argument): This typology classifies every sign according to the category which the interpretant attributes to the sign's way of denoting its object—the rheme, for example a term, is a sign interpreted to represent its object in respect of quality; the dicisign, for example a proposition, is a sign interpreted to represent its object in respect of fact; and the argument is a sign interpreted to represent its object in respect of habit or law. This is the culminating typology of the three, where the sign is understood as a structural element of inference.

**Lines of joint classification of signs.** Every sign is: 1.2.3. I. Qualisign or Sinsign or Legisign and II. Icon or Index or Symbol and III. Rheme or Dicisign or Argument. Every sign belongs to one class or another within (I) and within (II) and within (III). Thus each of the three typologies is a three-valued parameter for every sign. The three parameters are not independent of each other; many co-classifications are absent, for reasons pertaining to the lack of either habit-taking or singular reaction in a quality, and the lack of habit-taking in a singular reaction. The result is not 27 but instead ten classes of signs fully specified at this level of analysis.

**Modes of inference** Borrowing a brace of concepts from Aristotle, Peirce examined three basic modes of inference in inquiry, processes currently known as abductive reasoning, deductive reasoning, and inductive reasoning.

Peirce also called abduction "retroduction", "presumption", and, earliest of all, "hypothesis". He characterized it as guessing and as inference to an explanatory hypothesis. He sometimes expounded the modes of inference by transformations of the categorical syllogism Barbara (AAA), for example in "Deduction, Induction, and Hypothesis" (1878). *Popular Science Monthly*, v. 13, pp. 470–82, see 472. CP 2.619–44, see 623. He does this by rearranging the rule (Barbara's major premiss), the case (Barbara's minor premiss), and the result (Barbara's conclusion):

**Deduction.** Rule: All the beans from this bag are white. Case: These beans are from this bag. \therefore Result: These beans are white.

**Induction.** Case: These beans are [randomly selected] from this bag. Result: These beans are white. \therefore Rule: All the beans from this bag are white.

**Hypothesis (Abduction).** Rule: All the beans from this bag are white. Result: These beans [oddly] are white. \therefore Case: These beans are from this bag.

Peirce 1883 in "A Theory of Probable Inference" (#SIL Studies in Logic) equated hypothetical inference with the induction of characters of

objects (as he had done in effect before). Eventually dissatisfied, by 1900 he distinguished them once and for all and also wrote that he now took the syllogistic forms and the doctrine of logical extension and comprehension as being less basic than he had thought. In 1903 he presented the following logical form for abductive inference: See, under "Abduction" at CDPT, the following quotes: On correction of "A Theory of Probable Inference", see quotes from "Minute Logic", CP 2.102, c. 1902, and from the Carnegie Application (L75), 1902, Historical Perspectives on Peirce's Logic of Science v. 2, pp. 1031–1032. On new logical form for abduction, see quote from Harvard Lectures on Pragmatism, 1903, CP 5.188–189. See also Santaella, Lucia (1997) "The Development of Peirce's Three Types of Reasoning: Abduction, Deduction, and Induction", 6th Congress of the IASS. Eprint. The surprising fact, C, is observed; But if A were true, C would be a matter of course, Hence, there is reason to suspect that A is true. The logical form does not also cover induction, since induction neither depends on surprise nor proposes a new idea for its conclusion. Induction seeks facts to test a hypothesis; abduction seeks a hypothesis to account for facts. "Deduction proves that something must be; Induction shows that something actually is operative; Abduction merely suggests that something may be." "Lectures on Pragmatism", 1903, CP 5.171. Peirce did not remain quite convinced that one logical form covers all abduction. A Letter to J. H. Kehler (dated 1911), #NEM The New Elements of Mathematics v. 3, pp. 203–4, see in "Retroduction" at CDPT. In his methodoetic or theory of inquiry (see below), he portrayed abduction as an economic initiative to further inference and study, and portrayed all three modes as clarified by their coordination in essential roles in inquiry: hypothetical explanation, deductive prediction, inductive testing. Pragmatism Some noted articles and lectures Illustrations of the Logic of Science (1877–78): inquiry, pragmatism, statistics, inference The Fixation of Belief (1877) How to Make Our Ideas Clear (1878) The Doctrine of Chances (1878) The Probability of Induction (1878) The Order of Nature (1878) Deduction, Induction, and Hypothesis (1878) The Harvard lectures on pragmatism (1903) What Pragmatism Is (1905) Issues of Pragmatism (1905) Pragmatism (1907 MS in EP 2) Peirce's recipe for pragmatic thinking, which he called pragmatism and, later, pragmaticism, is recapitulated in several versions of the so-called pragmatic maxim. Here is one of his more Pragmatic maxim#2 emphatic reiterations of it: Consider what effects that might conceivably have practical bearings you conceive the objects of your conception to have. Then, your conception of those effects is the whole of your conception of the object. As a movement, pragmatism began in the early 1870s in discussions among Peirce, William James, and others in the Metaphysical Club. James among others regarded some articles by Peirce such as "The Fixation of Belief" (1877) and especially "How to Make Our Ideas Clear" (1878) as foundational to pragmatism. James, William (1897), The Will to Believe, see p. 124. Peirce (CP 5.11–12), like James (Pragmatism: A New Name for Some Old Ways of Thinking, 1907), saw pragmatism as embodying familiar attitudes, in philosophy and elsewhere, elaborated into a new deliberate method for fruitful thinking about problems. Peirce differed from James and the early John Dewey, in some of their tangential enthusiasms, in being decidedly more rationalistic and realistic, in several senses of those terms, throughout the preponderance of his own philosophical moods. In 1905 Peirce coined the new name pragmaticism "for the precise purpose of expressing the original definition", saying that "all went happily" with James's and F.C.S. Schiller's variant uses of the old name "pragmatism" and that he coined the new name because of the old name's growing use in "literary journals, where it gets abused". Yet he cited as causes, in a 1906 manuscript, his differences with James and Schiller and, in a 1908 publication, his differences with James as well as literary author Giovanni Papini's declaration of pragmatism's indefinability. Peirce in any case regarded his views that truth is immutable and infinity is real, as being opposed by the other pragmatists, but he remained allied with them on other issues. See Pragmaticism#Pragmaticism's name for discussion and references. Pragmatism begins with the idea that belief is that on which one is prepared to act. Peirce's pragmatism is a method of clarification of conceptions of objects. It equates any conception of an object to a conception of that object's effects to a general extent of the effects' conceivable implications for informed practice. It is a method of sorting out conceptual confusions occasioned, for example, by distinctions that make (sometimes needed) formal yet not practical differences. He formulated both pragmatism and statistical principles as aspects of scientific logic, in his "Illustrations of the Logic of Science" series of articles. In the second one, "How to Make Our Ideas Clear", Peirce discussed three grades of clearness of conception: Clearness of a conception familiar and readily



used, even if unanalyzed and undeveloped. Clearness of a conception in virtue of clearness of its parts, in virtue of which logicians called an idea "distinct", that is, clarified by analysis of just what makes it applicable. Elsewhere, echoing Kant, Peirce called a likewise distinct definition "nominal" (CP 5.553). Clearness in virtue of clearness of conceivable practical implications of the object's conceived effects, such as fosters fruitful reasoning, especially on difficult problems. Here he introduced that which he later called the pragmatic maxim. By way of example of how to clarify conceptions, he addressed conceptions about truth and the real as questions of the presuppositions of logicpresuppositions of reasoning in general. In clearness's second grade (the "nominal" grade), he defined truth as a sign's correspondence to its object, and the real as the object of such correspondence, such that truth and the real are independent of that which you or I or any actual, definite Community of inquirycommunity of inquirers think. After that needful but confined step, next in clearness's third grade (the pragmatic, practice-oriented grade) he defined truth as that opinion which would be reached, sooner or later but still inevitably, by research taken far enough, such that the real does depend on that ideal final opinion—a dependence to which he appeals in theoretical arguments elsewhere, for instance for the long-run validity of the rule of induction. "That the rule of induction will hold good in the long run may be deduced from the principle that reality is only the object of the final opinion to which sufficient investigation would lead", in Peirce (1878 April), "The Probability of Induction", p. 718 (via Internet Archive ) in *Popular Science Monthly*, v. 12, pp. 705–18. Reprinted in CP 2.669–93, W 3:290–305, EP 1:155–69, elsewhere. Peirce argued that even to argue against the independence and discoverability of truth and the real is to presuppose that there is, about that very question under argument, a truth with just such independence and discoverability. Peirce said that a conception's meaning consists in "Pragmatic maxim#2all general modes of rational conduct" implied by "acceptance" of the conception—that is, if one were to accept, first of all, the conception as true, then what could one conceive to be consequent general modes of rational conduct by all who accept the conception as true?—the whole of such consequent general modes is the whole meaning. His pragmatism does not equate a conception's meaning, its intellectual purport, with the conceived benefit or cost of the conception itself, like a meme (or, say, propaganda), outside the perspective of its being true, nor, since a conception is general, is its meaning equated with any definite set of actual consequences or upshots corroborating or undermining the conception or its worth. His pragmatism also bears no resemblance to "vulgar" pragmatism, which misleadingly connotes a ruthless and Machiavellian search for mercenary or political advantage. Instead the pragmatic maxim is the heart of his pragmatism as a method of experimental mental Pragmatic maxim#6reflectionPeirce (1902), CP 5.13 note 1. arriving at conceptions in terms of conceivable confirmatory and disconfirmatory circumstances—a method hospitable to the formation of explanatory hypotheses, and conducive to the use and improvement of verification. See CP 1.34 Eprint (in "The Spirit of Scholasticism"), where Peirce ascribed the success of modern science less to a novel interest in verification than to the improvement of verification. Peirce's pragmatism, as method and theory of definitions and conceptual clearness, is part of his theory of inquiry. See Joseph Morton RansdellJoseph Ransdell's comments and his tabular list of titles of Peirce's proposed list of memoirs in 1902 for his Carnegie application, Eprint which he variously called "Methodic" and "Philosophical or Speculative Rhetoric". He applied his pragmatism as a method throughout his work. Theory of inquiryCritical common-sensism Critical common-sensism, Peirce (1905), "Issues of Pragmaticism", *The Monist*, v. XV, n. 4, pp. 481–99. Reprinted CP 5.438–63. Also important: CP 5.497–525. treated by Peirce as a consequence of his pragmatism, is his combination of Scottish School of Common SenseThomas Reid's common-sense philosophy with a fallibilism that recognizes that propositions of our more or less vague common sense now indubitable may later come into actual question, for example because of science's transformation of our world. It includes efforts to work up genuine doubts in tests for a core group of common indubitables that varies slowly if at all. Rival methods of inquiry In *The Fixation of Belief* (1877), Peirce described inquiry in general not as the pursuit of truth per se but as the struggle to move from irritating, inhibitory doubt born of surprise, disagreement, and the like, and to reach a secure belief, belief being that on which one is prepared to act. That let Peirce frame scientific inquiry as part of a broader spectrum and as spurred, like inquiry generally, by actual doubt, not mere verbal or hyperbolic doubt, which he held to be fruitless. Peirce sketched four methods of settling opinion, ordered from least to most successful: The method of tenacity (policy of sticking to initial belief) — which brings comforts

and decisiveness but leads to trying to ignore contrary information and others' views as if truth were intrinsically private, not public. The method goes against the social impulse and easily falters since one may well notice when another's opinion seems as good as one's own initial opinion. Its successes can be brilliant but tend to be transitory. The method of authority — which overcomes disagreements but sometimes brutally. Its successes can be majestic and long-lasting, but it cannot regulate people thoroughly enough to withstand doubts indefinitely, especially when people learn about other societies present and past. The method of congruity or the a priori or the dilettante or "what is agreeable to reason" — which promotes conformity less brutally, but depends on taste and fashion in paradigms and can go in circles over time, along with barren disputation. It is more intellectual and respectable but, like the first two methods, sustains capricious and accidental beliefs, destining some minds to doubts. The method of science — wherein inquiry supposes that the real is discoverable but independent of particular opinion, such that, unlike in the other methods, inquiry can, by its own account, go wrong (fallibilism), not only right, and thus purposely tests itself and criticizes, corrects, and improves itself. Peirce held that, in practical affairs, slow and stumbling ratiocination is often dangerously inferior to instinct and traditional sentiment, and that the scientific method is best suited to theoretical research. Peirce, "Philosophy and the Conduct of Life", Lecture 1 of the 1898 Cambridge (MA) Conferences Lectures, CP 1.616–48 in part and *Reasoning and the Logic of Things*, 105–22, reprinted in EP 2:27–41. which in turn should not be trammelled by the other methods and practical ends; reason's "first rule" is that, in order to learn, one must desire to learn and, as a corollary, must not block the way of inquiry. Scientific method excels the others finally by being deliberately designed to arrive — eventually — at the most secure beliefs, upon which the most successful practices can be based. Starting from the idea that people seek not truth per se but instead to subdue irritating, inhibitory doubt, Peirce showed how, through the struggle, some can come to submit to truth for the sake of belief's integrity, seek as truth the guidance of potential conduct correctly to its given goal, and wed themselves to the scientific method. Scientific method Insofar as clarification by pragmatic reflection suits explanatory hypotheses and fosters predictions and testing, pragmatism points beyond the usual duo of foundational alternatives: Deductive reasoning deduction from self-evident truths, or rationalism; and Inductive reasoning induction from experiential phenomena, or empiricism. Peirce's approach, based in his critique of three *Modes of inference* modes of argument, differs from approaches based in either foundationalism or coherentism about justification of claims, by a three-phase dynamic of inquiry: Active, Abductive reasoning abductive genesis of theory, with no prior assurance of truth; Deductive application of the contingent theory so as to clarify its practical implications; Inductive testing and evaluation of the provisional theory's utility for the anticipation of future experience, in both senses: prediction and control. Thereby he fleshed out an approach to inquiry far more solid than the flatter image of inductive generalization simpliciter, which is a mere relabeling of phenomenological patterns. Peirce's pragmatism was the first time the scientific method was proposed as an epistemology for philosophical questions. A theory that succeeds better than its rivals in predicting and controlling our world is said to be nearer the truth. This is an operational notion of truth used by scientists. Peirce extracted the pragmatic mental model model or theory of inquiry from its raw materials in classical logic and refined it in parallel with the early development of symbolic logic to address problems about the nature of scientific reasoning. Abduction, deduction, and induction make incomplete sense in isolation from one another but comprise a cycle understandable as a whole insofar as they collaborate toward inquiry's end. In the pragmatic way of thinking in terms of conceivable practical implications, every thing has a purpose, and its purpose is the first thing that we should try to note about it. Abduction hypothesizes an explanation for deduction to clarify into implications to be tested so that induction can evaluate the hypothesis, in the struggle to move from troublesome uncertainty to secure belief. No matter how traditional and needful it is to study the modes of inference in abstraction from one another, inquiry's integrity strongly limits the effective modularity (programming) modularity of inquiry's principal components. Peirce outlined the scientific method as follows, in §III–IV in "A Neglected Argument" Peirce (1908), "A Neglected Argument for the Reality of God", published in large part, *Hibbert Journal* v. 7, 90–112. Reprinted with an unpublished part, CP 6.452–85, *Selected Writings* pp. 358–79, EP 2:434–50, Peirce on Signs 260–78. (except as otherwise noted), wherein he also reviewed plausibility and inductive precision (issues of *Modes of inference* modes of inference). 1. Abductive (or

retroductive) phase. Guessing, inference to explanatory hypotheses for selection of those best worth trying. From abduction, Peirce distinguishes induction as inferring, on the basis of tests, the proportion of truth in the hypothesis. Every inquiry, whether into ideas, brute facts, or norms and laws, arises from surprising observations in one or more of those realms (and for example at any stage of an inquiry already underway). All explanatory content of theories comes from abduction, which guesses a new or outside idea so as to account in a simple, economical way for a surprising or complicated phenomenon. Oftenest even a well-prepared mind guesses wrong. But the modicum of success of our guesses far exceeds that of random luck, and seems born of attunement to nature by instincts developed or inherent, especially insofar as best guesses are optimally plausible and simple in the sense of the "facile and natural", as by Galileo's natural light of reason and as distinct from "logical simplicity". See also Nubiola, Jaime (2004), "Il Lume Naturale: Abduction and God", *Semiotiche* 1/2, 91–102. Abduction is the most fertile but least secure mode of inference. Its general rationale is inductive: it succeeds often enough and it has no substitute in expediting us toward new truths. Peirce (c. 1906), "PAP (Prolegomena to an Apology for Pragmatism)" (MS 293), #NEM The New Elements of Mathematics v. 4, pp. 319–20, first quote under "Abduction" at CDPT. In 1903 Peirce called pragmatism "the logic of abduction". Peirce (1903), "Pragmatism – The Logic of Abduction", CP 5.195–205, especially 196. Eprint. It points to efficiency. Coordinative method leads from abducting a plausible hypothesis to judging it for its testability. Peirce, Carnegie application, MS L75.279–280: Memoir 27, Draft B. and for how its trial would economize inquiry itself. See MS L75.329–330, from Draft D of Memoir 27 of Peirce's application to the Carnegie Institution: Consequently, to discover is simply to expedite an event that would occur sooner or later, if we had not troubled ourselves to make the discovery. Consequently, the art of discovery is purely a question of economics. The economics of research is, so far as logic is concerned, the leading doctrine with reference to the art of discovery. Consequently, the conduct of abduction, which is chiefly a question of heuristic and is the first question of heuristic, is to be governed by economical considerations. The hypothesis, being insecure, needs to have practical implications leading at least to mental tests and, in science, lending themselves to scientific tests. A simple but unlikely guess, if uncostly to test for falsity, may belong first in line for testing. A guess is intrinsically worth testing if it has instinctive plausibility or reasoned objective probability, while Subjective probability subjective likelihood, though reasoned, can be misleadingly seductive. Guesses can be chosen for trial strategically, for their caution (for which Peirce gave as example the game of Twenty Questions), breadth, or incompleteness. Peirce, C. S., "On the Logic of Drawing Ancient History from Documents", EP 2, see 107–9. On Twenty Questions, see 109: Thus, twenty skillful hypotheses will ascertain what 200,000 stupid ones might fail to do. One can hope to discover only that which time would reveal through a learner's sufficient experience anyway, so the point is to expedite it; economy of research is what demands the "leap" of abduction and governs its art.

2. Deductive phase. Two stages: i. Explication. Unclearly premissed, but deductive, analysis of the hypothesis so as to render its parts as clear as possible. ii. Demonstration: Deductive Argumentation, Euclidean in procedure. Explicit deduction of hypothesis's consequences as predictions about evidence to be found. Corollary Corollary or, if needed, Theorematic. 3. Inductive phase. Evaluation of the hypothesis, inferring from observational or experimental tests of its deduced consequences. The long-run validity of the rule of induction is deducible from the principle (presuppositional to reasoning in general) that the real "is only the object of the final opinion to which sufficient investigation would lead"; anything to which no such process would ever lead would not be real. Induction involving the ongoing accumulation of evidence follows a method which, sufficiently persisted in, will diminish its error below any predesignate degree. Three stages: i. Classification. Unclearly premissed, but inductive, classing of objects of experience under general ideas. ii. Probation: direct (and explicit) Inductive Argumentation. Crude or Gradual. Crude Induction, founded on experience in one mass (CP 2.759), presumes that future experience on a question will not differ utterly from all past experience (CP 2.756). Gradual Induction makes a new estimate of the proportion of truth in the hypothesis after each test, and is Qualitative or Quantitative. Qualitative Induction depends on estimating the relative evidential weights of the various qualities of the subject class under investigation (CP 2.759; see also CP 7.114–20). Quantitative Induction depends on how often, in a fair sample of instances of S, S is found actually accompanied by P that was predicted for S (CP 2.758). It depends on measurements, or statistics, or counting. iii. Sentential Induction. "...which, by Inductive

reasonings, appraises the different Probations singly, then their combinations, then makes self-appraisal of these very appraisals themselves, and passes final judgment on the whole result". Against Cartesianism Peirce drew on the methodological implications of the #Four incapacitiesfour incapacities — no genuine introspection, no intuition in the sense of non-inferential cognition, no thought but in signs, and no conception of the absolutely incognizable — to attack philosophical René DescartesCartesianism, of which he said that:1. "It teaches that philosophy must begin in universal doubt" — when, instead, we start with preconceptions, "prejudices [...] which it does not occur to us can be questioned", though we may find reason to question them later. "Let us not pretend to doubt in philosophy what we do not doubt in our hearts."2. "It teaches that the ultimate test of certainty is...in the individual consciousness" — when, instead, in science a theory stays on probation till agreement is reached, then it has no actual doubters left. No lone individual can reasonably hope to fulfill philosophy's multi-generational dream. When "candid and disciplined minds" continue to disagree on a theoretical issue, even the theory's author should feel doubts about it. 3. It trusts to "a single thread of inference depending often upon inconspicuous premisses" — when, instead, philosophy should, "like the successful sciences", proceed only from tangible, scrutinizable premisses and trust not to any one argument but instead to "the multitude and variety of its arguments" as forming, not a chain at least as weak as its weakest link, but "a cable whose fibers", soever "slender, are sufficiently numerous and intimately connected". 4. It renders many facts "absolutely inexplicable, unless to say that 'God makes them so' is to be regarded as an explanation"Peirce believed in God. See section #Philosophy: metaphysics. — when, instead, philosophy should avoid being "unidealistic",However, Peirce disagreed with Hegelian absolute idealism. See for example CP 8.131. misbelieving that something real can defy or evade all possible ideas, and supposing, inevitably, "some absolutely inexplicable, unanalyzable ultimate", which explanatory surmise explains nothing and so is inadmissible. Philosophy: metaphysicsSome noted articles The Monist Metaphysical Series (1891–93)The Architecture of Theories (1891) The Doctrine of Necessity Examined (1892) The Law of Mind (1892) Man's Glassy Essence (1892) Evolutionary Love (1893) Immortality in the Light of Synechism (1893 MS) Peirce Classification of the sciences (Peirce)divided metaphysics into (1) ontology or general metaphysics, (2) psychical or religious metaphysics, and (3) physical metaphysics. Ontology. Peirce was a Scholastic Realist, declaring for the reality of generals as early as 1868.Peirce (1868), "Nominalism versus Realism", *Journal of Speculative Philosophy* v. 2, n. 1, pp. 57-61. Reprinted (CP 6.619–24), ( W 2:144–53). Regarding modalities (possibility, necessity, etc.), he came in later years to regard himself as having wavered earlier as to just how positively real the modalities are. In his 1897 "The Logic of Relatives" he wrote: I formerly defined the possible as that which in a given state of information (real or feigned) we do not know not to be true. But this definition today seems to me only a twisted phrase which, by means of two negatives, conceals an anacoluthon. We know in advance of experience that certain things are not true, because we see they are impossible. Peirce retained, as useful for some purposes, the definitions in terms of information states, but insisted that the pragmatist is committed to a strong modal realism by conceiving of objects in terms of predictive general conditional propositions about how they would behave under certain circumstances.On developments in Peirce's realism, see: Peirce (1897), "The Logic of Relatives", *The Monist* v. VII, n. 2 pp. 161–217, see 206 (via Google). Reprinted CP 3.456–552.Peirce (1905), "Issues of Pragmatism", *The Monist* v. XV, n. 4, pp. 481–99, see 495–6 (via Google). Reprinted (CP 5.438–63, see 453–7).Peirce (c. 1905), Letter to Signor Calderoni, CP 8.205–13, see 208. Lane, Robert (2007), "Peirce's Modal Shift: From Set Theory to Pragmatism", *Journal of the History of Philosophy*, v. 45, n. 4.Psychical or Religious Metaphysics. Peirce believed in God, and characterized such belief as founded in an instinct explorable in musing over the worlds of ideas, brute facts, and evolving habits — and it is a belief in God not as an actual or existent being (in Peirce's sense of those words), but all the same as a real being.Peirce in his 1906 "Answers to Questions concerning my Belief in God", CP 6.495, Eprint, reprinted in part as "The Concept of God" in *Philosophical Writings of Peirce*, J. Buchler, ed., 1940, pp. 375–8: I will also take the liberty of substituting "reality" for "existence." This is perhaps overscrupulosity; but I myself always use exist in its strict philosophical sense of "react with the other like things in the environment." Of course, in that sense, it would be fetichism to say that God "exists." The word "reality," on the contrary, is used in ordinary parlance in its correct philosophical sense. [...] I define the real as that which holds its characters on such a tenure that it makes not

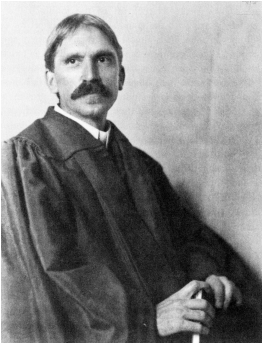
the slightest difference what any man or men may have thought them to be, or ever will have thought them to be, here using thought to include, imagining, opining, and willing (as long as forcible means are not used); but the real thing's characters will remain absolutely untouched. In "A Neglected Argument for the Reality of God" (1908), Peirce sketches, for God's reality, an argument to a hypothesis of God as the Necessary Being, a hypothesis which he describes in terms of how it would tend to develop and become compelling in musement and inquiry by a normal person who is led, by the hypothesis, to consider as being purposed the features of the worlds of ideas, brute facts, and evolving habits (for example scientific progress), such that the thought of such purposefulness will "stand or fall with the hypothesis"; meanwhile, according to Peirce, the hypothesis, in supposing an "infinitely incomprehensible" being, starts off at odds with its own nature as a purportedly true conception, and so, no matter how much the hypothesis grows, it both (A) inevitably regards itself as partly true, partly vague, and as continuing to define itself without limit, and (B) inevitably has God appearing likewise vague but growing, though God as the Necessary Being is not vague or growing; but the hypothesis will hold it to be more false to say the opposite, that God is purposeless. Peirce also argued that the will is free. See his Charles Sanders Peirce bibliography#MMS "The Doctrine of Necessity Examined" (1892) and "Reply to the Necessitarians" (1893), to both of which editor Paul Carus responded. and (see Synechism) that the soul is immortal. Physical Metaphysics. Peirce held the view, which he called objective idealism, that "matter is effete mind, inveterate habits becoming physical laws". Peirce (1891), "The Architecture of Theories", *The Monist* v. 1, pp. 161–76, see p. 170, via Internet Archive. Reprinted (CP 6.7–34) and (EP 1:285–97, see p. 293). Peirce asserted the reality of (1) chance (his Tychism/tychist view), (2) mechanical necessity (anancist view), and (3) that which he called the law of love (Agapism/agapist view), echoing his #Theory of categories/categories Firstness, Secondness, and Thirdness, respectively. He held that fortuitous variation (which he also called "sporting"), mechanical necessity, and creative love are the three modes of evolution (modes called "tychasm", "anancasm", and "agapasm"). See "tychism", "tychasm", "tychasticism", and the rest, at CDPT. of the cosmos and its parts. He found his conception of agapasm embodied in Lamarckism/Lamarckian evolution; the overall idea in any case is that of evolution tending toward an end or goal, and it could also be the evolution of a mind or a society; it is the kind of evolution which manifests workings of mind in some general sense. He said that overall he was a synechist, holding with reality of continuity. Peirce (1893), "Evolutionary Love", *The Monist* v. 3, pp. 176–200. Reprinted CP 6.278–317, EP 1:352–72. Arisbe Eprint especially of space, time, and law. See p. 115 in #RLT Reasoning and the Logic of Things (Peirce's 1898 lectures). Science of review Peirce outlined two fields, "Cenoscopy" and "Science of Review", both of which he called philosophy. Both included philosophy about science. In 1903 he arranged them, from more to less theoretically basic, thus: Science of Discovery. Mathematics. Cenoscopia (philosophy as discussed earlier in this article—categorical, normative, metaphysical), as First Philosophy, concerns positive phenomena in general, does not rely on findings from special sciences, and includes the general study of inquiry and scientific method. Idioscopy, or the Special Sciences (of nature and mind). Science of Review, as Ultimate Philosophy, arranges "...the results of discovery, beginning with digests, and going on to endeavor to form a philosophy of science". His examples included Alexander von Humboldt/Humboldt's Alexander Von Humboldt#The .22Cosmos.22Cosmos, Auguste Comte/Comte's Philosophie positive, and Herbert Spencer/Spencer's Synthetic Philosophy. Practical Science, or the Arts. Peirce placed, within Science of Review, the work and theory of classifying the sciences (including mathematics and philosophy). His classifications, on which he worked for many years, draw on argument and wide knowledge, and are of interest both as a map for navigating his philosophy and as an accomplished polymath's survey of research in his time. Notes/External links Charles Sanders Peirce bibliography has external links throughout to such materials as Charles Sanders Peirce bibliography#Overviews and biographies/biographical and overview articles on Peirce at encyclopedias, study sites, etc.; Charles Sanders Peirce bibliography#Books authored or edited by Peirce, published in his lifetime/individual works by Peirce; and Charles Sanders Peirce bibliography#External links/collections, bibliographies, and Peirce's definitions in the Baldwin dictionary. Other useful sets of links: Semiotics#External links/Semiotics external links. Conceptual graphs#External links/Conceptual graphs external links. Pragmatism#External links/Pragmatism external links. Peirce sites Arisbe: The Peirce Gateway, Joseph Ransdell, ed. Over 100 online writings by Peirce as of 11/24/10, with annotations. 100s of

online papers on Peirce. The peirce-l e-forum. Much else. Center for Applied Semiotics (CAS) (1998–2003), Donald Cunningham & Jean Umiker-Sebeok, Indiana U. Centro de Estudos Peirceanos (CeneP) and Centro Internacional de Estudos Peirceanos (CIEP), Lucia Santaella et al., Pontifical Catholic U. of São Paulo (PUC-SP), Brazil. In Portuguese, some English. Centro Studi Peirce, Carlo Sini, Rossella Fabbrichesi, et al., U. of Milan, Italy. In Italian and English. Part of Pragma. Charles S. Peirce Foundation. Co-sponsoring the 2014 Peirce International Centennial Congress (100th anniversary of Peirce's death). Charles S. Peirce Society— Transactions of the Charles S. Peirce Society. Quarterly journal of Peirce studies since spring 1965. Table of Contents of all issues. Charles S. Peirce Studies, Brian Kariger, ed. Charles Sanders Peirce at the Mathematics Genealogy Project. Collegium for the Advanced Study of Picture Act and Embodiment: The Peirce Archive. Humboldt U, Berlin, Germany. Cataloguing Peirce's innumerable drawings & graphic materials. More info (Prof. Aud Sissel Hoel). Digital Encyclopedia of Charles S. Peirce, João Queiroz ( now at UFJF) & Ricardo Gudwin ( at Unicamp), eds., Universidade Estadual de CampinasU. of Campinas, Brazil, in English. 84 authors listed, 51 papers online & more listed, as of 1/31/09. Existential Graphs, Jay Zeman, ed., U. of Florida. Has 4 Peirce texts. Grupo de Estudios Peirceanos (GEP) / Peirce Studies Group, Jaime Nubiola, ed., U. of Navarra, Spain. Big study site, Peirce & others in Spanish & English, bibliography, more. Helsinki Peirce Research Center (HPRC), Ahti-Veikko Pietarinen et al., U. of Helsinki, with Commens: Virtual Centre for Peirce Studies, Mats Bergman & Sami Paavola, eds. 23 papers by 11 authors as of 11/24/10.— Commens Dictionary of Peirce's Terms (CDPT): Peirce's own definitions, often many per term across the decades. His Glassy Essence. Autobiographical Peirce. Kenneth Laine Ketner. Institute for Studies in Pragmaticism, Kenneth Laine Ketner, Clyde Hendrick, et al., Texas Tech U. Peirce's life and works. International Research Group on Abductive Inference, Uwe Wirth et al., eds., Goethe U., Frankfurt, Germany. Uses frames. Click on link at bottom of its home page for English. Moved to University of GießenU. of Gießen, Germany, home page not in English but see Artikel section there. Laboratory for Artificial Intelligence Research: Abductive Inference in Reasoning and Perception, John R. Josephson, Ohio State U. L'I.R.S.C.E. (1974–2003)—Institut de Recherche en Sémiotique, Communication et Éducation, Gérard Deledalle, Joëlle Réthoré, U. of Perpignan, France. Minute Semeiotic, Vinicius Romanini, U. of São Paulo, Brazil. English, Portuguese. Peirce at Signo: Theoretical Semiotics on the Web, Louis Hébert, director, supported by U. of Québec. Theory, application, exercises of Peirce's Semiotics and Esthetics. English, French. Peirce Edition Project (PEP), Indiana U.-Purdue U. Indianapolis (IUPUI). André De Tienne, Nathan Houser, et al. Editors of the Writings of Charles S. Peirce (W) and The Essential Peirce (EP) v. 2. Many study aids such as the Robin Catalog of Peirce's manuscripts & letters and:—Biographical introductions to EP 1–2 and W 1–6 & 8— Most of W 2 readable online.— PEP's branch at Université du Québec à Montréal (UQÀM). Working on W 7: Peirce's work on the Century Dictionary. Definition of the week. Peirce's Existential Graphs, Frithjof Dau, Germany Peirce's Theory of Semiosis: Toward a Logic of Mutual Affection, Joseph Esposito. Free online course. Research Group on Semiotic Epistemology and Mathematics Education (late 1990s), Institut für Didaktik der Mathematik (Michael Hoffman, Michael Otte, Universität Bielefeld, Germany). See Peirce Project Newsletter v. 3, n. 1, p. 13. Semiotics according to Robert Marty, with 76 definitions of the sign by C. S. Peirce. An earlier version of this article, by Jaime Nubiola, was posted at Nupedia.LogicStatisticsPhilosophy of scienceMetaphysics

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# John Dewey

## John Dewey

<div></div> <div>Dewey in 1902</div>	
Full name	John Dewey
Born	October 20, 1859
Died	June 1, 1952 (aged 92)
Era	20th-century philosophy
Region	Western Philosophy
School	Pragmatism
Main interests	Philosophy of education, Epistemology, Journalism, Ethics
Notable ideas	Reflective Thinking <sup>[1]</sup> American Association of University Professors Inquiry into Moscow show trials about Trotsky Educational progressivism

**John Dewey** (October 20, 1859 – June 1, 1952) was an American philosopher, psychologist and educational reformer whose ideas have been influential in education and social reform. Dewey was an important early developer of the philosophy of pragmatism and one of the founders of functional psychology. He was a major representative of the progressive and progressive populist<sup>[2]</sup> philosophies of schooling during the first half of the 20th century in the USA.<sup>[3]</sup>

Although Dewey is known best for his publications concerning education, he also wrote about many other topics, including experience, nature, art, logic, inquiry, democracy, and ethics.

In his advocacy of democracy, Dewey considered two fundamental elements—schools and civil society—as being major topics needing attention and reconstruction to encourage experimental intelligence and plurality. Dewey asserted that complete democracy was to be obtained not just by extending voting rights but also by ensuring that there exists a fully formed public opinion, accomplished by effective communication among citizens, experts, and politicians, with the latter being accountable for the policies they adopt.

### Life and works

Dewey was born in Burlington, Vermont, to a family of modest means.<sup>[4]</sup> Like his older brother, Davis Rich Dewey, he attended the University of Vermont, from which he graduated (Phi Beta Kappa)<sup>[5]</sup> in 1879. A significant professor of Dewey's at the University of Vermont was Henry A. P. Torrey, the son-in-law and nephew of former University of Vermont president Joseph Torrey. Dewey studied privately with Torrey between his graduation from Vermont and his enrollment at Johns Hopkins University.<sup>[6]</sup> <sup>[7]</sup>

After two years as a high-school teacher in Oil City, Pennsylvania and one teaching elementary school in a small town in Vermont, Dewey decided that he was unsuited for employment in primary or secondary education. After studying with George Sylvester Morris, Charles Sanders Peirce, Herbert Baxter Adams, and G. Stanley Hall, Dewey received his Ph.D. from the School of Arts & Sciences at Johns Hopkins University. In 1884, he accepted a faculty position at the University of Michigan (1884–88 and 1889–94) with the help of George Sylvester Morris. His unpublished and now lost dissertation was titled "The Psychology of Kant."

In 1894 Dewey joined the newly founded University of Chicago (1894–1904) where he developed his belief in an empirically based theory of knowledge, becoming associated with the newly emerging Pragmatic philosophy. His time at the University of Chicago resulted in four essays collectively entitled *Thought and its Subject-Matter*, which was published with collected works from his colleagues at Chicago under the collective title *Studies in Logical Theory* (1903). During that time Dewey also initiated the University of Chicago Laboratory Schools, where he was able to actualize the pedagogical beliefs that provided material for his first major work on education, *The School and Social Progress* (1899). Disagreements with the administration ultimately caused his resignation from the University, and soon thereafter he relocated near the East Coast. In 1899, Dewey was elected president of the American Psychological Association. From 1904 until his retirement in 1930 he was professor of philosophy at both Columbia University and Columbia University's Teachers College.<sup>[8]</sup> In 1905 he became president of the American Philosophical Association. He was a longtime member of the American Federation of Teachers.

Along with the historian Charles Beard, economists Thorstein Veblen and James Harvey Robinson, Dewey is one of the founders of The New School. Dewey's most significant writings were "The Reflex Arc Concept in Psychology" (1896), a critique of a standard psychological concept and the basis of all his further work; *Democracy and Education* (1916), his celebrated work on progressive education; *Human Nature and Conduct* (1922), a study of the function of habit in human behavior; *The Public and its Problems* (1927), a defense of democracy written in response to Walter Lippmann's *The Phantom Public* (1925); *Experience and Nature* (1925), Dewey's most "metaphysical" statement; *Art as Experience* (1934), Dewey's major work on aesthetics; *A Common Faith* (1934), a humanistic study of religion originally delivered as the Dwight H. Terry Lectureship at Yale; *Logic: The Theory of Inquiry* (1938), a statement of Dewey's unusual conception of logic; *Freedom and Culture* (1939), a political work examining the roots of fascism; and *Knowing and the Known* (1949), a book written in conjunction with Arthur F. Bentley that systematically outlines the concept of trans-action, which is central to his other works. While each of these works focuses on one particular philosophical theme, Dewey included his major themes in most of what he published. He published more than 700 articles in 140 journals, and approximately 40 books.

Reflecting his immense influence on 20th-century thought, Hilda Neatby, in 1953, wrote "Dewey has been to our age what Aristotle was to the later middle ages, not a philosopher, but *the* philosopher."<sup>[9]</sup>

Dewey was first married to Alice Chipman. They had six children.<sup>[10]</sup> His second wife was Roberta Lowitz Grant.<sup>[11]</sup>

The United States Postal Service honored Dewey with a Prominent Americans series 30¢ postage stamp.

## Functional psychology

At University of Michigan, Dewey published his first two books, *Psychology* (1887), and *Leibniz's New Essays Concerning the Human Understanding* (1888), both of which expressed Dewey's early commitment to British neo-Hegelianism. In *Psychology*, Dewey attempted a synthesis between idealism and experimental science.<sup>[12]</sup>

While still professor of philosophy at Michigan, Dewey and his junior colleagues, James Hayden Tufts and George Herbert Mead, together with his student James Rowland Angell, all influenced strongly by the recent publication of William James' *Principles of Psychology* (1890), began to reformulate psychology, emphasizing the social environment on the activity of mind and behaviour rather than the physiological psychology of Wundt and his followers.

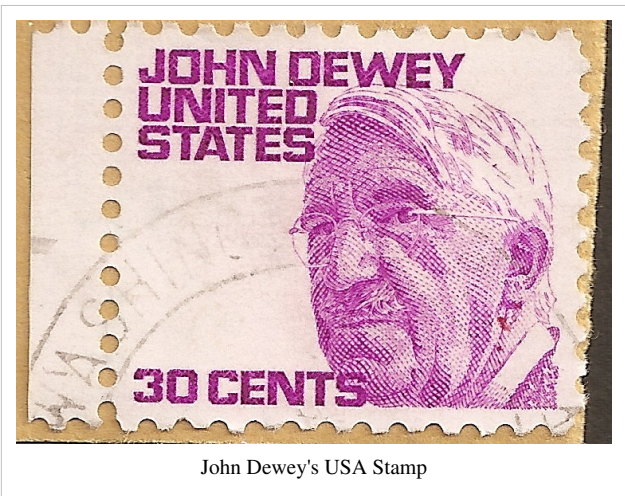


By 1894, Dewey had joined Tufts, with whom he would later write *Ethics* (1908), at the recently founded University of Chicago and invited Mead and Angell to follow him, the four men forming the basis of the so-called "Chicago group" of psychology.

Their new style of psychology, later dubbed functional psychology, had a practical emphasis on action and application. In Dewey's article "The Reflex Arc Concept in Psychology" which appeared in *Psychological Review* in 1896, he reasons against the traditional stimulus-response understanding of the reflex arc in favor of a "circular" account in which what serves as "stimulus" and what as "response" depends on how one considers the situation, and defends the unitary nature of the sensory motor circuit. While he does not deny the existence of stimulus, sensation, and response, he disagreed that they were separate, juxtaposed events happening like links in a chain. He developed the idea that there is a coordination by which the stimulation is enriched by the results of previous experiences. The response is modulated by sensorial experience.

Dewey was elected president of the American Psychological Association in 1899.

In 1984, the American Psychological Association announced that Lillian Moller Gilbreth (1878–1972) had become the first psychologist to be commemorated on a United States postage stamp. However, psychologists Gary Brucato Jr. and John D. Hogan later made the case that this distinction actually belonged to John Dewey, who had been celebrated on an American stamp 17 years earlier. While some psychology historians consider Dewey more of a philosopher than a bona fide psychologist,<sup>[13]</sup> the authors noted that Dewey was a founding member of the A.P.A., served as the A.P.A.'s eighth President in 1899, and was the author of an 1896 article on the reflex arc which is now considered a basis of American functional psychology.<sup>[14]</sup>



John Dewey's USA Stamp

Dewey also expressed interest in work in the psychology of visual perception performed by Dartmouth research professor Adelbert Ames, Jr. He had great trouble with listening, however, because it is known Dewey could not distinguish musical pitches - in other words was tone deaf.<sup>[15]</sup>

## Pragmatism and instrumentalism

Although Dewey referred to his philosophy as "instrumentalism" rather than pragmatism, he was one of the three major figures in American pragmatism, along with Charles Sanders Peirce, who invented the term, and William James, who popularized it. Dewey worked from strongly Hegelian influences, unlike James, whose intellectual lineage was primarily British, drawing particularly on empiricist and utilitarian ideas.<sup>[16]</sup> Neither was Dewey so pluralist or relativist as James. He stated that value was a function not of whim nor purely of social construction, but a quality situated in events ("nature itself is wistful and pathetic, turbulent and passionate" (*Experience and Nature*)).

James also stated that experimentation (social, cultural, technological, philosophical) could be used as an approximate arbiter of truth. For example he felt that, for many people who lacked "over-belief" of religious concepts, human life was superficial and rather uninteresting, and that while no one religious belief could be demonstrated as the correct one, we are all responsible for making a gamble on one or another theism, atheism, monism, etc. Dewey, in contrast, while honoring the important function that religious institutions and practices played in human life, rejected belief in any static ideal, such as a personal God. Dewey felt that only scientific method could reliably increase human good.

Of the idea of God, Dewey said, "it denotes the unity of all ideal ends arousing us to desire and actions."<sup>[17]</sup>

As with the reemergence of progressive philosophy of education, Dewey's contributions to philosophy as such (he was, after all, much more a professional philosopher than an educator) have also reemerged with the reassessment of pragmatism, beginning in the late 1970s, by philosophers like Richard Rorty, Richard J. Bernstein and Hans Joas.

Because of his process-oriented and sociologically conscious opinion of the world and knowledge, his ideology is considered sometimes as a useful alternative to both modern and postmodern ideology. Dewey's non-foundational method pre-dates postmodernism by more than half a century. Recent exponents (like Rorty) have not always remained faithful to Dewey's original ideas, though this itself is completely consistent with Dewey's own usage of other writers and with his own philosophy— for Dewey, past doctrines always require reconstruction in order to remain useful for the present time.

Dewey's philosophy has had other names than "pragmatism". He has been called an instrumentalist, an experimentalist, an empiricist, a functionalist, and a naturalist. The term "transactional" may better describe his views, a term emphasized by Dewey in his later years to describe his theories of knowledge and experience.

## Epistemology

The terminology problem in the fields of epistemology and logic is partially due, according to Dewey and Bentley,<sup>[18]</sup> to inefficient and imprecise use of words and concepts that reflect three historic levels of organization and presentation.<sup>[19]</sup> In the order of chronological appearance, these are:

- Self-Action: Prescientific concepts regarded humans, animals, and things as possessing powers of their own which initiated or caused their actions.
- Interaction: as described by Newton, where things, living and inorganic, are balanced against something in a system of interaction, for example, the third law of motion states that for every action there is an equal and opposite reaction.
- Transaction: where modern systems of descriptions and naming are employed to deal with multiple aspects and phases of action without any attribution to ultimate, final, or independent entities, essences, or realities.

A series of characterizations of Transactions indicate the wide range of considerations involved.<sup>[20]</sup>

## Logic and method

Dewey sees paradox in contemporary logical theory. Proximate subject matter garners general agreement and advance, while the ultimate subject matter of logic generates unremitting controversy. In other words, he challenges confident logicians to answer the question of the truth of logical operators. Do they function merely as abstractions (e.g., pure mathematics) or do they connect in some essential way with their objects, and therefore alter or bring them to light?<sup>[21]</sup>

Logical positivism also figured in Dewey's thought. About the movement he wrote that it "eschews the use of 'propositions' and 'terms', substituting 'sentences' and 'words'." ("General Theory of Propositions", in *Logic: The Theory of Inquiry*) He welcomes this changing of referents "in as far as it fixes attention upon the symbolic structure and content of propositions." However, he registers a small complaint against the use of "sentence" and "words" in that without careful interpretation the act or process of transposition "narrows unduly the scope of symbols and language, since it is not customary to treat gestures and diagrams (maps, blueprints, etc.) as words or sentences." In other words, sentences and words, considered in isolation, do not disclose intent, which may be inferred or "adjudged only by means of context."<sup>[21]</sup>

Yet Dewey was not entirely opposed to modern logical trends. Concerning traditional logic, he states:

"Aristotelian logic, which still passes current nominally, is a logic based upon the idea that qualitative objects are existential in the fullest sense. To retain logical principles based on this conception along with the acceptance of theories of existence and knowledge based on an opposite conception is not, to say the least, conducive to clearness – a consideration that has a good deal to do with existing dualism between traditional

and the newer relational logics.

—(*Qualitative Thought* 1930)

Louis Menand argues in *The Metaphysical Club* that Jane Addams had been critical of Dewey's emphasis on antagonism in the context of a discussion of the Pullman strike of 1894. In a later letter to his wife, Dewey confessed that Addams' argument was

"the most magnificent exhibition of intellectual & moral faith I ever saw. She converted me internally, but not really, I fear.... When you think that Miss Addams does not think this as a philosophy, but believes it in all her senses & muscles-- Great God... I guess I'll have to give it [all] up & start over again."

He went on to add,

"I can see that I have always been interpreting dialectic wrong end up, the unity as the reconciliation of opposites, instead of the opposites as the unity in its growth, and thus translated the physical tension into a moral thing... I don't know as I give the reality of this at all,... it seems so natural & commonplace now, but I never had anything take hold of me so."<sup>[22]</sup>

In a letter to Addams herself, Dewey wrote, clearly influenced by his conversation with her:

"Not only is actual antagonizing bad, but the assumption that there is or may be antagonism is bad-- in fact, the real first antagonism always comes back to the assumption."

## Aesthetics

*Art as Experience* (1934) is Dewey's major writing on aesthetics. It is, according to his place in the Pragmatist tradition that emphasizes community, a study of the individual art object as embedded in (and inextricable from) the experiences of a local culture. See his *Experience and Nature* for an extended discussion of 'Experience' in Dewey's philosophy.

## On democracy

The overriding theme of Dewey's works was his profound belief in democracy, be it in politics, education or communication and journalism. As Dewey himself stated in 1888, while still at the University of Michigan, "Democracy and the one, ultimate, ethical ideal of humanity are to my mind synonymous."<sup>[23]</sup>

With respect to technological developments in a democracy:

"Persons do not become a society by living in physical proximity any more than a man ceases to be socially influenced by being so many feet or miles removed from others"

—John Dewey from Andrew Feenberg's "Community in the Digital Age"

## On education

Dewey's educational theories were presented in *My Pedagogic Creed* (1897), *The School and Society* (1900), *The Child and the Curriculum* (1902), *Democracy and Education* (1916) and *Experience and Education* (1938). Throughout these writings, several recurrent themes ring true; Dewey continually argues that education and learning are social and interactive processes, and thus the school itself is a social institution through which social reform can and should take place. In addition, he believed that students thrive in an environment where they are allowed to experience and interact with the curriculum, and all students should have the opportunity to take part in their own learning.

The ideas of democracy and social reform are continually discussed in Dewey's writings on education. Dewey makes a strong case for the importance of education not only as a place to gain content knowledge, but also as a place to learn how to live. In his eyes, the purpose of education should not revolve around the acquisition of a pre-determined set of skills, but rather the realization of one's full potential and the ability to use those skills for the greater good. He

notes that “to prepare him for the future life means to give him command of himself; it means so to train him that he will have the full and ready use of all his capacities” (1897, p. 6).<sup>[24]</sup> In addition to helping students realize their full potential, Dewey goes on to acknowledge that education and schooling are instrumental in creating social change and reform. He notes that “education is a regulation of the process of coming to share in the social consciousness; and that the adjustment of individual activity on the basis of this social consciousness is the only sure method of social reconstruction” (1897, p. 16).

In addition to his ideas regarding what education is and what effect it should have on society, Dewey also had specific notions regarding how education should take place within the classroom. In *The Child and the Curriculum* (1902), Dewey discusses two major conflicting schools of thought regarding educational pedagogy. The first is centered on the curriculum and focuses almost solely on the subject matter to be taught. Dewey argues that the major flaw in this methodology is the inactivity of the student; within this particular framework, “the child is simply the immature being who is to be matured; he is the superficial being who is to be deepened” (1902, p. 13).<sup>[25]</sup> He argues that in order for education to be most effective, content must be presented in a way that allows the student to relate the information to prior experiences, thus deepening the connection with this new knowledge.

At the same time, Dewey was alarmed by many of the “child-centered” excesses of educational-school pedagogues who claimed to be his followers, and he argued that too much reliance on the child could be equally detrimental to the learning process. In this second school of thought, “we must take our stand with the child and our departure from him. It is he and not the subject-matter which determines both quality and quantity of learning” (Dewey, 1902, p. 13-14). According to Dewey, the potential flaw in this line of thinking is that it minimizes the importance of the content as well as the role of the teacher.

In order to rectify this dilemma, Dewey advocated for an educational structure that strikes a balance between delivering knowledge while also taking into account the interests and experiences of the student. He notes that “the child and the curriculum are simply two limits which define a single process. Just as two points define a straight line, so the present standpoint of the child and the facts and truths of studies define instruction” (Dewey, 1902, p. 16). It is through this reasoning that Dewey became one of the most famous proponents of hands-on learning or experiential education, which is related to, but not synonymous with experiential learning. He argued that “if knowledge comes from the impressions made upon us by natural objects, it is impossible to procure knowledge without the use of objects which impress the mind” (Dewey, 1916/2009, p. 217-218).<sup>[26]</sup> Dewey’s ideas went on to influence many other influential experiential models and advocates. Many researchers even credit him with the influence of Project Based Learning (PBL) which places students in the active role of researchers.

Dewey not only re-imagined the way that the learning process should take place, but also the role that the teacher should play within that process. According to Dewey, the teacher should not be one to stand at the front of the room doling out bits of information to be absorbed by passive students. Instead, the teacher’s role should be that of facilitator and guide. As Dewey (1897) explains it:

The teacher is not in the school to impose certain ideas or to form certain habits in the child, but is there as a member of the community to select the influences which shall affect the child and to assist him in properly responding to these influences (p. 9).

Thus the teacher becomes a partner in the learning process, guiding students to independently discover meaning within the subject area. This philosophy has become an increasingly popular idea within present-day teacher preparatory programs.

As well as his very active and direct involvement in setting up educational institutions such as the University of Chicago Laboratory Schools (1896) and The New School for Social Research (1919), many of Dewey’s ideas influenced the founding of Bennington College in Vermont, where he served on the Board of Trustees. Dewey’s works and philosophy also held great influence in the creation of the short-lived Black Mountain College in North Carolina, an experimental college focused on interdisciplinary study, and whose faculty included Buckminster Fuller, Willem de Kooning, Charles Olson, Franz Kline, Robert Duncan, and Robert Creeley, among others. Black

Mountain College was the locus of the "Black Mountain Poets" a group of avant-garde poets closely linked with the Beat Generation and the San Francisco Renaissance.

## On journalism

Since the mid-1980s, Deweyan ideas have experienced revival as a major source of inspiration for the public journalism movement. Dewey's definition of "public," as described in *The Public and its Problems*, has profound implications for the significance of journalism in society. As suggested by the title of the book, his concern was of the transactional relationship between publics and problems. Also implicit in its name, public journalism seeks to orient communication away from elite, corporate hegemony toward a civic public sphere. "The 'public' of public journalists is Dewey's public."

Dewey gives a concrete definition to the formation of a public. Publics are spontaneous groups of citizens who share the indirect effects of a particular action. Anyone affected by the indirect consequences of a specific action will automatically share a common interest in controlling those consequences, i.e., solving a common problem.<sup>[27]</sup>

Since every action generates unintended consequences, publics continuously emerge, overlap, and disintegrate.

In *The Public and its Problems*, Dewey presents a rebuttal to Walter Lippmann's treatise on the role of journalism in democracy. Lippmann's model was a basic transmission model in which journalists took information given them by experts and elites, repackaged that information in simple terms, and transmitted the information to the public, whose role was to react emotionally to the news. In his model, Lippmann supposed that the public was incapable of thought or action, and that all thought and action should be left to the experts and elites.

Dewey refutes this model by assuming that politics is the work and duty of each individual in the course of his daily routine. The knowledge needed to be involved in politics, in this model, was to be generated by the interaction of citizens, elites, experts, through the mediation and facilitation of journalism. In this model, not just the government is accountable, but the citizens, experts, and other actors as well.

Dewey also said that journalism should conform to this ideal by changing its emphasis from actions or happenings (choosing a winner of a given situation) to alternatives, choices, consequences, and conditions, in order to foster conversation and improve the generation of knowledge. Journalism would not just produce a static product that told what had already happened, but the news would be in a constant state of evolution as the public added value by generating knowledge. The "audience" would end, to be replaced by citizens and collaborators who would essentially be users, doing more with the news than simply reading it. Concerning his effort to change journalism, he wrote in *The Public and its Problems*: "Till the Great Society is converted in to a Great Community, the Public will remain in eclipse. Communication can alone create a great community" (Dewey, p. 142).

Dewey believed that communication creates a great community, and citizens who participate actively with public life contribute to that community. "The clear consciousness of a communal life, in all its implications, constitutes the idea of democracy." (*The Public and its Problems*, p. 149). This Great Community can only occur with "free and full intercommunication." (p. 211) Communication can be understood as journalism.

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## On humanism

Dewey participated with a variety of humanist activities from the 1930s into the 1950s, which included sitting on the advisory board of Charles Francis Potter's First Humanist Society of New York (1929); being one of the original 34 signatories of the first *Humanist Manifesto* (1933) and being elected an honorary member of the Humanist Press Association (1936).<sup>[28]</sup>

His opinion of humanism is best summarised in his own words from an article titled "What Humanism Means to Me", published in the June 1930 edition of *Thinker* 2:

"What Humanism means to me is an expansion, not a contraction, of human life, *an expansion in which nature and the science of nature are made the willing servants of human good.*" — John Dewey, "What Humanism Means to Me"<sup>[29]</sup>

## Social and political activism

As a major advocate for academic freedom, in 1935 Dewey, together with Albert Einstein and Alvin Johnson, became a member of the United States section of the International League for Academic Freedom,<sup>[30]</sup> and in 1940, together with Horace M Kallen, edited a series of articles related to the infamous Bertrand Russell Case.

As well as being active in defending the independence of teachers, and opposing a communist takeover of the New York Teachers' Union, Dewey was involved in the organization that eventually became the National Association for the Advancement of Colored People (NAACP).

He directed the famous Dewey Commission held in Mexico in 1937, which cleared Leon Trotsky of the charges made against him by Joseph Stalin,<sup>[31]</sup> and marched for women's rights, among many other causes.

In 1950, Dewey, Bertrand Russell, Benedetto Croce, Karl Jaspers, and Jacques Maritain agreed to act as honorary chairmen of the Congress for Cultural Freedom.<sup>[32]</sup>

## Other interests

Dewey's interests and writings included many topics, and according to the Stanford Encyclopedia of Philosophy, "a substantial part of his published output consisted of commentary on current domestic and international politics, and public statements on behalf of many causes. (He is probably the only philosopher in this encyclopedia to have published both on the Treaty of Versailles and on the value of displaying art in post offices.)"<sup>[33]</sup>

In 1917, Dewey met F. M. Alexander in New York City and later wrote introductions to Alexander's *Man's Supreme Inheritance* (1918), *Constructive Conscious Control of the Individual* (1923) and *The Use of the Self* (1932). Alexander's influence is referenced in "Human Nature and Conduct" and "Experience and Nature."<sup>[34]</sup>

As well as his contacts with people mentioned elsewhere in the article, he also maintained correspondence with Henri Bergson, William M. Brown, Martin Buber, George S. Counts, William Rainey Harper, Sidney Hook, and George Santayana.

## Criticism

Dewey is considered the epitome of liberalism by many conservative pundits today (see *The Closing of the American Mind*), even being "portrayed as dangerously radical" during the era of McCarthyism.<sup>[35]</sup> Meanwhile, Dewey was critiqued strongly by American communists because he argued against Stalinism and had philosophical differences with Marx, despite identifying himself as a democratic socialist.<sup>[36]</sup>

Other criticisms of him include his opinions of both the First and the Second World Wars, as well as, despite having been involved with the initiation of the NAACP, not having written more directly against racism.

Another source of criticism has been religion. While one biographer, Steven C. Rockefeller, traced Dewey's democratic convictions to his childhood attendance at the Congregational Church, with its strong proclamation of social ideals,<sup>[37]</sup> another, Edward A. White, a Stanford University professor of history, suggested in *Science and Religion in American Thought* (1952) that Dewey's work had led to the 20th century rift between religion and science. However, in reviewing the book in *The Quarterly Review of Biology* (1954), noted geneticist H. Bentley Glass openly wondered if the controversy between religion and science would have been much the same, even if there had not been a John Dewey.<sup>[38]</sup>

## Academic awards

- Copernican Citation (1943)
- Doctor "honoris causa" – University of Oslo (1946)
- Doctor "honoris causa" – University of Pennsylvania (1946)
- Doctor "honoris causa" – Yale University (1951)
- Doctor "honoris causa" – University of Rome (1951)

## Publications

Besides publishing prolifically himself, Dewey also sat on the boards of scientific publications such as *Sociometry* (advisory board, 1942) and *Journal of Social Psychology* (editorial board, 1942), as well as having posts at other publications such as *New Leader* (contributing editor, 1949).

The following publications by John Dewey are referenced or mentioned in this article. A more complete list of his publications may be found at List of publications by John Dewey.

- "The New Psychology"<sup>[39]</sup> *Andover Review*, 2, 278-289 (1884)
- *Psychology* (1887)
- *Leibniz's New Essays Concerning the Human Understanding* (1888)
- "The Ego as Cause"<sup>[40]</sup> *Philosophical Review*, 3, 337-341. (1894)
- "The Reflex Arc Concept in Psychology"<sup>[41]</sup> (1896)
- "My Pedagogic Creed" (1897)
- *The School and Society* (1900)
- *The Child and the Curriculum*<sup>[42]</sup> (1902)
- "The Postulate of Immediate Empiricism"<sup>[43]</sup> (1905)
- *Moral Principles in Education* (1909) The Riverside Press Cambridge Project Gutenberg<sup>[44]</sup>
- *How We Think* (1910)
- *German Philosophy and Politics*<sup>[45]</sup> (1915)
- *Democracy and Education: an introduction to the philosophy of education* (1916)
- *Reconstruction in Philosophy*<sup>[46]</sup> (1919)
- *Human Nature and Conduct: An Introduction to Social Psychology*
- *Experience and Nature*<sup>[47]</sup> (1925)
- *The Public and its Problems* (1927)

- The Quest for Certainty (1929)
- The Sources of a Science of Education (1929) The Kappa Delta Pi Lecture Series
- *Individualism Old and New* (1930)
- *Philosophy and Civilization* (1931)
- Ethics, second edition (with James Hayden Tufts) (1932)
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- *A Common Faith* (1934)
- *Liberalism and Social Action* (1935)
- *Experience and Education* (1938)
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#### See also

- *The Essential Dewey: Volumes 1 and 2*. Edited by Larry Hickman and Thomas Alexander (1998). Indiana University Press
- *The Philosophy of John Dewey* Edited by John J. McDermott (1981). University of Chicago Press

**Dewey's Complete Writings** is available in 3 multi-volume sets (37 volumes in all) from Southern Illinois University Press: <sup>[48]</sup>

- *The Early Works: 1892-1898* (5 volumes)
- *The Middle Works: 1899-1924* (15 volumes)
- *The Later Works: 1925-1953* (17 volumes)
- *Posthumous Works: 1956-2009*

**The Correspondence of John Dewey** is available in 4 volumes via online subscription <sup>[49]</sup> and also in TEI format for university servers. (The CD-ROM has been discontinued).

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## External links

- *Center for Dewey Studies* (<http://www.siu.edu/~deweyctr/>)
  - John Dewey Papers, 1858-1970 (<http://archives.lib.siu.edu/index.php?p=collections/controlcard&id=2125>) at Southern Illinois University Carbondale, Special Collections Research Center
  - John Dewey Chronology at Southern Illinois University (<http://www.siu.edu/~deweyctr/CHRONO.pdf>)
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- Works by John Dewey (<http://www.gutenberg.org/author/John+Dewey>) at Project Gutenberg
- Democracy and Education: An Introduction to the Philosophy of Education (<http://xroads.virginia.edu/~HYPER2/dewey/cover.html>) hypertext from American Studies at the University of Virginia.
- Excerpts from Dewey, *Experience and Nature* (<http://www.erzwiss.uni-hamburg.de/sonstiges/dewey/DewExpNa.pdf>) (pdf file)
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- Information about John Dewey and F. Mathias Alexander (<http://www.alexandertechnique.com/articles/dewey>)
- John Dewey: His Life and Work (<http://video.google.com/videoplay?docid=8009791051515751015>) 4-minute clip from a documentary film used primarily in higher education.
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# Charles Hartshorne

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## Charles Hartshorne

<b>Full name</b>	Charles Hartshorne
<b>Born</b>	June 5, 1897 Kittanning, Pennsylvania
<b>Died</b>	October 9, 2000 (aged 103) Austin, Texas
<b>Era</b>	20th century philosophy
<b>Region</b>	Western Philosophy
<b>School</b>	Process Philosophy
<b>Main interests</b>	Metaphysics, Philosophy of Religion, ornithology
<b>Notable ideas</b>	Process Theology

**Charles Hartshorne** (June 5, 1897 – October 9, 2000) was a prominent American philosopher who concentrated primarily on the philosophy of religion and metaphysics. He developed the neoclassical idea of God and produced a modal proof of the existence of God that was a development of St. Anselm's Ontological Argument. Hartshorne is also noted for developing Alfred North Whitehead's process philosophy into process theology.

## Early life and education

Hartshorne (pronounced harts-horn) was born in Kittanning, Pennsylvania, and was the son of Reverend F.C. Hartshorne. Among his brothers was the prominent geographer Richard Hartshorne. Charles attended Haverford College between 1915–17, but then spent two years as a hospital orderly serving in the US Army. He then studied at Harvard University, where he earned the B.A. (1921), M.A. (1922) and PhD (1923) degrees. His doctoral dissertation was on "The Unity of Being". He obtained all three degrees in only four years, an accomplishment believed unique in Harvard's long history.

From 1923-25 Hartshorne pursued further studies in Europe. He attended the University of Freiburg, where he studied under the phenomenologist Edmund Husserl, and also the University of Marburg, where he studied under Martin Heidegger. He then returned to Harvard University as a research fellow from 1925–28, where he and Paul Weiss edited the *Collected Papers of Charles Sanders Peirce* v. 1–6 and spent a semester assisting Alfred North Whitehead.

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## Career

After Hartshorne worked at Harvard University, he became a professor of philosophy at the University of Chicago (1928–1955), and was also a member of the University's Federated Theological Faculty (1943–1955). He then taught at Emory University (1955–62), followed by the University of Texas (1962–retirement). He published his last article at age 96 and delivered his last lecture at 98.<sup>[1]</sup>

In addition to his long teaching career at the previous three universities, Hartshorne was also appointed as a special lecturer or visiting professor at Stanford University, the University of Washington, Yale University, the University of Frankfurt, the University of Melbourne and Kyoto University. He served as president of the Metaphysical Society of America in 1955. He was elected a Fellow of the American Academy of Arts and Sciences in 1975.<sup>[2]</sup>

## Intellectual influences

Hartshorne acknowledged that he was greatly influenced by Matthew Arnold (*Literature and Dogma*), Emerson's *Essays*, Charles Sanders Peirce, and Alfred North Whitehead. Rufus Jones was his Haverford teacher and continuing mentor. He also found inspiration in the works of Josiah Royce (*Problem of Christianity*), William James, Henri Bergson, Ralph Barton Perry and Nikolai Berdyaev. He conducted a lengthy correspondence over some twenty-three years with Edgar S. Brightman of Boston University about their respective philosophical and theological views.

In turn Hartshorne has been a seminal influence on the theologians Matthew Fox, Daniel Day Williams, Norman Pittenger, Gregory A. Boyd, Schubert Ogden and John B. Cobb, on the American philosopher Frank Ebersole and on the Australian biologist-futurologist Charles Birch.

## Philosophy and theology

The intellectual movement with which Hartshorne is associated is generally referred to as process theology. The roots of process thinking can be found in the Greek philosopher Heraclitus. Contemporary process philosophy arose from the work of Alfred North Whitehead, while Hartshorne is identified as the seminal influence on process theology that emerged after World War Two.

The key motifs of process philosophy are: empiricism, relationalism, process and events.

The motif of empiricism in process thought refers to the theme that experience is the realm for defining meaning and verifying any theory of reality. Unlike classical empiricism, process thought takes the category of thinking beyond just the human senses of perception. Experiences are not confined to sense perception or consciousness, and there are pre-sensual, pre-conscious experiences from which consciousness and perception derive.

The motif of relationalism refers to both experiences and relationships. Humans experience things and also experience the relationship between things. The motif of process means that all time, history and change are in a dynamic evolutionary process. The final motif of events refers to all the units (organic and inorganic) of the world.

While Hartshorne acknowledges the importance of Whitehead's philosophy on his own ideas, he did not entirely agree with Whitehead. In Hartshorne's process theology God and the world exist in a dynamic, changing relationship. God is a 'di-polar' deity. By this Hartshorne meant that God has both abstract and concrete poles. The abstract pole refers to those elements within God that never vary, such as God's self-identity, while the concrete pole refers to the organic growth in God's perfect knowledge of the world as the world itself develops and changes. Hartshorne did not accept the classical theistic claim of *creatio ex nihilo* (creation out of nothing), and instead held to *creatio ex materia* (creation out of pre-existent material).

One of the technical terms Hartshorne used is pan-en-theism, originally coined by Karl Christian Friedrich Krause in 1828. Panentheism (all is in God) must be differentiated from pantheism (all is God). In Hartshorne's theology God is not identical with the world, but God is also not completely independent from the world. God has his self-identity that transcends the earth, but the world is also contained within God. A rough analogy is the relationship between a

mother and a fetus. The mother has her own identity and is different from the unborn, yet is intimately connected to the unborn. The unborn is within the womb and attached to the mother via the umbilical cord.

Hartshorne reworked the ontological argument for God's existence as promulgated by Anselm. In Anselm's equation, "God is that than which no greater can be conceived." Anselm's argument used the concept of perfection. Hartshorne accepts that by definition God is perfect. However, Hartshorne maintains that classical Christian theism has held to a self-contradictory notion of perfection. He argues that the classical concept of God fails. Hartshorne posited that God's existence is necessary and is compatible with any events in the world. In the economy of his argument Hartshorne has attempted to break a perceived stalemate in theology over the problem of evil and God's omnipotence. For Hartshorne, perfection means that God cannot be surpassed in his social relatedness to every creature. God is capable of surpassing himself by growing and changing in his knowledge and feeling for the world.

Hartshorne acknowledged a God capable of change, as is consistent with pandeism, but early on he specifically rejected both deism and pandeism in favor of panentheism, writing that "panentheistic doctrine contains all of deism and pandeism except their arbitrary negations".<sup>[3]</sup>

Hartshorne did not believe in the immortality of human souls as identities separate from God, but explained that all the beauty created in a person's life will exist for ever in the reality of God. This can be understood in a way reminiscent of Hinduism, or perhaps Buddhism's Sunyata (emptiness) ontology: namely that a person's identity is extinguished in one's ultimate union with God, but that a person's life within God is eternal. Hartshorne regularly attended services at several Unitarian Universalist churches, and joined the First Unitarian Universalist Church in Austin, Texas.<sup>[4]</sup>

## Criticisms

Hartshorne's philosophical and theological views have received criticism from many different quarters. Positive criticism has underscored that Hartshorne's emphasis on change and process and creativity has acted as a great corrective to static thinking about causal laws and determinism. Several commentators affirm that his position offers metaphysical coherence by providing a coherent set of concepts.

Others indicate that Hartshorne has quite properly placed a valuable emphasis on appreciating nature (even evidenced in Hartshorne's hobby for bird-watching). His emphasis on nature and human-divine relationships to the world has goaded reflective work on developing theologies about pollution, resource degradation and a philosophy of ecology. Allied to this has been Hartshorne's emphasis on aesthetics and beauty. In his system of thought science and theology achieve some integration as science and theology provide data for each other.

Hartshorne has also been an important figure in upholding natural theology, and in offering an understanding of God as a personal, dynamic being. It is accepted by many philosophers that Hartshorne made the idea of perfection rationally conceivable, and so his contribution to the ontological argument is deemed to be valuable for modern philosophical discussion.

It has been said that Hartshorne has placed an interesting emphasis on affirming that the God who loves the creation also endures suffering. In his theological thought the centrality of love is very strong, particularly in his interpretation of God, nature and all living creatures. Hartshorne is also appreciated for his philosophical interest in Buddhism, and in stimulating others in new approaches to inter-religious co-operation and dialogue.

Langdon Gilkey questioned Hartshorne's assumptions about human reasoning experiences. Gilkey pointed out that Hartshorne assumes there is an objective or rational structure to the whole universe, and he then assumes that human thought can acquire accurate and adequate knowledge of the universe.

In Hartshorne's theology there is no literal first event in the universe, and the universe is thus regarded as an actually infinite reality. This has led some to point out that as Hartshorne has emphasized that every event has been partly determined by previous events, his thought is susceptible to the fallacy of the infinite regress.

Other critics question the adequacy of panentheism. The point of tension in Hartshorne's theology is whether God is really worthy of worship since God needs the world in order to be a complete being. Traditional theism posits that God is a complete being before the creation of the world. Others find that his argument about God's perfection is flawed by confusing existential necessity with logical necessity.

In classical Protestant and Evangelical thought, Hartshorne's theology has received strong criticism. In these theological networks Hartshorne's panentheist reinterpretation of God's nature has been deemed to be incompatible with Biblical revelation and the classic creedal formulations of the Trinity. Critics such as Royce Gruenler, Ronald Nash and Norman Geisler argue that Hartshorne does not offer a tripersonal view of the Trinity, and instead his interpretation of Christ (Christology) has some affinities with the early heresy of the Ebionites. It is also argued that Hartshorne's theology entails a denial of divine foreknowledge and predestination to salvation. Hartshorne is also criticized for his denial or devaluing of Christ's miracles and the supernatural events mentioned in the Bible.

Other criticisms are that Hartshorne gives little attention to the classical theological concepts of God's holiness, and that the awe of God is an undeveloped element in his writings. Alan Gragg criticizes Hartshorne's highly optimistic view of humanity, and hence its lack of emphasis on human depravity, guilt and sin. Allied to these criticisms is the assertion that Hartshorne over-emphasizes aesthetics and is correspondingly weak on ethics and morality. Others have indicated that Hartshorne failed to understand traditional Christian views about petitionary prayer and survival of the individual in the afterlife.

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## External links

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- Hartshorne's collected papers are archived at the Center for Process Studies (<http://www.ctr4process.org/programs/Archives.shtml>)
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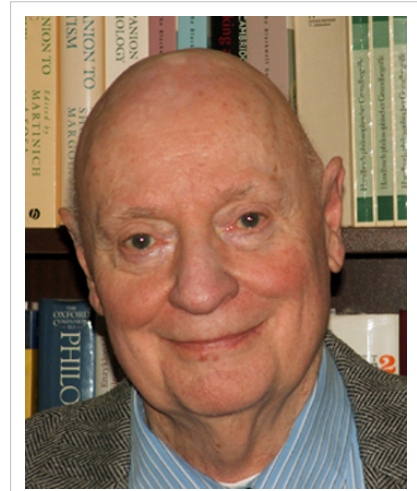


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## Nicholas Rescher

**Nicholas Rescher** (born July 15, 1928 in Hagen, Germany) is an American philosopher at the University of Pittsburgh. In a productive research career extending over six decades, Rescher has established himself as a systematic philosopher of the old style and author of a system of pragmatic idealism which weaves together threads of thought from continental idealism and American pragmatism. He is the exponent of a realistic pragmatism which, rejecting the deconstructive approach of some recent pragmatists, construes pragmatic efficacy as an evidential index for such normative features as truth and validity rather than being a substitute or replacement for them. And apart from this larger program Rescher's many-sided work has made significant contributions to logic (the conception autodescriptive systems of many-sided logic), to the history of logic (the medieval Arabic theory of modal syllogistic), to the theory of knowledge (epistemetrics as a quantitative approach in theoretical epistemology), to the philosophy of science (in particular its economic aspects and as regards the relation of science and religion). Rescher has also worked in the area of futuristics, and along with Olaf Helmer and Norman Dalkey is co-inaugurator of the so-called Delphi method of forecasting. The Encyclopedia of Bioethics credits Rescher with writing one of the very first articles in the field.



Nicholas Rescher

One of the first among the increasing number of contemporary exponents of philosophical idealism, Rescher has been active in the rehabilitation of the coherence theory of truth and in the reconstruction of philosophical pragmatism in line with the idealistic tradition. He has pioneered the development of inconsistency-tolerant logics and, in the philosophy of science, the logarithmic retardation theory of scientific progress based on the epistemological principle that our knowledge in a field does not increase in proportion with the volume of information but only with its logarithm.

### Career

Rescher came to the United States in 1938 at the age of nine. He served in the U.S. Marine Corps during 1952-54, and during 1954-56 worked in the Mathematics Division of the RAND Corporation in Santa Monica. He obtained his Ph.D. in Philosophy from Princeton University in 1951, the youngest person—22 at the time—ever to do so in that department.[1]

During his formative years, Rescher was a student of Carl Gustav Hempel in philosophy of science, of Alonzo Church in logic, Walter Terence Stace in metaphysics, and of Banesh Hoffmann in differential geometry. In 1957-59 Rescher studied Arabic with S.D. Goiten at the University of Pennsylvania, and over the next four years he issued various publications about medieval Arabic Logic.

Rescher arrived at the University of Pittsburgh in 1961 where has been a faculty member ever since. He is a former chair of the University of Pittsburgh Department of Philosophy and currently co-chairs the Center for Philosophy of Science with the status of Distinguished University Professor of Philosophy. Having begun his teaching career with a

preceptorship at Princeton in 1960, he continues to be active in this role.

He is among the most prolific of contemporary scholars, having written about 400 articles and 100 books, ranging over many areas of philosophy. Works by Rescher have been translated into German, Spanish, French, Italian, and Japanese. Rescher serves on the editorial board of some dozen academic professional publications, including *Process Studies*, the principal academic journal for process philosophy and theology. Some dozen books about Rescher's work have appeared in English, German, and Italian and Arabic. For over three decades Rescher served as editor of the *American Philosophical Quarterly*.

He has lectured at universities in many countries, and has held visiting lectureships at Oxford, Constance, Salamanca, Munich, and Marburg. He has held fellowships from the J. S. Guggenheim Foundation, the Ford Foundation, and the American Philosophical Society. A former president of the American Philosophical Association (Eastern Division), of the American Catholic Philosophical Association, of the Metaphysical Society of America, of the C. S. Peirce Society, and of the G. W. Leibniz Society of America. Rescher has also served as member of the Board of Directors of the International Federation of Philosophical Societies, an organ of UNESCO. His contributions to philosophy have been recognized by honorary degrees awarded by eight universities on three continents.

He was awarded the Alexander von Humboldt Prize for Humanistic Scholarship in 1984, the Cardinal Mercier Prize for International Philosophy in 2005, and the American Catholic Philosophical Society's Aquinas medal in 2007. In response to his substantial gift to its philosophy archive, the University of Pittsburgh established in 2010 a biennial Nicholas Rescher Prize for Systematic Philosophy, to honor an internationally acknowledged contribution with a gold medal and an award of \$25,000.

He was elected to the American Academy of Arts and Sciences in 2009 and is also a member of the Academia Europaea and of the Royal Society of Canada.<sup>[1]</sup> In 2011 the German Federal Republic awarded Rescher its premier Order of Merit (Bundesverdienstkreuz Erster Klasse) for his services to philosophy and to German-American collaboration in the field.

In 1968 Rescher married Dorothy Henle and they have three children, Mark (b. 1969), Owen (b. 1970), and Catherine (b. 1975). By an earlier marriage he also has a daughter Elizabeth (b. 1960). His life is detailed in an *Autobiography* (Frankfurt: ONTOS, 2007). He is a cousin of the eminent orientalist Oskar Rescher.

## Ideas

Rescher has written on a wide range of topics, including logic, epistemology, the philosophy of science, metaphysics, and the philosophy of value. He is best known as an advocate of pragmatism and, more recently, of process philosophy.

Over the course of his six decade research career, Rescher has established himself as a systematic philosopher of the old style, and the author of a system of pragmatic idealism that combines elements of continental idealism with American pragmatism. To this end, he:

- Projects a system of pragmatic idealism, in which the activity of the human mind makes a formative contribution to the substance of knowledge, and "valid" knowledge contributes to practical success;
- Defends a coherence theory of truth in a manner differing somewhat from that of classical idealism; see e.g. his exchange in *The Philosophy of Brand Blanshard* (in the Library of Living Philosophers series);
- Advocates<sup>[2]</sup> an "erotetic propagation" of science, asserting that scientific inquiry will continue without end because each newly answered question adds a presupposition for at least one more open question to the current body of scientific knowledge.
- Propounds an epistemic law of diminishing returns which holds that actual knowledge merely stands as the logarithm of the available information. This has the corollary that the comparative growth of knowledge is inversely propositional to the volume of information already at hand, so that when information grows

exponentially, knowledge will grow at a merely linear rate.

- Articulates a theory of axiogenesis which addresses some of the fundamental questions of philosophical metaphysics on the basis of value-eared considerations.

Apart from this larger program, Rescher has made significant contributions to:

- Historical studies on Leibniz, Kant, Charles Peirce, and on the medieval Arabic theory of modal syllogistic and logic.
- The study of rational dialectic as a rhetorical and linguistic process.
- The theory of knowledge (epistemetrics as a quantitative approach in theoretical epistemology).
- The philosophy of science (the theory of a logarithmic returns in scientific effort).

One central theme of his thought is the role of unknowing, uncertainty, risk, and luck in human affairs. The resultant need for orientation and support amidst the challenges of life in conditions so largely beyond our control as a prime pillar of religion.

During the 1960s and 70s Rescher worked extensively in symbolic and philosophical logic, contributing various innovations in many-sided logic and temporal logic, including the conception of autodescriptive systems of many-valued logic. He has also contributed to futuristics, and with Olaf Helmer and Norman Dalkey, invented the Delphi method of forecasting.

A lifelong aficionado of the philosophy of G. W. Leibniz, Rescher has been instrumental in the reconstruction of Leibniz's *machina deciphatoria*, an ancestor of the famous Enigma cipher machine.

## Eponymous concepts

- Logic: Rescher quantifier
- Non-classical logic: Dienes-Rescher inference engine (also Rescher-Dienes implication); Rescher-Manor consequence relation
- Paraconsistent logic: Rescher-Brandom semantics
- Temporal logic: Rescher operator
- Scientometrics: Rescher's Law of logarithmic returns
- Distributive justice: Rescher's effective average measure
- Dialectics: Rescher's theory of formal disputation

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## External links

- Rescher's web page, with complete bibliography. (<http://www.pitt.edu/~rescher/>)
- University of Pittsburgh Center for Philosophy of Science (<http://www.pitt.edu/~pittcntr/About/about.htm>)

# Ilya Prigogine

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Ilya Prigogine	
<b>Born</b>	25 January 1917 Moscow, Russia
<b>Died</b>	28 May 2003 (aged 86) Brussels, Belgium
<b>Nationality</b>	Belgian
<b>Fields</b>	Chemistry, Physics
<b>Institutions</b>	Université Libre de Bruxelles International Solvay Institute University of Texas, Austin
<b>Alma mater</b>	Université Libre de Bruxelles
<b>Doctoral advisor</b>	Théophile de Donder
<b>Doctoral students</b>	Adi Bulsara Radu Balescu Dilip Kondepudi
<b>Known for</b>	Dissipative structures
<b>Notable awards</b>	Nobel Prize for Chemistry (1977)

**Ilya, Viscount Prigogine** (Russian: Илья́ Рома́нович Приго́жин, **Ilya Romanovich Prigozhin**) (25 January 1917 – 28 May 2003) was a Russian-born naturalized Belgian physical chemist and Nobel Laureate noted for his work on dissipative structures, complex systems, and irreversibility.

## Biography

Prigogine was born in Moscow a few months before the Russian Revolution of 1917. His father, Roman (Ruvim Abramovich) Prigogine, was a chemical engineer at the Moscow Institute of Technology; his mother, Yulia Vikhman, was a pianist. Because the family was critical of the new Soviet system, they left Russia in 1921. They first went to Germany and in 1929, to Belgium, where Prigogine received Belgian citizenship in 1949.

Prigogine studied chemistry at the Free University of Brussels, where in 1950, he became professor. In 1959, he was appointed director of the International Solvay Institute in Brussels, Belgium. In that year, he also started teaching at the University of Texas at Austin in the United States, where he later was appointed Regental Professor and Ashbel Smith Professor of Physics and Chemical Engineering. From 1961 until 1966 he was affiliated with the Enrico Fermi Institute at the University of Chicago. In Austin, in 1967, he co-founded what is now called The Center for Complex Quantum Systems. In that year, he also returned to Belgium, where he became director of the *Center for Statistical Mechanics and Thermodynamics*.

He was a member of numerous scientific organizations, and received numerous awards, prizes and 53 honorary degrees. In 1955, Ilya Prigogine was awarded the Francqui Prize for Exact Sciences. For this study in irreversible thermodynamics, he received the Rumford Medal in 1976, and in 1977, the Nobel Prize in Chemistry. In 1989, he was awarded the title of Viscount by the King of the Belgians. Until his death, he was president of the International

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Academy of Science and was in 1997, one of the founders of the International Commission on Distance Education (CODE), a worldwide accreditation agency. In 1998 he was awarded an *honoris causa* doctorate by the UNAM in Mexico City.

Prigogine was first married to Belgian poet Hélène Jofé /in literature Hélène Prigogine/(son Yves 1945). After their divorce, he married Polish-born chemist Maria Prokopowicz(-Prigogine) in 1961 (son Pascal 1970).<sup>[1]</sup>

## Research

Prigogine is best known for his definition of dissipative structures and their role in thermodynamic systems far from equilibrium, a discovery that won him the Nobel Prize in Chemistry in 1977.

### Dissipative structures theory

Dissipative structure theory led to pioneering research in self-organizing systems, as well as philosophical inquiries into the formation of complexity on biological entities and the quest for a creative and irreversible role of time in the natural sciences.

His work is seen by many as a bridge between natural sciences and social sciences. With professor Robert Herman, he also developed the basis of the two fluid model, a traffic model in traffic engineering for urban networks, in parallel to the two fluid model in Classical Statistical Mechanics.

Prigogine's formal concept of self-organization was used also as a "complementary bridge" between General Systems Theory and Thermodynamics, conciliating the cloudiness of some important systems theory concepts with scientific rigour.

### Work on unsolved problems in physics

In his later years, his work concentrated on the fundamental role of Indeterminism in nonlinear systems on both the classical and quantum level. Prigogine and coworkers proposed a Liouville space extension of quantum mechanics aimed to solving the arrow of time problem of thermodynamics and the measurement problem of quantum mechanics.<sup>[2]</sup> He also co-authored several books with Isabelle Stengers, including *End of Certainty* and *La Nouvelle Alliance (The New Alliance)*.

### *The End of Certainty*

In his 1997 book, *The End of Certainty*, Prigogine contends that determinism is no longer a viable scientific belief. "The more we know about our universe, the more difficult it becomes to believe in determinism." This is a major departure from the approach of Newton, Einstein and Schrödinger, all of whom expressed their theories in terms of deterministic equations. According to Prigogine, determinism loses its explanatory power in the face of irreversibility and instability.

Prigogine traces the dispute over determinism back to Darwin, whose attempt to explain individual variability according to evolving populations inspired Ludwig Boltzmann to explain the behavior of gases in terms of populations of particles rather than individual particles. This led to the field of statistical mechanics and the realization that gases undergo irreversible processes. In deterministic physics, all processes are time-reversible, meaning that they can proceed backward as well as forward through time. As Prigogine explains, determinism is fundamentally a denial of the arrow of time. With no arrow of time, there is no longer a privileged moment known as the "present," which follows a determined "past" and precedes an undetermined "future." All of time is simply given, with the future as determined or undetermined as the past. With irreversibility, the arrow of time is reintroduced to physics. Prigogine notes numerous examples of irreversibility, including diffusion, radioactive decay, solar radiation, weather and the emergence and evolution of life. Like weather systems, organisms are unstable systems existing far from thermodynamic equilibrium. Instability resists standard deterministic explanation. Instead, due to sensitivity to

initial conditions, unstable systems can only be explained statistically, that is, in terms of probability.

Prigogine asserts that Newtonian physics has now been "extended" three times, first with the use of the wave function in quantum mechanics, then with the introduction of spacetime in general relativity and finally with the recognition of indeterminism in the study of unstable systems.

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# Gaston Bachelard

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## Gaston Bachelard

Full name	Gaston Bachelard
Born	1884
Died	1962
Era	20th century philosophy
Region	Western philosophy
School	Historical epistemology Constructivist epistemology
Main interests	History and philosophy of science, philosophy of art, psychoanalysis, literary theory, education
Notable ideas	Epistemological break

**Gaston Bachelard** (June 27, 1884, Bar-sur-Aube – October 16, 1962, Paris) was a French philosopher.<sup>[1]</sup> He made contributions in the fields of poetics and the philosophy of science. To the latter he introduced the concepts of *epistemological obstacle* and *epistemological break* (*obstacle épistémologique* et *rupture épistémologique*). He rose to some of the most prestigious positions in the Académie française and influenced many subsequent French philosophers, among them Michel Foucault, Louis Althusser, Dominique Lecourt and Jacques Derrida.

## Life and work

Bachelard was a postmaster in Bar-sur-Aube, and then studied physics before finally becoming interested in philosophy. He was a professor at Dijon from 1930 to 1940 and then became the inaugural chair in history and philosophy of the sciences at the Sorbonne.

## Bachelard's psychology of science

Bachelard's studies of the history and philosophy of science in such works as *Le nouvel esprit scientifique* ("The New Scientific Mind", 1934) and *La formation de l'esprit scientifique* ("The Formation of the Scientific Mind", 1938) were based on his vision of historical epistemology as a kind of psychoanalysis of the scientific mind, or rather of the psychological factors in the development of sciences. For instance, he takes the example of Heisenberg's first chapters of the *Physical principles of the quantum theory*, where he alternatively defends a corpuscular theory and an undulatory theory, correcting each by the others (*The New Scientific Mind*, IV). This, claims Bachelard, is an excellent example of the importance of psychological training in sciences, as one should correct spontaneous errors by taking the opposite stance.

In the English-speaking world, the connection Bachelard made between psychology and the history of science has been little understood. Bachelard demonstrated how the progress of science could be blocked by certain types of mental patterns, creating the concept of *obstacle épistémologique* ("epistemological obstacle"). One task of epistemology is to make clear the mental patterns at use in science, in order to help scientists overcome the obstacles to knowledge.

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## Epistemological breaks: the discontinuity of scientific progress

Bachelard was critical of Auguste Comte's positivism, which considered science as a continual progress. To Bachelard, scientific developments such as Einstein's theory of relativity demonstrated the discontinuous nature of the history of sciences. Thus models that framed scientific development as continuous, such as that of Comte and Émile Meyerson, seemed simplistic and erroneous to Bachelard. Through his concept of "epistemological break", Bachelard underlined the discontinuity at work in the history of sciences. However the term "epistemological break" itself is almost never used by Bachelard, but became famous through Louis Althusser.

He showed that new theories integrated old theories in new paradigms, changing the sense of concepts (for instance, the concept of mass, used by Newton and Einstein in two different senses). Thus, non-Euclidean geometry did not contradict Euclidean geometry, but integrated it into a larger framework.

## The role of epistemology in science

Bachelard was a rationalist in the Cartesian sense, although he recommended his "non-Cartesian epistemology" as a replacement for the more standard Cartesian epistemology.<sup>[2]</sup> He compared "scientific knowledge" to ordinary knowledge in the way we deal with it, and saw error as only illusion: "Scientifically, we think the truth as the historical rectification of a long error, and we think experience as the rectification of the common and original illusion (*illusion première*)."<sup>[3]</sup>

The role of epistemology is to show the history of the (scientific) production of concepts; those concepts are not just theoretical propositions: they are simultaneously abstract and concrete, pervading technical and pedagogical activity. This explains why "The electric bulb is an object of scientific thought... an example of an abstract-concrete object."<sup>[4]</sup> To understand the way it works, one has to pass by the detour of scientific knowledge. Epistemology is thus not a general philosophy that aims at justifying scientific reasoning. Instead it produces regional histories of science.

## Shifts in scientific perspective

Bachelard saw how seemingly irrational theories often simply represented a drastic shift in scientific perspective. For instance, he claimed that the theory of probabilities was just another way of complexifying reality through a deepening of rationality (even though critics like Lord Kelvin found this theory irrational).<sup>[5]</sup>

One of his main theses in *The New Scientific Mind* was that modern sciences had replaced the classical ontology of the substance with an "ontology of relations", which could be assimilated to something as a process philosophy. For instance, the physical concepts of matter and rays correspond, according to him, to the metaphysical concepts of the thing and of movement; but whereas classical philosophy considered both as distinct, and the thing as ontologically real, modern science can not distinguish matter from rays: it is thus impossible to examine an immobile thing, which was precisely the conditions of knowledge according to classical theory of knowledge (Becoming being impossible to be known, in accordance with Aristotle and Plato's theories of knowledge).

In non-Cartesian epistemology, there is no "simple substance" as in Cartesianism, but only complex objects built by theories and experiments, and continuously improved (VI, 4). Intuition is therefore not primitive, but built (VI, 2). These themes led Bachelard to support a sort of constructivist epistemology.

## Other academic interests

In addition to epistemology, Bachelard's work deals with many other topics, including poetry, dreams, psychoanalysis, and the imagination. *The Psychoanalysis of Fire* (1938) and *The Poetics of Space* (1958) are among the most popular of his works. Sartre cites the former and Bachelard's "Water and Dreams" in his *Being and Nothingness*.

## Legacy

Thomas S. Kuhn used Bachelard's notion of "epistemological rupture" (*coupure* or *rupture épistémologique*) as re-interpreted by Alexandre Koyré to develop his theory of paradigm shifts; Althusser, Georges Canguilhem (his successor at the Sorbonne) and Michel Foucault also drew upon Bachelard's epistemology.

Bachelard's daughter, Suzanne, translated Husserl's *Formale und transzendente Logik* in French.

## Quotations

- List of quotes <sup>[6]</sup> (French)
- Et, quoi qu'on en dise, dans la vie scientifique, les problèmes ne se posent pas d'eux-mêmes. C'est précisément ce sens du problème qui donne la marque du véritable esprit scientifique. Pour un esprit scientifique, toute connaissance est une réponse à une question. S'il n'y a pas eu de question, il ne peut y avoir de connaissance scientifique. Rien ne va de soi. Rien n'est donné. Tout est construit*, Gaston Bachelard (*La formation de l'esprit scientifique*, 1934)

"And, irrespective of what one might assume, in the life of a science, problems do not arise by themselves. It is precisely this that marks out a problem as being of the true scientific spirit: all knowledge is in response to a question. If there were no question, there would be no scientific knowledge. Nothing proceeds from itself. Nothing is given. All is constructed."

- It is the pen which dreams.* (*The Poetics of Reverie*, 1960)
- It is not a question of observation which propels mankind forward as if toward a looking glass of great magnitude; it is an instance of aggrandized reflection that insinuates the human psyche to the inhuman.*
- Michel Foucault: Bachelard "plays against his own culture with his own culture".<sup>[6]</sup>

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- Les intuitions atomistiques: essai de classification* (1933)
- Le nouvel esprit scientifique* (1934)
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- [2] *The New Scientific Mind*, conclusion
- [3] *The New Scientific Mind*, VI, 6
- [4] in *Le Rationalisme appliqué* (1949, 2e ed. of 1962, p.104ff).
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- [6] Michel Foucault, Interview of Foucault on Bachelard ([http://www.ina.fr/archivespour tous/index.php?vue=notice&id\\_notice=I00002886](http://www.ina.fr/archivespour tous/index.php?vue=notice&id_notice=I00002886)), INA (video)

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- Dagognet, F. (1970). "Bachelard, Gaston". *Dictionary of Scientific Biography*. **1**. New York: Charles Scribner's Sons. pp. 365–366. ISBN 0684101149.

## External links

- Website of the Association of Friends of Gaston Bachelard (<http://www.gastonbachelard.org/>) (**French**)
- Centre Gaston Bachelard de Recherche sur l'Imaginaire et la Rationalité (<http://www.u-bourgogne.fr/CENTRE-BACHELARD/>), Université de Bourgogne
- Works of Bachelard on-line (in French) ([http://classiques.uqac.ca/classiques/Bachelard\\_gaston/bachelard.html](http://classiques.uqac.ca/classiques/Bachelard_gaston/bachelard.html))

# Henri Bergson

## Henri-Louis Bergson



A portrait painted by J.E. Blanche in 1891

Full name	Henri-Louis Bergson
Born	October 18, 1859 Paris, France
Died	January 4, 1941 (aged 81) Paris, France
Era	20th century philosophy
Region	Western Philosophy
School	Continental philosophy <b>Nobel Prize in Literature</b> 1927
Main interests	Metaphysics, epistemology, philosophy of language, philosophy of mathematics
Notable ideas	Duration, Intuition, Élan Vital, Open Society

**Henri-Louis Bergson** (French pronunciation: [bɛʁksɔ̃] 18 October 1859 – 4 January 1941) was a major French philosopher, influential especially in the first half of the 20th century. Bergson convinced many thinkers that immediate experience and intuition are more significant than rationalism and science for understanding reality.

He was awarded the 1927 Nobel Prize in Literature "in recognition of his rich and vitalizing ideas and the brilliant skill with which they have been presented".<sup>[1]</sup>

## Biography

### Overview

Bergson was born in the Rue Lamartine in Paris, not far from the Palais Garnier (the old Paris opera house) in 1859 (the year in which France emerged as a victor in the Second Italian War of Independence, and in the month before the publication of Charles Darwin's *On the Origin of Species*). His father, the musician Michał Bergson, was of a Polish Jewish family background (originally bearing the name Bereksohn). His mother, Katherine Levison, daughter of a Yorkshire doctor, was from an English and Irish Jewish background. The Bereksohns were a famous Jewish entrepreneurial family of Polish descent. Henri Bergson's great-great-grandfather, Szmul Jakubowicz Sonnenberg,

called Zbytkower, was a prominent banker and a protégé of Stanisław August Poniatowski,<sup>[2] [3]</sup> King of Poland from 1764 to 1795.

Henri Bergson's family lived in London for a few years after his birth, and he obtained an early familiarity with the English language from his mother. Before he was nine, his parents crossed the English Channel and settled in France, Henri becoming a naturalized French citizen.

Henri Bergson married Louise Neuberger, a cousin of Marcel Proust (1871–1922), in 1891. (The novelist served as best man at Bergson's wedding.)<sup>[4]</sup> Henri and Louise Bergson had a daughter, Jeanne, born deaf in 1896.

Bergson's sister, Mina Bergson (also known as Moina Mathers), married the English occult author Samuel Liddell MacGregor Mathers, a founder of the Hermetic Order of the Golden Dawn, and the couple later relocated to Paris as well.

Bergson lived the quiet life of a French professor, marked by the publication of his four principal works:

1. in 1889, *Time and Free Will* (*Essai sur les données immédiates de la conscience*)
2. in 1896, *Matter and Memory* (*Matière et mémoire*)
3. in 1907, *Creative Evolution* (*L'Évolution créatrice*)
4. in 1932, *The Two Sources of Morality and Religion* (*Les deux sources de la morale et de la religion*)

In 1900 the College of France selected Bergson to a Chair of Greek and Latin Philosophy, which he held until 1904. He then replaced Gabriel Tarde in the Chair of Modern Philosophy, which he held until 1920. The public attended his open courses in large numbers.

## Education and career

Bergson attended the "Lycée Fontanes" (known as the *Lycée Condorcet* 1870-1874 and 1883- ) in Paris from 1868 to 1878. He had previously received a Jewish religious education. Between 14 and 16, however, he lost his faith. According to Hude (1990), this moral crisis is tied to his discovery of the theory of evolution, according to which humanity shares common ancestry with modern primates, a process construed by some as not needing a creative deity.<sup>[5]</sup>

While at the lycée Bergson won a prize for his scientific work and another, in 1877 when he was eighteen, for the solution of a mathematical problem. His solution was published the following year in *Annales de Mathématiques*. It was his first published work. After some hesitation as to whether his career should lie in the sphere of the sciences or that of the humanities, he decided in favour of the latter, to the dismay of his teachers.<sup>[6]</sup> When he was nineteen, he entered the famous *École Normale Supérieure*. During this period, he read Herbert Spencer.<sup>[6]</sup> He obtained there the degree of *Licence-ès-Lettres*, and this was followed by that of *Agrégation de philosophie* in 1881.

The same year he received a teaching appointment at the *lycée* in Angers, the ancient capital of Anjou. Two years later he settled at the *Lycée Blaise-Pascal* in Clermont-Ferrand, capital of the Puy-de-Dôme département.

The year after his arrival at Clermont-Ferrand Bergson displayed his ability in the humanities by the publication of an edition of extracts from Lucretius, with a critical study of the text and of the materialist cosmology of the poet (1884), a work whose repeated editions give sufficient evidence of its useful place in the promotion of classical study among the youth of France. While teaching and lecturing in this part of his country (the Auvergne region), Bergson found time for private study and original work. He crafted his dissertation *Time and Free Will*, which was submitted, along with a short Latin thesis on Aristotle (*Quid Aristoteles de loco senserit*), for his doctoral degree which was awarded by the University of Paris in 1889. The work was published in the same year by Félix Alcan. He also gave courses in Clermont-Ferrand on the Pre-Socratics, in particular on Heraclitus.<sup>[6]</sup>

Bergson dedicated *Time and Free Will* to Jules Lachelier (1832–1918), then public education minister, a disciple of Félix Ravaisson (1813–1900) and the author of a philosophical work *On the Founding of Induction* (*Du fondement de l'induction*, 1871). Lachelier endeavoured "to substitute everywhere force for inertia, life for death, and liberty for fatalism". (Bergson owed much to both of these teachers of the *École Normale Supérieure*. Compare his memorial



address on Ravaisson, who died in 1900.)

Bergson settled again in Paris, and after teaching for some months at the municipal college, known as the *College Rollin*, he received an appointment at the Lycée Henri-Quatre, where he remained for eight years. There, he read Darwin and gave a course on his theories.<sup>[6]</sup> Although Bergson had previously endorsed Lamarckism and its theory of the heritability of acquired characteristics, he came to prefer Darwin's hypothesis of gradual variations, which were more compatible with his continuist vision of life.<sup>[6]</sup>

In 1896 he published his second major work, entitled *Matter and Memory*. This rather difficult work investigates the function of the brain and undertakes an analysis of perception and memory, leading up to a careful consideration of the problems of the relation of body and mind. Bergson had spent years of research in preparation for each of his three large works. This is especially obvious in *Matter and Memory*, where he showed a thorough acquaintance with the extensive pathological investigations which had been carried out during the period.

In 1898 Bergson became *Maître de conférences* at his alma mater, *l'Ecole Normale Supérieure*, and later in the same year received promotion to a Professorship. The year 1900 saw him installed as Professor at the Collège de France, where he accepted the Chair of Greek and Latin Philosophy in succession to Charles L'Eveque.

At the first International Congress of Philosophy, held in Paris during the first five days of August, 1900, Bergson read a short, but important, paper, "Psychological Origins of the Belief in the Law of Causality" (*Sur les origines psychologiques de notre croyance à la loi de causalité*). In 1900 Felix Alcan published a work which had previously appeared in the *Revue de Paris*, entitled *Laughter (Le rire)*, one of the most important of Bergson's minor productions. This essay on the meaning of comedy stemmed from a lecture which he had given in his early days in the Auvergne. The study of it is essential to an understanding of Bergson's views of life, and its passages dealing with the place of the artistic in life are valuable. The main thesis of the work is that laughter is a corrective evolved to make social life possible for human beings. We laugh at people who fail to adapt to the demands of society, if it seems their failure is akin to an inflexible mechanism. Comic authors have exploited this human tendency to laugh in various ways, and what is common to them is the idea that the comic consists in there being "something mechanical encrusted on the living".<sup>[7]</sup> <sup>[8]</sup>

In 1901 the *Académie des sciences morales et politiques* elected Bergson as a member, and he became a member of the Institute. In 1903 he contributed to the *Revue de métaphysique et de morale* a very important essay entitled *Introduction to Metaphysics (Introduction à la métaphysique)*, which is useful as a preface to the study of his three large books. He detailed in this essay his philosophical program, realized in the *Creative Evolution*.<sup>[6]</sup>

On the death of Gabriel Tarde, the sociologist and philosopher, in 1904, Bergson succeeded him in the Chair of Modern Philosophy. From 4 to 8 September of that year he visited Geneva, attending the Second International Congress of Philosophy, when he lectured on *The Mind and Thought: A Philosophical Illusion (Le cerveau et la pensée: une illusion philosophique)*. An illness prevented his visiting Germany to attend the Third Congress held at Heidelberg.

His third major work, *Creative Evolution*, the most widely known and most discussed of his books, appeared in 1907. It constitutes one of the most profound and original contributions to the philosophical consideration of evolution. Pierre Imbart de la Tour remarked that *Creative Evolution* was a milestone of new direction in thought. By 1918, Alcan, the publisher, had issued twenty-one editions, making an average of two editions *per annum* for ten years. Following the appearance of this book, Bergson's popularity increased enormously, not only in academic circles, but among the general reading public.

At that time, Bergson had already made an extensive study of biology, knowing of the theory of fecundation (as shown by the first chapter of the *Creative Evolution*), which had only recently emerged, ca. 1885 — no small feat for a philosopher specializing in the history of philosophy, in particular of Greek and Latin philosophy.<sup>[6]</sup> He also most certainly had read, apart from Darwin, Haeckel, from whom he retained his idea of a unity of life and of the ecological solidarity between all living beings,<sup>[6]</sup> as well as Hugo de Vries, whom he quoted his mutation theory of evolution (which he opposed, preferring Darwin's gradualism).<sup>[6]</sup> He also quoted Charles-Édouard Brown-Séquard,

the successor of Claude Bernard at the Chair of Experimental Medicine in the College of France, etc.

Bergson served as a juror with Florence Meyer Blumenthal in awarding the Prix Blumenthal, a grant given between 1919-1954 to painters, sculptors, decorators, engravers, writers, and musicians.<sup>[9]</sup>

### Relationship with James and Pragmatism

Bergson travelled to London in 1908 and met there with William James, the Harvard philosopher who was Bergson's senior by seventeen years, and who was instrumental in calling the attention of the Anglo-American public to the work of the French professor. The two became great friends. James's impression of Bergson is given in his Letters under date of 4 October 1908:

"So modest and unpretending a man but such a genius intellectually! I have the strongest suspicions that the tendency which he has brought to a focus, will end by prevailing, and that the present epoch will be a sort of turning point in the history of philosophy."

As early as 1880, James had contributed an article in French to the periodical *La Critique philosophique*, of Renouvier and Pilon, entitled *Le Sentiment de l'Effort*. Four years later, a couple of articles by him appeared in the journal *Mind*: "What is an Emotion?" and "On some Omissions of Introspective Psychology". Bergson quoted the first two of these articles in his 1889 work, *Time and Free Will*. In the following years 1890-91 appeared the two volumes of James's monumental work, *The Principles of Psychology*, in which he refers to a pathological phenomenon observed by Bergson. Some writers, taking merely these dates into consideration and overlooking the fact that James's investigations had been proceeding since 1870 (registered from time to time by various articles which culminated in "The Principles"), have mistakenly dated Bergson's ideas as earlier than James's.

It has been suggested that Bergson owes the root ideas of his first book to the 1884 article by James, "On Some Omissions of Introspective Psychology," which he neither refers to nor quotes. This article deals with the conception of thought as a stream of consciousness, which intellect distorts by framing into concepts. Bergson replied to this insinuation by denying that he had any knowledge of the article by James when he wrote *Les données immédiates de la conscience*. The two thinkers appear to have developed independently until almost the close of the century. They are further apart in their intellectual position than is frequently supposed. Both have succeeded in appealing to audiences far beyond the purely academic sphere, but only in their mutual rejection of "intellectualism" as final is their real unanimity. Although James was slightly ahead in the development and enunciation of his ideas, he confessed that he was baffled by many of Bergson's notions. James certainly neglected many of the deeper metaphysical aspects of Bergson's thought, which did not harmonize with his own, and are even in direct contradiction. In addition to this, Bergson can hardly be considered a pragmatist. For him, "utility," far from being a test of truth, was in fact the reverse: a synonym for error.

Nevertheless, William James hailed Bergson as an ally. In 1903, he wrote:

I have been re-reading Bergson's books, and nothing that I have read since years has so excited and stimulated my thoughts. I am sure that that philosophy has a great future, it breaks through old cadres and brings things into a solution from which new crystals can be got.<sup>[10]</sup>

The most noteworthy tributes James paid to Bergson come in the Hibbert Lectures (A Pluralistic Universe), which James gave at Manchester College, Oxford, shortly after meeting Bergson in London. He remarks on the encouragement he has received from Bergson's thought, and refers to the confidence he has in being "able to lean on Bergson's authority." (Also see James's reservations about Bergson below.)

The influence of Bergson had led James "to renounce the intellectualist method and the current notion that logic is an adequate measure of what can or cannot be". It had induced him, he continued, "to give up logic, squarely and irrevocably" as a method, for he found that "reality, life, experience, concreteness, immediacy, use what word you will, exceeds our logic, overflows, and surrounds it".

These remarks, which appeared in James's book *A Pluralistic Universe* in 1909, impelled many English and American readers to an investigation of Bergson's philosophy for themselves, but no English translations of Bergson's major work had yet appeared. James, however, encouraged and assisted Dr. Arthur Mitchell in his preparation of the English translation of *Creative Evolution*. In August 1910, James died. It was his intention, had he lived to see the completion of the translation, to introduce it to the English reading public by a prefatory note of appreciation. In the following year the translation was completed and still greater interest in Bergson and his work was the result. By coincidence, in that same year (1911), Bergson penned a preface of sixteen pages entitled *Truth and Reality* for the French translation of James's book, *Pragmatism*. In it he expressed sympathetic appreciation of James's work, coupled with certain important reservations.

From April 5 to 11, Bergson attended the Fourth International Congress of Philosophy held at Bologna, in Italy, where he gave an address on "Philosophical Intuition". In response to invitations he visited England in May of that year, and on several subsequent occasions. These visits were well received. His speeches offered new perspectives and elucidated many passages in his three major works: *Time and Free Will*, *Matter and Memory*, and *Creative Evolution*. Although necessarily brief statements, they developed and enriched the ideas in his books and clarified for English audiences the fundamental principles of his philosophy.

### The lectures on change

In May 1911 Bergson visited the University of Oxford, where he delivered two lectures entitled *The Perception of Change* (*La perception du changement*), which the Clarendon Press published in French in the same year.<sup>[11]</sup> As he had a delightful gift of lucid and brief exposition, when the occasion demanded such treatment, these lectures on change formed a most valuable synopsis or brief survey of the fundamental principles of his thought, and served the student or general reader alike as an excellent introduction to the study of the larger volumes. Oxford honoured its distinguished visitor by conferring upon him the degree of Doctor of Science.

Two days later he delivered the Huxley Lecture at the University of Birmingham, taking for his subject *Life and Consciousness*. This subsequently appeared in *The Hibbert Journal* (October, 1911), and since revised, forms the first essay in the collected volume *Mind-Energy* (*L'Energie spirituelle*). In October he again travelled to England, where he had an enthusiastic reception, and delivered at University College London four lectures on *La Nature de l'Âme* [The nature of the soul].

In 1913 Bergson visited the United States of America at the invitation of Columbia University, New York, and lectured in several American cities, where very large audiences welcomed him. In February, at Columbia University, he lectured both in French and English, taking as his subjects: *Spirituality and Freedom* and *The Method of Philosophy*. Being again in England in May of the same year, he accepted the Presidency of the British Society for Psychical Research, and delivered to the Society an impressive address: *Phantoms of Life and Psychic Research* (*Fantômes des vivants et recherche psychique*).

Meanwhile, his popularity increased, and translations of his works began to appear in a number of languages: English, German, Italian, Danish, Swedish, Hungarian, Polish and Russian. In 1914 Bergson's fellow-countrymen honoured him by his election as a member of the Académie française. He was also made President of the Académie des Sciences morales et politiques, and in addition he became Officier de la Légion d'honneur, and Officier de l'Instruction publique.

Bergson found disciples of many varied types, and in France movements such as neo-Catholicism or Modernism on the one hand and syndicalism on the other, endeavoured to absorb and to appropriate for their own immediate use and propaganda some of the central ideas of his teaching. The continental organ of socialist and syndicalist theory, *Le Mouvement socialiste*,<sup>[12]</sup> portrayed the realism of Karl Marx and Pierre-Joseph Proudhon as hostile to all forms of intellectualism, and that, therefore, supporters of Marxian socialism should welcome a philosophy such as that of Bergson. Other writers, in their eagerness, asserted the collaboration of the Chair of Philosophy at the College de France with the aims of the *Confédération Générale du Travail* and the Industrial Workers of the World. It was

claimed that there is harmony between the flute of personal philosophical meditation and the trumpet of social revolution.

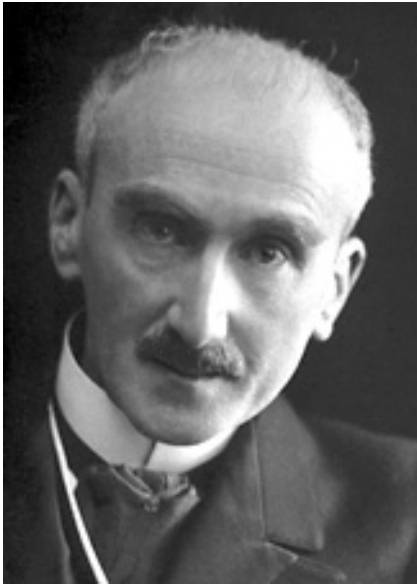
While social revolutionaries endeavoured to make the most out of Bergson, many leaders of religious thought, particularly the more liberal-minded theologians of all creeds, e.g., the Modernists and Neo-Catholic Party in his own country, showed a keen interest in his writings, and many of them endeavoured to find encouragement and stimulus in his work. The Roman Catholic Church however took the step of banning Bergson's three books, accused of pantheism (that is, of conceiving of God as immanent to his Creation and of being himself created in the process of the Creation <sup>[6]</sup>) by placing them upon the Index of prohibited books (Decree of 1 June 1914).

## Later life

In 1914, the Scottish universities arranged for Bergson to give the famous Gifford Lectures, planning one course for the spring and another for the autumn. Bergson delivered the first course, consisting of eleven lectures, under the title of *The Problem of Personality*, at the University of Edinburgh in the spring of that year. The course of lectures planned for the autumn months had to be abandoned because of the outbreak of war. Bergson was not, however, silent during the conflict, and he gave some inspiring addresses. As early as 4 November 1914, he wrote an article entitled *Wearing and Nonwearing forces* (La force qui s'use et celle qui ne s'use pas), which appeared in that unique and interesting periodical of the *poilus*, *Le Bulletin des Armées de la République Française*. A presidential address, *The Meaning of the War*, was delivered in December, 1914, to the Académie des sciences morales et politiques.

Bergson contributed also to the publication arranged by *The Daily Telegraph* in honour of King Albert I of the Belgians, *King Albert's Book* (Christmas, 1914).<sup>[13]</sup> In 1915 he was succeeded in the office of President of the *Académie des Sciences morales et politiques* by Alexandre Ribot, and then delivered a discourse on "The Evolution of German Imperialism". Meanwhile he found time to issue at the request of the Minister of Public Instruction a brief summary of French Philosophy. Bergson did a large amount of travelling and lecturing in America during the war. He participated to the negotiations which led to the entry of the United States in the war. He was there when the French Mission under René Viviani paid a visit in April and May 1917, following upon America's entry into the conflict. Viviani's book *La Mission française en Amérique* (1917), contains a preface by Bergson.

Early in 1918 the *Académie française* received Bergson officially when he took his seat among "The Select Forty" as successor to Emile Ollivier (the author of the historical work *L'Empire libéral*). A session was held in January in his honour at which he delivered an address on Ollivier. In the war, Bergson saw the conflict of Mind and Matter, or rather of Life and Mechanism; and thus he shows us the central idea of his own philosophy in action. To no other philosopher has it fallen, during his lifetime, to have his philosophical principles so vividly and so terribly tested.



Bergson in 1927.  
He was awarded the  
1927 Nobel Prize in Literature

As many of Bergson's contributions to French periodicals remained relatively inaccessible, he agreed to the request of his friends to have such works collected and published in two volumes. The first of these was being planned when war broke out. The conclusion of strife was marked by the appearance of a delayed volume in 1919. It bears the title *Spiritual Energy: Essays and Lectures* (*L'Energie spirituelle: essais et conférences*). The advocate of Bergson's philosophy in England, Dr. Wildon Carr, prepared an English translation under the title *Mind-Energy*. The volume opens with the Huxley Memorial Lecture of 1911, "Life and Consciousness", in a revised and developed form under the title "Consciousness and Life". Signs of Bergson's growing interest in social ethics and in the idea of a future life of personal survival are manifested. The lecture before the Society for Psychical Research is included, as is also the one given in France, *L'Âme et le Corps*, which contains the substance of the four London lectures on the Soul. The seventh and last article is a reprint of Bergson's famous lecture to the Congress of Philosophy at Geneva in 1904, *The Psycho-Physiological Paralogism* (*Le paralogisme psycho-physiologique*), which now appears as *Le cerveau et la pensée: une illusion philosophique*. Other articles are

on the False Recognition, on Dreams, and Intellectual Effort. The volume is a most welcome production and serves to bring together what Bergson wrote on the concept of mental force, and on his view of "tension" and "detension" as applied to the relation of matter and mind.

In June 1920, the University of Cambridge honoured him with the degree of Doctor of Letters. In order that he might devote his full time to the great new work he was preparing on ethics, religion, and sociology, the Collège de France relieved Bergson of the duties attached to the Chair of Modern Philosophy there. He retained the chair, but no longer delivered lectures, his place being taken by his disciple, the mathematician and philosopher Edouard Le Roy, who supported a conventionalist stance on the foundations of mathematics, which was adopted by Bergson.<sup>[14]</sup> Le Roy, who also succeeded to Bergson at the *Académie française* and was a fervent Catholic, extended to revealed truth his conventionalism, leading him to privilege faith, heart and sentiment to dogmas, speculative theology and abstract reasonings. Like Bergson's, his writings were placed on the Index by the Vatican.

Bergson then published *Duration and Simultaneity: Bergson and the Einsteinian Universe* (*Durée et simultanéité*), a book on physics, which he followed with a polemical conversation with Albert Einstein at the French Society of Philosophy.<sup>[6]</sup> The latter book has been often considered as one of his worst, many alleging that his knowledge of physics was very insufficient, and that the book did not follow up contemporary developments on physics.<sup>[6]</sup> It was not published in the 1951 *Edition du Centenaire* in French, which contained all of his other works, and was only published later in a work gathering different essays, titled *Mélanges*. *Duration and simultaneity* took advantage of Bergson's experience at the League of Nations, where he presided starting in 1920 the International Commission on Intellectual Cooperation (the ancestor of the UNESCO, which included Einstein, Marie Curie, etc.).<sup>[6]</sup>

Living with his wife and daughter in a modest house in a quiet street near the Porte d'Auteuil in Paris, Bergson won the Nobel Prize for Literature in 1927 for having written *The Creative Evolution*. Because of serious rheumatics ailments, he could not travel to Stockholm, and sent instead a text subsequently published in *La Pensée et le mouvant*.<sup>[6]</sup> He was elected a Foreign Honorary Member of the American Academy of Arts and Sciences in 1928.<sup>[15]</sup>

After his retirement from the Collège, Bergson began to fade into obscurity: he suffered from a degenerative illness (rheumatism, which left him half paralyzed<sup>[6]</sup>). He completed his new work, *The Two Sources of Morality and Religion*, which extended his philosophical theories to the realms of morality, religion and art, in 1935. It was respectfully received by the public and the philosophical community, but all by that time realized that Bergson's days

as a philosophical luminary were past. He was, however, able to reiterate his core beliefs near the end of his life, by renouncing all of the posts and honours previously awarded him, rather than accept exemption from the antisemitic laws imposed by the Vichy government.

Bergson inclined to convert to Catholicism, writing in his will on February 8, 1937: *My thinking has always brought me nearer to Catholicism, in which I saw the perfect complement to Judaism.*<sup>[16]</sup> Though wishing to convert to Catholicism, as stated in his will, he did not convert in view of the travails inflicted on the Jewish people by the rise of nazism and antisemitism in Europe in the 1930s; he did not want to appear to want to leave the persecuted. On 3 January 1941 Bergson died in occupied Paris from pneumonia contracted after standing for several hours in a queue for registration as a Jew.<sup>[17]</sup> A Roman Catholic priest said prayers at his funeral per his request. Henri Bergson is buried in the Cimetière de Garches, Hauts-de-Seine.

## Philosophy

Bergson rejected what he saw as the overly mechanistic predominant view of causality (as expressed in, say, finalism). He argued that we must allow space for free will to unfold in an autonomous and unpredictable fashion. While Kant saw free will as something beyond time and space and therefore ultimately a matter of faith, Bergson attempted to redefine the modern conceptions of time, space, and causality in his concept of Duration, making room for a tangible marriage of free will with causality. Seeing Duration as a mobile and fluid concept, Bergson argued that one cannot understand Duration through "immobile" analysis, but only through experiential, first-person intuition.

Bergson's other philosophical concepts include *Élan vital*, or the living, creative force that he saw as driving evolution and also as showing up in mankind's impulse to create. Bergson also discussed the nature and mechanism of laughter.

## Creativity

Bergson considers the appearance of novelty as a result of pure undetermined creation, instead of as the predetermined result of mechanistic forces. His philosophy emphasises pure mobility, unforeseeable novelty, creativity and freedom; thus one can characterize his system as a process philosophy. It touches upon such topics as time and identity, free will, perception, change, memory, consciousness, language, the foundation of mathematics and the limits of reason.<sup>[18]</sup>

Criticizing Kant's theory of knowledge exposed in the *Critique of Pure Reason* and his conception of truth — which he compares to Plato's conception of truth as its symmetrical inversion (order of nature/order of thought) — Bergson attempted to redefine the relations between science and metaphysics, intelligence and intuition, and insisted on the necessity of increasing thought's possibility through the use of intuition, which, according to him, alone approached a knowledge of the absolute and of real life, understood as pure duration. Because of his (relative) criticism of intelligence, he makes a frequent use of images and metaphors in his writings in order to avoid the use of concepts, which (he considers) fail to touch the whole of reality, being only a sort of abstract net thrown on things. For instance, he says in *The Creative Evolution* (chap.III) that thought in itself would never have thought it possible for the human being to swim, as it cannot deduce swimming from walking. For swimming to be possible, man must throw itself in water, and only then can thought consider swimming as possible. Intelligence, for Bergson, is a practical faculty rather than a pure speculative faculty, a product of evolution used by man to survive. If metaphysics is to avoid "false problems", it should not extend to pure speculation the abstract concepts of intelligence, but rather use intuition.<sup>[19]</sup>

*The Creative Evolution* in particular attempted to think through the continuous creation of life, and explicitly pitted itself against Herbert Spencer's evolutionary philosophy — Spencer had attempted to transpose Charles Darwin's theory of evolution in philosophy and to construct a cosmology based on this theory (Spencer also coined the expression "survival of the fittest"). Although Spencer is considered as an important influence of Bergson, some

have downplayed such influence, as it seems that Bergson would have very early criticized Spencer.<sup>[6]</sup> Henri Bergson's *Lebensphilosophie* (Philosophy of Life) can be seen as a response to the mechanistic philosophies of his time,<sup>[20]</sup> but also to the failure of finalism.<sup>[6]</sup> Indeed, he considers that finalism is unable to explain "duration" and the "continuous creation of life", as it only explains life as the progressive development of an initially determined program — a notion which remains, for example, in the expression of a "genetic program";<sup>[6]</sup> such a description of finalism was adopted, for instance, by Leibniz.<sup>[6]</sup>

Bergson regarded planning beforehand for the future as impossible, since time itself unravels unforeseen possibilities. Indeed, one could always explain a historical event retrospectively by its conditions of possibility. But, in the introduction to the *Pensée et le mouvant*, he explains that such an event created retrospectively its causes, taking the example of the creation of a work of art, for example a symphony: it was impossible to predict what would be the symphony of the future, as if the musician knew what symphony would be the best for his time, he would realize it. In his words, the effect created its cause. Henceforth, he attempted to find a third way between mechanism and finalism, through the notion of an original impulse, the *élan vital*, in life, which dispersed itself through evolution into contradictory tendencies (he substituted to the finalist notion of a teleological aim a notion of an original impulse).

## Duration

The foundation of Henri Bergson's philosophy, his theory of Duration, he discovered when trying to improve the inadequacies of Herbert Spencer's philosophy.<sup>[20]</sup> Bergson introduced Duration as a theory of time and consciousness in his doctoral thesis *Time and Free Will: An Essay on the Immediate Data of Consciousness* as a response to another of his influences: Immanuel Kant.<sup>[21]</sup>

Kant believed that free will could only exist outside of time and space, that we could therefore not know whether or not it exists, and that it is nothing but a pragmatic faith.<sup>[21]</sup> Bergson responded that Kant, along with many other philosophers, had confused time with its spatial representation.<sup>[22]</sup> In reality, Bergson argued, Duration is unextended yet heterogeneous, and so its parts cannot be juxtaposed as a succession of distinct parts, with one causing the other. Based on this he concluded that determinism is an impossibility and free will pure mobility, which is what Bergson identified as being the Duration.<sup>[23]</sup>

## Intuition

Duration, as defined by Bergson, then is a unity and a multiplicity, but, being mobile, it cannot be grasped through immobile concepts. Bergson hence argues that one can grasp it only through his method of intuition. Two images from Henri Bergson's *An Introduction to Metaphysics* may help one to grasp Bergson's term intuition, the limits of concepts, and the ability of intuition to grasp the absolute. The first image is that of a city. Analysis, or the creation of concepts through the divisions of points of view, can only ever give us a model of the city through a construction of photographs taken from every possible point of view, yet it can never give us the dimensional value of walking in the city itself. One can only grasp this through intuition; likewise the experience of reading a line of Homer. One may translate the line and pile commentary upon commentary, but this commentary too shall never grasp the simple dimensional value of experiencing the poem in its originality itself. The method of intuition, then, is that of getting back to the things themselves.<sup>[24]</sup>

## Élan vital

Élan vital ranks as Bergson's third essential concept, after Duration and intuition. An idea with the goal of explaining evolution, the Élan vital first appeared in 1907's *Creative Evolution*. Bergson portrays Élan vital as a kind of vital impetus which explains evolution in a less mechanical and more lively manner, as well as accounting for the creative impulse of mankind. This concept led several authors to characterize Bergson as a supporter of vitalism—although he criticized it explicitly in *The Creative Evolution*, as he thought, against Driesch and Johannes Reinke (whom he

cited) that there is neither "purely internal finality nor clearly cut individuality in nature".<sup>[25]</sup>

Hereby lies the stumbling block of vitalist theories (...) It is thus in vain that one pretends to reduce finality to the individuality of the living being. If there is finality in the world of life, it encompasses the whole of life in one indivisible embrace.<sup>[26]</sup>

## Laughter

In the idiosyncratic *Laughter: An Essay on the Meaning of the Comic*, Bergson develops a theory not of laughter itself, but of how laughter can be provoked (see his objection to Delage, published in the 23rd edition of the essay).<sup>[6]</sup> He describes the process of laughter (refusing to give a conceptual definition which would not approach its reality<sup>[6]</sup>), used in particular by comics and clowns, as the caricature of the mechanism nature of humans (habits, automatic acts, etc.), one of the two tendencies of life (degradation towards inert matter and mechanism, and continual creation of new forms).<sup>[6]</sup> However, Bergson warns us that laughter's criterion of what should be laughed at is not a moral criterion and that it can in fact cause serious damage to a person's self-esteem.<sup>[27]</sup> This essay made his opposition to the Cartesian theory of the animal-machine obvious.<sup>[6]</sup>

## Reception

From his first publications, Bergson's philosophy attracted strong criticism from different quarters, although he also became very popular and durably influenced French philosophy. The mathematician Edouard Le Roy became Bergson's main disciple. Alfred North Whitehead acknowledged Bergson's influence on his process philosophy in his 1929 *Process and Reality*. However, Bertrand Russell, Whitehead's collaborator on *Principia Mathematica*, was not so entranced by Bergson's philosophy. Although acknowledging Bergson's literary skills, Russell saw Bergson's arguments at best as persuasive or emotive speculation but not at all as any worthwhile example of sound reasoning or philosophical insight.<sup>[28]</sup> The epistemologist Gaston Bachelard explicitly alluded to him in the last pages of his 1938 book *The Formation of the Scientific Mind*. Others influenced by Bergson include Vladimir Jankélévitch, who wrote a book on him in 1931,<sup>[29]</sup> Pierre Teilhard de Chardin and Gilles Deleuze who wrote *Le bergsonisme* in 1966.<sup>[30]</sup> Bergson also influenced the phenomenology of Maurice Merleau-Ponty and Emmanuel Lévinas,<sup>[31]</sup> although Merleau-Ponty had reservations about Bergson's philosophy.<sup>[32]</sup> The Greek author Nikos Kazantzakis studied under Bergson in Paris and his writing and philosophy were profoundly influenced as a result.<sup>[33]</sup>

Many writers of the early 20th century criticized Bergson's intuitionism, indeterminism, psychologism and interpretation of the scientific impulse. Those who explicitly criticized Bergson, either in published articles or in letters, included Bertrand Russell<sup>[34]</sup> George Santayana,<sup>[35]</sup> G. E. Moore, Ludwig Wittgenstein, Julien Benda,<sup>[36]</sup> T. S. Eliot, Wyndham Lewis,<sup>[37]</sup> Paul Valéry, André Gide, Jean Piaget,<sup>[38]</sup> Marxist philosophers Theodor W. Adorno,<sup>[39]</sup> Lucio Colletti,<sup>[40]</sup> Jean-Paul Sartre,<sup>[41]</sup> and Georges Politzer,<sup>[42]</sup> as well as Maurice Blanchot,<sup>[43]</sup> American philosophers such as Irving Babbitt, Arthur Lovejoy, Josiah Royce, The New Realists (Ralph B. Perry, E. B. Holt, and William Pepperell Montague), The Critical Realists (Durant Drake, Roy W. Sellars, C. A. Strong, and A. K. Rogers), Daniel-Henry Kahnweiler, Roger Fry (see his letters), Julian Huxley (in *Evolution: The Modern Synthesis*) and Virginia Woolf (for the latter, see Ann Banfield, *The Phantom Table*).

The Vatican accused Bergson of pantheism, while free-thinkers (who formed a large part of the teachers and professors of the French Third Republic) accused him of spiritualism. Still others have characterized his philosophy as a materialist emergentism — Samuel Alexander and C. Lloyd Morgan explicitly claimed Bergson as their forebear.<sup>[6]</sup> According to Henri Hude (1990, II, p. 142), who supports himself on the whole of Bergson's works as well as his now published courses, accusing him of pantheism is a "counter-sense". Hude alleges that a mystical experience, roughly outlined at the end of *Les Deux sources de la morale et de la religion*, is the inner principle of his whole philosophy, although this has been contested by other commentators.

Charles Sanders Peirce took strong exception to those who associated him with Bergson. In response to a letter comparing his work with that of Bergson he wrote, "a man who seeks to further science can hardly commit a greater



sin than to use the terms of his science without anxious care to use them with strict accuracy; it is not very gratifying to my feelings to be classed along with a Bergson who seems to be doing his utmost to muddle all distinctions." William James's students resisted the assimilation of his work to that of Bergson. See, for example, Horace Kallen's book on the subject *James and Bergson*. As Jean Wahl described the "ultimate disagreement" between James and Bergson in his *System of Metaphysics*: "for James, the consideration of action is necessary for the definition of truth, according to Bergson, action...must be kept from our mind if we want to see the truth". Gide even went so far as to say that future historians will over-estimate Bergson's influence on art and philosophy just because he was the self-appointed spokesman for "the spirit of the age".

As early as the 1890s, Santayana attacked certain key concepts in Bergson's philosophy, above all his view of the New and the indeterminate:

the possibility of a new and unaccountable fact appearing at any time," he writes in his book on Hermann Lotze, "does not practically affect the method of investigation;...the only thing given up is the hope that these hypotheses may ever be adequate to the reality and cover the process of nature without leaving a remainder. This is no great renunciation; for that consummation of science...is by no one really expected.

According to Santayana and Russell, Bergson projected false claims onto the aspirations of scientific method, claims which Bergson needed to make in order to justify his prior moral commitment to freedom. Russell takes particular exception to Bergson's understanding of number in chapter two of *Time and Free-will*. According to Russell, Bergson uses an outmoded spatial metaphor ("extended images") to describe the nature of mathematics as well as logic in general. "Bergson only succeeds in making his theory of number possible by confusing a particular collection with the number of its terms, and this again with number in general", writes Russell (see *The Philosophy of Bergson* and *A History of Western Philosophy*).

Furthermore, writers such as Russell, Wittgenstein, and James saw *élan vital* as a projection of subjectivity onto the world. The external world, according to certain theories of probability, provides less and less indeterminism with further refinement of scientific method. In brief, one should not confuse the moral, psychological, subjective demand for the new, the underivable and the unexplained with the universe. One's subjective sense of duration differs the (non-human) world, a difference which, according to the ancient materialist Lucretius should not be characterized as either one of becoming or being, creation or destruction (*De Rerum Natura*).

Suzanne Guerlac has argued that the more recent resurgence of scholarly interest in Bergson is related to the growing influence of his follower Deleuze within continental philosophy: "If there is a return to Bergson today, then, it is largely due to Gilles Deleuze whose own work has etched the contours of the New Bergson. This is not only because Deleuze wrote about Bergson; it is also because Deleuze's own thought is deeply engaged with that of his predecessor, even when Bergson is not explicitly mentioned."<sup>[44]</sup> Leonard Lawlor and Valentine Moulard agree with Guerlac that "the recent revitalization of Bergsonism [...] is almost entirely due to Deleuze." They explain that Bergson's concept of multiplicity "is at the very heart of Deleuze's thought, and duration is the model for all of Deleuze's 'becomings.' The other aspect that attracted Deleuze, which is indeed connected to the first, is Bergson's criticism of the concept of negation in Creative Evolution. [...] Thus Bergson became a resource in the criticism of the Hegelian dialectic, the negative."<sup>[45]</sup>

## Notes

[1] "The Nobel prize in Literature" ([http://nobelprize.org/nobel\\_prizes/literature/laureates/1927/](http://nobelprize.org/nobel_prizes/literature/laureates/1927/)). . Retrieved 2010-11-15.

[2] "Z ziemi polskiej do Nobla [From the Polish lands to the Nobel Prize]" (<http://www.wprost.pl/ar/140524/Z-ziemi-polskiej-do-Nobla/?O=140524&pg=2>) (in Polish). *Wprost* (Warsaw: Agencja Wydawniczo-Reklamowa Wprost). 41/2008 (1346). . Retrieved 2010-05-10.

"Polskie korzenie ma Henri Bergson, jeden z najwybitniejszych pisarzy, fizyk i filozof francuski żydowskiego pochodzenia. Jego ojcem był Michał Bergson z Warszawy, prawnuk Szmula Jakubowicza Sonnenberga, zwanego Zbytkowerem (1756-1801), żydowskiego kupca i bankiera. [Translation: Henri Bergson, one of the greatest French writers, physicists and philosophers of Jewish ancestry, had Polish roots. His father was Michael Bergson from Warsaw, the great-grandson of Szmul Jakubowicz Sonnenberg - known as Zbytkower - (1756-1801), a

- Jewish merchant and banker.]"
- [3] Testament starozakonnego Berka Szmula Sonnenberga z 1818 roku ([http://dziedzictwo.polska.pl/katalog/skarb,Testament\\_starozakonnego\\_Berka\\_Szmula\\_Sonnenberga\\_z\\_1818\\_roku,gid,261356,cid,3312.htm?body=desc](http://dziedzictwo.polska.pl/katalog/skarb,Testament_starozakonnego_Berka_Szmula_Sonnenberga_z_1818_roku,gid,261356,cid,3312.htm?body=desc))
  - [4] Suzanne Guerlac, *Thinking in Time: An Introduction to Henri Bergson*, Ithaca, NY: Cornell University Press, 2007, p. 9.
  - [5] Henri Hude, *Bergson*, Paris, Editions universitaires, 1990, 2 volumes, quoted by Anne Fagot-Largeau in her 21 December 2006 course ([http://www.college-de-france.fr/default/EN/all/phi\\_sci/cours\\_3.jsp](http://www.college-de-france.fr/default/EN/all/phi_sci/cours_3.jsp)) at the College of France
  - [6] Anne Fagot-Largeau, 21 December 2006 course ([http://www.college-de-france.fr/default/EN/all/phi\\_sci/p1184676830986.htm](http://www.college-de-france.fr/default/EN/all/phi_sci/p1184676830986.htm)) at the College of France (audio file of the course)
  - [7] p.39
  - [8] Seth Benedict Graham A *CULTURAL ANALYSIS OF THE RUSSO-SOVIET ANEKDOT* ([http://etd.library.pitt.edu/ETD/available/etd-11032003-192424/unrestricted/grahamsethb\\_etd2003.pdf](http://etd.library.pitt.edu/ETD/available/etd-11032003-192424/unrestricted/grahamsethb_etd2003.pdf)) 2003 p.2
  - [9] "Florence Meyer Blumenthal" (<http://jwa.org/encyclopedia/article/blumenthal-florence-meyer>). Jewish Women's Archive, Michele Siegel.
  - [10] Bergson and his philosophy ([http://www.ibiblio.org/HTMLTexts/John\\_Alexander\\_Gunn/Bergson\\_And\\_His\\_Philosophy/chapter1.html](http://www.ibiblio.org/HTMLTexts/John_Alexander_Gunn/Bergson_And_His_Philosophy/chapter1.html)) Chapter 1: Life of Bergson
  - [11] Bergson, Henri (1911) (in French). *La perception du changement; conférences faites à l'Université d'Oxford les 26 et 27 mai 1911 [The perception of change: lectures delivered at the University of Oxford on 26 and 27 May 1911]*. Oxford: Clarendon. p. 37.
  - [12] Reberieux, M. (January–March 1964). "La gauche socialiste française: *La Guerre Sociale* et *Le Mouvement Socialiste* face au problème colonial [French right-wing socialism: *La Guerre Sociale* and *Le Mouvement Socialiste* in the face of the colonial problem]" (in French). *Le Mouvement social* (Editions l'Atelier/Association Le Mouvement Social) (46): 91–103. JSTOR 3777267. "[...] deux organes, d'ailleurs si dissemblables, ou s'exprime l'extrême-gauche du courant socialiste français: le *Mouvement socialiste* d'Hubert Lagardelle et la *Guerre sociale* de Gustave Hervé. Jeune publications - le *Mouvement socialiste* est fondé en janvier 1899, la *Guerre sociale* en décembre 1906 -, dirigées par de jeunes équipes qui faisaient profession de rejeter le chauvinisme, d'être attentives au nouveau et de ne pas reculer devant les prises de position les plus véhémentes, [...]"
  - [13] *King Albert's book : a tribute to the Belgian king and people from representative men and women throughout the world*. London: The Daily Telegraph. 1914. p. 187.
  - [14] See Chapter III of *The Creative Evolution*
  - [15] "Book of Members, 1780–2010: Chapter B" (<http://www.amacad.org/publications/BookofMembers/ChapterB.pdf>). American Academy of Arts and Sciences. . Retrieved 16 June 2011.
  - [16] Quoted in: Zolli, Eugenio (2008) [1954]. *Before the Dawn* ([http://books.google.com/books?hl=en&lr=&id=bq\\_Qp53ksMAC&oi](http://books.google.com/books?hl=en&lr=&id=bq_Qp53ksMAC&oi)). Ignatius Press. p. 89. ISBN 9781586172879.
  - [17] "Henri Bergson - Philosopher - Biography" (<http://www.egs.edu/library/henri-bergson/biography/>). www.egs.edu. 1941-01-03. . Retrieved 2010-02-17.
  - [18] Bergson explores these topics in *Time and Free Will: An Essay on the Immediate Data of Consciousness*, in *Matter and Memory*, in *Creative Evolution*, and in *The Creative Mind: An Introduction to Metaphysics*.
  - [19] Elie Duhring, « *Fantômes de problèmes* » ([http://ciepfc.rhapsodyk.net/article.php3?id\\_article=63](http://ciepfc.rhapsodyk.net/article.php3?id_article=63)), published by the *Centre International d'Etudes de la Philosophie Française Contemporaine* (short version first published in *Le magazine littéraire*, n°386, April 2000 (issue dedicated to Bergson)
  - [20] Henri Bergson, *The Creative Mind: An Introduction to Metaphysics*, pages 11 to 13.
  - [21] *The Stanford Encyclopedia of Philosophy* (<http://plato.stanford.edu/entries/bergson/>) "'Time and Free Will' has to be seen as an attack on Kant, for whom freedom belongs to a realm outside of space and time."
  - [22] Henri Bergson, *Time and Free Will: An Essay on the Immediate Data of Consciousness*, Author's Preface.
  - [23] *The Stanford Encyclopedia of Philosophy* (<http://plato.stanford.edu/entries/bergson/>) *For Bergson — and perhaps this is his greatest insight — freedom is mobility.*
  - [24] Henri Bergson, *The Creative Mind: An Introduction to Metaphysics*, pages 160 to 161.
  - [25] *L'Evolution créatrice*, pp. 42-44; pp. 226-227
  - [26] *L'Evolution créatrice*, pp. 42-43
  - [27] Henri Bergson's theory of laughter (<http://www.timoroso.com/philosophy/writings/sketches/2006-04-09-henri-bergsons-theory-of-laughter>). A brief summary.
  - [28] Russell, B.; "The Philosophy of Bergson," *The Monist* 1912 vol. 22 pp.321-347
  - [29] entitled *Henri Bergson*.
  - [30] transl. 1988.
  - [31] Dermot Moran, *Introduction to Phenomenology*, pages 322 and 393.
  - [32] Merleau-Ponty, Maurice (2001). Bjelland, Andrew G.; Burke, Patrick. eds. *The incarnate subject : Malebranche, Biran, and Bergson on the union of body and soul*. preface by Jacques Taminiaux ; translation by Paul B. Milan. Amherst, N.Y.: Humanity Books. p. 152. ISBN 1573929158.
  - [33] Peter Bien, *Three Generations of Greek Writers*, Published by Efstathiadis Group, Athens, 1983
  - [34] see his short book Russell, Bertrand (1977). *The philosophy of Bergson*. Folcroft, Pa.: Folcroft Library Editions. p. 36. ISBN 0841473714.on the subject).

- [35] see his study on the author in "Winds of Doctrine"
- [36] see his two books on the subject
- [37] Wyndham Lewis, *Time and Western Man* (1927), ed. Paul Edwards, Santa Rosa, CA: Black Sparrow, 1993.
- [38] see his book *Insights and Illusions of Philosophy* 1972
- [39] see "Against Epistemology"
- [40] see "Hegel and Marxism"
- [41] see his early book *Imagination* — although Sartre also appropriated himself Bergsonian thesis on novelty as pure creation - see *Situations I* Gallimard 1947, p. 314
- [42] see the latter's two books on the subject: *Le Bergsonisme, une Mystification Philosophique* and *La fin d'une parade philosophique: le Bergsonisme* both of which had a tremendous effect on French existential phenomenology
- [43] see *Bergson and Symbolism*
- [44] Suzanne Guerlac, *Thinking in Time: An Introduction to Henri Bergson*, Ithaca, NY: Cornell University Press, 2006, p. 175.
- [45] Leonard Lawlor and Valentine Moulard, "Henri Bergson", sec. 7, *Stanford Encyclopedia of Philosophy*, May 18, 2004; revised Jul 12, 2011; (<http://plato.stanford.edu/entries/bergson/#7>), retrieved September 3, 2011.

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## External links

- Stanford Encyclopedia of Philosophy entry (<http://plato.stanford.edu/entries/bergson/>)
- Henri Bergson (<http://www.egs.edu/library/henri-bergson/biography/>) - Entry in Philosophical Library. European Graduate School
- Henri Bergson's theory of laughter (<http://www.timoroso.com/philosophy/writings/sketches/2006-04-09-henri-bergsons-theory-of-laughter>). A brief summary.
- « 'A History of Problems' : Bergson and the French Epistemological Tradition », by Elie During ([http://ciepfc.rhapsodyk.net/article.php3?id\\_article=65](http://ciepfc.rhapsodyk.net/article.php3?id_article=65))
- Bergson compared to Plato (<http://www.sfo.com/~eameece/rrr.html>)


## Works online

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- Complete works in French on the "Classiques des sciences sociales" website ([http://classiques.uqac.ca/classiques/bergson\\_henri/bergson\\_henri.html](http://classiques.uqac.ca/classiques/bergson_henri/bergson_henri.html))
- *L'Evolution créatrice* ([http://classiques.uqac.ca/classiques/bergson\\_henri/evolution\\_creatrice/evolution\\_creatrice.html](http://classiques.uqac.ca/classiques/bergson_henri/evolution_creatrice/evolution_creatrice.html)) (in the original French, 1907)
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  - multiple formats (<http://www.archive.org/details/timeandfreewilla00berguoft>) at Internet Archive
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  - multiple formats (<http://www.archive.org/details/matterandmemory00berguoft>) at Internet Archive

# Gilles Deleuze

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## Gilles Deleuze

	
<b>Full name</b>	Gilles Deleuze
<b>Born</b>	18 January 1925 Paris, France
<b>Died</b>	4 November 1995 (aged 70) Paris, France
<b>Era</b>	20th-century philosophy
<b>Region</b>	Western Philosophy
<b>School</b>	Continental philosophy · Empiricism
<b>Main interests</b>	Aesthetics History of Western philosophy Metaphilosophy · Metaphysics
<b>Notable ideas</b>	Affect · Assemblage Body without organs Deterritorialization · Line of flight Plane of immanence · Rhizome Schizoanalysis

**Gilles Deleuze** (French pronunciation: [ʒil dəløz]), (18 January 1925 – 4 November 1995) was a French philosopher who, from the early 1960s until his death, wrote influentially on philosophy, literature, film, and art. His most popular works were the two volumes of *Capitalism and Schizophrenia: Anti-Oedipus* (1972) and *A Thousand Plateaus* (1980), both co-written with Félix Guattari. His metaphysical treatise *Difference and Repetition* (1968) is considered by some scholars to be his magnum opus.<sup>[1]</sup>

## Life

Deleuze was born into a middle-class family in Paris and lived there for most of his life. His initial schooling was undertaken during World War II, during which time he attended the Lycée Carnot. He also spent a year in khâgne at the Lycée Henri IV. During the Nazi occupation of France, Deleuze's older brother, Georges, was arrested for his participation in the French Resistance, and died while in transit to a concentration camp.<sup>[2]</sup> In 1944, Deleuze went to study at the Sorbonne. His teachers there included several noted specialists in the history of philosophy, such as Georges Canguilhem, Jean Hyppolite, Ferdinand Alquié, and Maurice de Gandillac, and Deleuze's lifelong interest in the canonical figures of modern philosophy owed much to these teachers. Nonetheless, Deleuze also found the work of non-academic thinkers such as Jean-Paul Sartre strongly attractive.<sup>[3]</sup> He agrégated in philosophy in 1948.

Deleuze taught at various lycées (Amiens, Orléans, Louis le Grand) until 1957, when he took up a position at the Sorbonne. In 1953, he published his first monograph, *Empiricism and Subjectivity*, on Hume. He married Denise Paul "Fanny" Grandjouan in 1956. From 1960 to 1964 he held a position at the Centre National de Recherche

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Scientifique. During this time he published the seminal *Nietzsche and Philosophy* (1962) and befriended Michel Foucault. From 1964 to 1969 he was a professor at the University of Lyon. In 1968 he published his two dissertations, *Difference and Repetition* (supervised by Gandillac) and *Expressionism in Philosophy: Spinoza* (supervised by Alquié).

In 1969 he was appointed to the University of Paris VIII at Vincennes/St. Denis, an experimental school organized to implement educational reform. This new university drew a number of talented scholars, including Foucault (who suggested Deleuze's hiring), and the psychoanalyst Félix Guattari. Deleuze taught at Vincennes until his retirement in 1987.

Deleuze, a heavy smoker, suffered from a debilitating pulmonary ailment throughout the final 25 years of his life. In his last decade this condition grew more severe and was compounded by respiratory problems.<sup>[4]</sup> Although he had a lung removed, the disease had spread throughout his pulmonary system. Deleuze underwent a tracheotomy, lost the power of speech<sup>[5]</sup> and considered himself "chained like a dog" to an oxygen machine.<sup>[6]</sup> By the last years of his life, simple tasks such as handwriting required laborious effort. In 1995, he committed suicide, throwing himself from the window of his apartment.<sup>[7]</sup> At the time of his death, Deleuze had announced his intention to write a book entitled *La Grandeur de Marx*, and left behind two chapters of an unfinished project entitled *Ensembles and Multiplicities* (these chapters have been published as the essays "Immanence: A Life" and "The Actual and the Virtual").<sup>[8]</sup> He is buried in the cemetery of the village of Saint-Léonard-de-Noblat.<sup>[9]</sup>

Upon Deleuze's death, his colleague Jean-François Lyotard sent a fax to *Le Monde*, in which he wrote of his friend:

"He was too tough to experience disappointments and resentments — negative affections. In this nihilist *fin de siècle*, he was affirmation. Right through to illness and death. Why did I speak of him in the past? He laughed, he is laughing, he is here. It's your sadness, idiot, he'd say."<sup>[10]</sup>

The novelist Michel Tournier, who knew Deleuze from their teen years onward,<sup>[11]</sup> described him thus:

"The ideas we threw about like cottonwool or rubber balls he returned to us transformed into hard and heavy iron or steel cannonballs. We quickly learnt to be in awe of his gift for catching us red-handed in the act of cliché-mongering, talking rubbish, or loose thinking. He had the knack of translating, transposing. As it passed through him, the whole of worn-out academic philosophy re-emerged unrecognisable, totally refreshed, as if it has not been properly digested before. It was all fiercely new, completely disconcerting, and it acted as a goad to our feeble minds and our slothfulness."<sup>[12]</sup>

Deleuze himself almost entirely demurred from autobiography. When once asked to talk about his life, he replied: "Academics' lives are seldom interesting."<sup>[13]</sup> When a critic seized upon Deleuze's unusually long, uncut fingernails as a revealing eccentricity, he replied: "I haven't got the normal protective whorls, so that touching anything, especially fabric, causes such irritation that I need long nails to protect them."<sup>[14]</sup> Deleuze concludes his reply to this critic thus:

"What do you know about me, given that I believe in secrecy? ... If I stick where I am, if I don't travel around, like anyone else I make my inner journeys that I can only measure by my emotions, and express very obliquely and circuitously in what I write. ... Arguments from one's own privileged experience are bad and reactionary arguments."<sup>[15]</sup>

## Philosophy

Deleuze's works fall into two groups: on one hand, monographs interpreting the work of other philosophers (Spinoza, Leibniz, Hume, Kant, Nietzsche, Bergson, Foucault) and artists (Proust, Kafka, Francis Bacon); on the other, eclectic philosophical tomes organized by concept (e.g., difference, sense, events, schizophrenia, cinema, philosophy). Regardless of topic, however, Deleuze consistently develops variations on similar ideas.

## Metaphysics

Deleuze's main philosophical project in his early works (i.e., those prior to his collaborations with Guattari) can be baldly summarized as a systematic inversion of the traditional metaphysical relationship between identity and difference. Traditionally, difference is seen as derivative from identity: e.g., to say that "X is different from Y" assumes some X and Y with at least relatively stable identities. To the contrary, Deleuze claims that all identities are effects of difference. Identities are neither logically nor metaphysically prior to difference, Deleuze argues, "given that there exist differences of nature between things of the same genus."<sup>[16]</sup> That is, not only are no two things ever the same, the categories we use to identify individuals in the first place derive from differences. Apparent identities such as "X" are composed of endless series of differences, where "X" = "the difference between x and x'", and "x" = "the difference between...", and so forth. Difference goes all the way down. To confront reality honestly, Deleuze claims, we must grasp beings exactly as they are, and concepts of identity (forms, categories, resemblances, unities of apperception, predicates, etc.) fail to attain difference in itself. "If philosophy has a positive and direct relation to things, it is only insofar as philosophy claims to grasp the thing itself, according to what it is, in its difference from everything it is not, in other words, in its *internal difference*."<sup>[17]</sup>

Like Kant and Bergson, Deleuze considers traditional notions of space and time as unifying forms imposed by the subject. Therefore he concludes that pure difference is non-spatio-temporal; it is an idea, what Deleuze calls "the virtual". (The coinage refers not to the "virtual reality" of the computer age, but to Proust's definition of what is constant in both the past and the present: "real without being actual, ideal without being abstract."<sup>[18]</sup>) While Deleuze's virtual ideas superficially resemble Plato's forms and Kant's ideas of pure reason, they are not originals or models, nor do they transcend possible experience; instead they are the conditions of actual experience, the internal difference in itself. "The concept they [the conditions] form is identical to its object."<sup>[19]</sup> A Deleuzian idea or concept of difference is not a wraith-like abstraction of an experienced thing, it is a real system of differential relations that creates actual spaces, times, and sensations.<sup>[20]</sup>

Thus Deleuze, alluding to Kant and Schelling, at times refers to his philosophy as a *transcendental empiricism*. In Kant's transcendental idealism, experience only makes sense when organized by forms of sensibility (namely, space and time) and intellectual categories (such as causality). Assuming the content of these forms and categories to be qualities of the world as it exists independently of our perceptual access, according to Kant, spawns seductive but senseless metaphysical beliefs. (For example, extending the concept of causality beyond possible experience results in unverifiable speculation about a first cause.) Deleuze inverts the Kantian arrangement: experience exceeds our concepts by presenting novelty, and this raw experience of difference actualizes an idea, unfettered by our prior categories, forcing us to invent new ways of thinking (see below, *Epistemology*).

Simultaneously, Deleuze claims that being is univocal, i.e., that all of its senses are affirmed in one voice. Deleuze borrows the doctrine of *ontological univocity* from the medieval philosopher John Duns Scotus. In medieval disputes over the nature of God, many eminent theologians and philosophers (such as Thomas Aquinas) held that when one says that "God is good", God's goodness is only analogous to human goodness. Scotus argued to the contrary that when one says that "God is good", the goodness in question is exactly the same sort of goodness that is meant when one says "Jane is good". That is, God only differs from us in degree, and properties such as goodness, power, reason, and so forth are univocally applied, regardless of whether one is talking about God, a person, or a flea.

Deleuze adapts the doctrine of univocity to claim that being is, univocally, difference. "With univocity, however, it is not the differences which are and must be: it is being which is Difference, in the sense that it is said of difference.

Moreover, it is not we who are univocal in a Being which is not; it is we and our individuality which remains equivocal in and for a univocal Being."<sup>[21]</sup> Here Deleuze at once echoes and inverts Spinoza, who maintained that everything that exists is a modification of the one substance, God or Nature. For Deleuze, there is no one substance, only an always-differentiating process, an origami cosmos, always folding, unfolding, refolding. Deleuze summarizes this ontology in the paradoxical formula "pluralism = monism".<sup>[22]</sup>

*Difference and Repetition* is Deleuze's most sustained and systematic attempt to work out the details of such a metaphysics, but his other works develop similar ideas. In *Nietzsche and Philosophy* (1962), for example, reality is a play of forces; in *Anti-Oedipus* (1972), a "body without organs"; in *What Is Philosophy?* (1991), a "plane of immanence" or "chaosmos".

## Epistemology

Deleuze's unusual metaphysics entails an equally atypical epistemology, or what he calls a transformation of "the image of thought". According to Deleuze, the traditional image of thought, found in philosophers such as Aristotle, Descartes, and Husserl, misconceives of thinking as a mostly unproblematic business. Truth may be hard to discover—it may require a life of pure theorizing, or rigorous computation, or systematic doubt—but thinking is able, at least in principle, to correctly grasp facts, forms, ideas, etc. It may be practically impossible to attain a God's-eye, neutral point of view, but that is the ideal to approximate: a disinterested pursuit that results in a determinate, fixed truth; an orderly extension of common sense. Deleuze rejects this view as papering over the metaphysical flux, instead claiming that genuine thinking is a violent confrontation with reality, an involuntary rupture of established categories. Truth changes what we think; it alters what we think is possible. By setting aside the assumption that thinking has a natural ability to recognize the truth, Deleuze says, we attain a "thought without image", a thought always determined by problems rather than solving them. "All this, however, presupposes codes or axioms which do not result by chance, but which do not have an intrinsic rationality either. It's just like theology: everything about it is quite rational if you accept sin, the immaculate conception, and the incarnation. Reason is always a region carved out of the irrational—not sheltered from the irrational at all, but traversed by it and only defined by a particular kind of relationship among irrational factors. Underneath all reason lies delirium, and drift."<sup>[23]</sup>

Deleuze's peculiar readings of the history of philosophy stem from this unusual epistemological perspective. To read a philosopher is no longer to aim at finding a single, correct interpretation, but is instead to present a philosopher's attempt to grapple with the problematic nature of reality. "Philosophers introduce new concepts, they explain them, but they don't tell us, not completely anyway, the problems to which those concepts are a response. [...] The history of philosophy, rather than repeating what a philosopher says, has to say what he must have taken for granted, what he didn't say but is nonetheless present in what he did say."<sup>[24]</sup> (See below, *Deleuze's interpretations*.)

Likewise, rather than seeing philosophy as a timeless pursuit of truth, reason, or universals, Deleuze defines philosophy as the creation of concepts. For Deleuze, concepts are not identity conditions or propositions, but metaphysical constructions that define a range of thinking, such as Plato's ideas, Descartes's cogito, or Kant's doctrine of the faculties. A philosophical concept "posits itself and its object at the same time as it is created."<sup>[25]</sup> In Deleuze's view, then, philosophy more closely resembles practical or artistic production than it does an adjunct to a definitive scientific description of a pre-existing world (as in the tradition of Locke or Quine).

In his later work (from roughly 1981 onward), Deleuze sharply distinguishes art, philosophy, and science as three distinct disciplines, each analyzing reality in different ways. While philosophy creates concepts, the arts create novel qualitative combinations of sensation and feeling (what Deleuze calls "percepts" and "affects"), and the sciences create quantitative theories based on fixed points of reference such as the speed of light or absolute zero (which Deleuze calls "functives"). According to Deleuze, none of these disciplines enjoy primacy over the others<sup>[26]</sup>: they are different ways of organizing the metaphysical flux, "separate melodic lines in constant interplay with one another."<sup>[27]</sup> For example, Deleuze does not treat cinema as an art representing an external reality, but as an



ontological practice that creates different ways of organizing movement and time. Philosophy, science, and art are equally, and essentially, creative and practical. Hence, instead of asking traditional questions of identity such as "is it true?" or "what is it?", Deleuze proposes that inquiries should be functional or practical: "what does it do?" or "how does it work?"<sup>[28]</sup>

## Values

In ethics and politics, Deleuze again echoes Spinoza, albeit in a sharply Nietzschean key. In a classical liberal model of society, morality begins from individuals, who bear abstract natural rights or duties set by themselves or a God. Following his rejection of any metaphysics based on identity, Deleuze criticizes the notion of an individual as an arresting or halting of differentiation (as the etymology of the word "individual" suggests). Guided by the naturalistic ethics of Spinoza and Nietzsche, Deleuze instead seeks to understand individuals and their moralities as products of the organization of pre-individual desires and powers. In the two volumes of *Capitalism and Schizophrenia*, Deleuze and Guattari describe history as a congealing and regimentation of "desiring-production" (a concept combining features of Freudian drives and Marxist labor) into the modern individual (typically neurotic and repressed), the nation-state (a society of continuous control), and capitalism (an anarchy domesticated into infantilizing commodification). Deleuze, following Marx, welcomes capitalism's destruction of traditional social hierarchies as liberating, but inveighs against its homogenization of all values to the aims of the market.

But how does Deleuze square his pessimistic diagnoses with his ethical naturalism? Deleuze claims that standards of value are internal or immanent: to live well is to fully express one's power, to go to the limits of one's potential, rather than to judge what exists by non-empirical, transcendent standards. Modern society still suppresses difference and alienates persons from what they can do. To affirm reality, which is a flux of change and difference, we must overturn established identities and so become all that we can become—though we cannot know what that is in advance. The pinnacle of Deleuzian practice, then, is creativity. "Herein, perhaps, lies the secret: to bring into existence and not to judge. If it is so disgusting to judge, it is not because everything is of equal value, but on the contrary because what has value can be made or distinguished only by defying judgment. What expert judgment, in art, could ever bear on the work to come?"<sup>[29]</sup>

## Deleuze's interpretations

Deleuze's studies of individual philosophers and artists are purposely heterodox. In *Nietzsche and Philosophy*, for example, Deleuze claims that Nietzsche's *On the Genealogy of Morality* is an attempt to rewrite Kant's *Critique of Pure Reason*,<sup>[30]</sup> even though Nietzsche nowhere mentions the First Critique in the *Genealogy*, and the *Genealogy*'s moral topics are far removed from the epistemological focus of Kant's book. Likewise, Deleuze claims that univocity is the organizing principle of Spinoza's philosophy, despite the total absence of the term from any of Spinoza's works. Deleuze once famously described his method of interpreting philosophers as "buggery (*enculage*)", as sneaking behind an author and producing an offspring which is recognizably his, yet also monstrous and different.<sup>[31]</sup>

The various monographs thus are not attempts to present what Nietzsche or Spinoza strictly intended, but re-stagings of their ideas in different and unexpected ways. Rather than misinterpretation, Deleuze's peculiar readings aim to enact the creativity he believes is the acme of philosophical practice.<sup>[32]</sup> A parallel in painting Deleuze points to is Francis Bacon's *Study after Velázquez*—it is quite beside the point to say that Bacon "gets Velasquez wrong".<sup>[33]</sup> Similar considerations apply, in Deleuze's view, to his own uses of mathematical and scientific terms, *pace* critics such as Alan Sokal: "I'm not saying that Resnais and Prigogine, or Godard and Thom, are doing the same thing. I'm pointing out, rather, that there are remarkable similarities between scientific creators of functions and cinematic creators of images. And the same goes for philosophical concepts, since there are distinct concepts of these spaces."<sup>[34]</sup>

## Reception

Deleuze's ideas have not spawned a school, as Lacan's did. But his major collaborations with Guattari (*Anti-Oedipus*, *A Thousand Plateaus*, and *What Is Philosophy?*) were best-sellers in France, and his work is frequently cited in English-speaking academia (in 2007, e.g., he was the 11th most frequently cited author in English-speaking publications in the humanities, between Freud and Kant).<sup>[35]</sup>

In the 1960s, Deleuze's portrayal of Nietzsche as a metaphysician of difference rather than a reactionary mystic contributed greatly to the plausibility of "left-wing Nietzscheanism" as an intellectual stance.<sup>[36]</sup> His books *Difference and Repetition* (1968) and *The Logic of Sense* (1969) led Michel Foucault to declare that "one day, perhaps, this century will be called Deleuzian."<sup>[37]</sup> (Deleuze, for his part, said Foucault's comment was "a joke meant to make people who like us laugh, and make everyone else livid."<sup>[38]</sup>) In the 1970s, the *Anti-Oedipus*, written in a style by turns vulgar and esoteric,<sup>[39]</sup> offering a sweeping analysis of the family, language, capitalism, and history via eclectic borrowings from Freud, Marx, Nietzsche, and dozens of other writers, was received as a theoretical embodiment of the anarchic spirit of May 1968. In 1994 and 1995, *L'Abécédaire de Gilles Deleuze*, an eight-hour series of interviews between Deleuze and Claire Parnet, aired on France's Arte Channel (a still from the program appears in the infobox above).<sup>[40]</sup>

In the 1980s and 1990s, almost all of Deleuze's books were translated into English. Like his contemporaries Foucault, Derrida, and Lyotard, Deleuze's influence has been most strongly felt in North American humanities departments, particularly in literary theory, where *Anti-Oedipus* and *A Thousand Plateaus* are oft regarded as major statements of post-structuralism and postmodernism,<sup>[41]</sup> though neither Deleuze nor Guattari described their work in those terms. Likewise in the English-speaking academy, Deleuze's work is typically classified as "continental philosophy".<sup>[42]</sup>

Deleuze has attracted critics as well. The following list is not exhaustive, and gives only the briefest of summaries.

In *Modern French Philosophy* (1979), Vincent Descombes argues that Deleuze's account of a difference that is not derived from identity (in *Nietzsche and Philosophy*) is incoherent, and that his analysis of history in *Anti-Oedipus* is 'utter idealism', criticizing reality for falling short of a non-existent ideal of schizophrenic becoming.

In *What Is Neostructuralism?* (1984), Manfred Frank claims that Deleuze's theory of individuation as a process of bottomless differentiation fails to explain the unity of consciousness.

In "The Decline and Fall of French Nietzscheo-Structuralism" (1994), Pascal Engel presents a wholesale condemnation of Deleuze's thought. According to Engel, Deleuze's metaphilosophical approach makes it impossible to reasonably disagree with a philosophical system, and so destroys meaning, truth, and philosophy itself. Engel summarizes Deleuze's metaphilosophy thus: "When faced with a beautiful philosophical concept you should just sit back and admire it. You should not question it."<sup>[43]</sup>

In *The Mask of Enlightenment* (1995) Stanley Rosen objects to Deleuze's interpretation of Nietzsche's eternal return.

In *Deleuze: The Clamor of Being* (1997), Alain Badiou claims that Deleuze's metaphysics only apparently embraces plurality and diversity, remaining at bottom relentlessly monist. Badiou further argues that, in practical matters, Deleuze's monism entails an ascetic, aristocratic fatalism akin to ancient Stoicism.

In *Reconsidering Difference* (1997), Todd May argues that Deleuze's claim that difference is ontologically primary ultimately contradicts his embrace of immanence, i.e., his monism. However, May believes that Deleuze can discard the primacy-of-difference thesis, and accept a Wittgensteinian holism without significantly altering his practical philosophy.

In *Fashionable Nonsense* (1997), Alan Sokal and Jean Bricmont accuse Deleuze of abusing mathematical and scientific terms, particularly by sliding between accepted technical meanings and his own idiosyncratic use of those terms in his philosophical system. (But see above, *Deleuze's interpretations*.) Deleuze's writings on subjects such as calculus and quantum mechanics are, according to Sokal and Bricmont, vague, meaningless, or unjustified. However, by Sokal and Bricmont's own admission, they suspend judgment about Deleuze's philosophical theories

and terminology.

In 1998 the International College of Philosophy dedicated to its founder a special issue of its journal *Rue Descartes* (no 20), "Gilles Deleuze. Immanence et Vie."

In *Organs without Bodies* (2003), Slavoj Žižek claims that Deleuze's ontology oscillates between materialism and idealism,<sup>[44]</sup> and that the Deleuze of *Anti-Oedipus* ("arguably Deleuze's worst book"),<sup>[45]</sup> the "political" Deleuze under the "'bad' influence" of Guattari, ends up, despite protestations to the contrary, as "the ideologist of late capitalism".<sup>[46]</sup> Žižek also calls Deleuze to task for allegedly reducing the subject to "just another" substance and thereby failing to grasp the nothingness that, according to Lacan and Žižek, defines subjectivity.<sup>[47]</sup> What remains worthwhile in Deleuze's oeuvre, Žižek finds, are precisely those concepts closest to Žižek's own ideas.

In *Out of this World: Deleuze and the Philosophy of Creation* (2006), Peter Hallward argues that Deleuze's insistence that being is necessarily creative and always-differentiating entails that his philosophy can offer no insight into, and is supremely indifferent to, the material, actual conditions of existence. Thus Hallward claims that Deleuze's thought is literally other-worldly, aiming only at a passive contemplation of the dissolution of all identity into the theophanic self-creation of nature.

## Endnotes

- [1] "Gilles Deleuze" (<http://plato.stanford.edu/entries/deleuze/>). *Stanford Encyclopedia of Philosophy*. . Retrieved 17 February 2011.
- [2] François Dosse, *Gilles Deleuze and Felix Guattari: Intersecting Lives*, trans. Deborah Glassman (New York: Columbia University Press, 2010), p. 89.
- [3] *Dialogues*, p. 12: "At the Liberation we were still strangely stuck in the history of philosophy. We simply plunged into Hegel, Husserl and Heidegger; we threw ourselves like puppies into a scholasticism worse than that of the Middle Ages. Fortunately there was Sartre. Sartre was our Outside, he was really the breath of fresh air from the backyard."
- [4] ([http://www.ammppu.org/litterature/deleuze.htm#\(4\)](http://www.ammppu.org/litterature/deleuze.htm#(4)))
- [5] A.P. Colombat, "November 4, 1995: Deleuze's death as an event" (<http://www.ingentaconnect.com/content/klu/mawo/1996/00000029/00000003/00113444>), *Continental Philosophy Review* 29.3 (July 1996): 235-249.
- [6] Philip Goodchild, *Deleuze and Guattari: An Introduction to the Politics of Desire* (Thousands Oaks, CA: Sage, 1996).
- [7] "Gilles Deleuze" (<http://www.britannica.com/EBchecked/topic/156476/Gilles-Deleuze>). *Encyclopædia Britannica*. . Retrieved July 8, 2009.
- [8] F. Dosse, *Gilles Deleuze and Felix Guattari: Intersecting Lives*, pp. 454-455. "Immanence: A Life" has been translated and published in *Pure Immanence and Two Regimes of Madness*, while "The Actual and Virtual" has been translated and published as an appendix to the second edition of *Dialogues*.
- [9] ([http://www.ccnoblat.fr/otsi\\_v2/images/publications/guides/Saint Leonard de Noblat.pdf](http://www.ccnoblat.fr/otsi_v2/images/publications/guides/Saint Leonard de Noblat.pdf))
- [10] J.-F. Lyotard, *Misère de la philosophie* (Paris: Galilée, 2000), p. 194.
- [11] F. Dosse, *Gilles Deleuze and Félix Guattari: Intersecting Lives*, pp. 90-91.
- [12] Mary Bryden (ed.), *Deleuze and Religion* (New York: Routledge, 2001), p. 201.
- [13] *Negotiations*, p. 137.
- [14] *Negotiations*, p. 5.
- [15] *Negotiations*, pp. 11-12.
- [16] "Bergson's Conception of Difference", in *Desert Islands*, p. 33.
- [17] *Desert Islands*, p. 32.
- [18] Proust, *Le Temps Retrouvé*, ch. III: see the fourth line from the bottom of this page (<http://gallica.bnf.fr/proust/folios/NAF16725fol123.jpg>), or, in English translation, the thirteenth paragraph here (<http://etext.library.adelaide.edu.au/p/proust/marcel/p96t/chapter3.html>): "I began to discover the cause by comparing those varying happy impressions which had the common quality of being felt simultaneously at the actual moment and at a distance in time, because of which common quality the noise of the spoon upon the plate, the unevenness of the paving-stones, the taste of the madeleine, imposed the past upon the present and made me hesitate as to which time I was existing in. Of a truth, the being within me which sensed this impression, sensed what it had in common in former days and now, sensed its extra-temporal character, a being which only appeared when through the medium of the identity of present and past, it found itself in the only setting in which it could exist and enjoy the essence of things, that is, outside Time. [...] Nothing but a moment of the past? Much more perhaps; something which being common to the past and the present, is more essential than both. [...] a marvellous expedient of nature had caused a sensation to flash to me—sound of a spoon and of a hammer, uneven paving-stones—simultaneously in the past which permitted my imagination to grasp it and in the present in which the shock to my senses caused by the noise had effected a contact between the dreams of the imagination and that of which they are habitually deprived, namely, the idea of existence—and thanks to that stratagem had permitted that being within me to secure, to isolate and to render static for the duration of a lightning flash that which it can never wholly grasp, a fraction of Time in its pure essence. When, with such a shudder of happiness, I heard the sound common, at once, to the spoon touching the plate, to the hammer striking

the wheel, to the unevenness of the paving-stones in the courtyard of the Guermentes' mansion and the Baptistery of St. Mark's, it was because that being within me can only be nourished on the essence of things and finds in them alone its subsistence and its delight. It languishes in the observation by the senses of the present sterilised by the intelligence awaiting a future constructed by the will out of fragments of the past and the present from which it removes still more reality, keeping that only which serves the narrow human aim of utilitarian purposes. But let a sound, a scent already heard and breathed in the past be heard and breathed anew, simultaneously in the present and in the past, real without being actual, ideal without being abstract, then instantly the permanent and characteristic essence hidden in things is freed and our true being which has for long seemed dead but was not so in other ways awakes and revives, thanks to this celestial nourishment."

- [19] *Desert Islands*, p. 36.
- [20] See "The Method of Dramatization" in *Desert Islands*, and "Actual and Virtual" in *Dialogues*.
- [21] *Difference and Repetition*, p. 39.
- [22] *A Thousand Plateaus*, p. 20.
- [23] *Desert Islands*, p. 262.
- [24] *Negotiations*, p. 136.
- [25] *What Is Philosophy?*, p. 22.
- [26] *Negotiations*, p. 123.
- [27] *Negotiations*, p. 125. Cf. Spinoza's claim that the mind and the body are different modes expressing the same substance.
- [28] *Negotiations*, p. 21: "We're strict functionalists: what we're interested in is how something works".
- [29] *Essays Critical and Clinical*, p. 135.
- [30] *Nietzsche and Philosophy*, p. 88.
- [31] *Negotiations*, p. 6. See also: Daniel W. Smith, "The Inverse Side of the Structure: Zizek on Deleuze on Lacan", *Criticism* (2004): "Deleuze's all-too-well-known image of philosophical 'buggery,' which makes thinkers produce their own 'monstrous' children"; Robert Sinnerbrink (in "Nomadology or Ideology? Zizek's Critique of Deleuze", *Parrhesia* 1 (2006): 62-87) describes the "popular topic" of Deleuze's "notorious remarks"; Donald Callen (in "The Difficult Middle", *Rhizomes* 10 (Spring 2005)) describes "intellectual buggery" as "what Deleuze himself famously said about his encounters with the works of other philosophers." Deleuze's buggery analogy is also cited by, among many others, Brian Massumi, *A User's Guide to Capitalism and Schizophrenia* (MIT Press, 1992), p. 2; Slavoj Žižek, *Organs without Bodies* (Routledge, 2003), p. 48; Ian Buchanan, *A Deleuzian Century?* (Duke UP, 1999), p. 8; Jean-Jacques Lecercle, *Deleuze and Language* (Macmillan, 2002), p. 37; Gregg Lambert, *The Non-Philosophy of Gilles Deleuze* (Continuum, 2002), p. x; Claire Colebrook, *Understanding Deleuze* (Allen & Unwin, 2003), p. 73; and Charles Stivale, *Gilles Deleuze: Key Concepts* (McGill-Queen's, 2005), p. 3.
- [32] *Desert Islands*, p. 144.
- [33] *Francis Bacon: The Logic of Sensation*, pp. 46f: "[Bacon] let loose ... presences" already in Velázquez's painting. Cf. the passage cited above, from *Negotiations*, p. 136: "The history of philosophy, rather than repeating what a philosopher says, has to say what he must have taken for granted, what he didn't say but is nonetheless present in what he did say."
- [34] *Negotiations*, pp. 124-125.
- [35] "The most cited authors of books in the humanities" (<http://www.timeshighereducation.co.uk/story.asp?storyCode=405956&sectioncode=26>). timeshighereducation.co.uk. 2009-03-26. . Retrieved 2010-07-04.
- [36] See, e.g., the approving reference to Deleuze's Nietzsche study in Jacques Derrida's essay "*Différance*", or Pierre Klossowski's monograph *Nietzsche and the Vicious Circle*, dedicated to Deleuze. More generally, see D. Allison (ed.), *The New Nietzsche* (MIT Press, 1985), and L. Ferry and A. Renaut (eds.), *Why We Are Not Nietzscheans* (University of Chicago Press, 1997).
- [37] Foucault, "Theatrum Philosophicum", *Critique* 282, p. 885.
- [38] *Negotiations*, p. 4. However, in a later interview, Deleuze commented: "I don't know what Foucault meant, I never asked him" (*Negotiations*, p. 88).
- [39] Sometimes in the same sentence: "one is thus traversed, broken, fucked by the socius" (*Anti-Oedipus*, p. 347).
- [40] An English language summary can be found here (<http://www.langlab.wayne.edu/CStivale/D-G/ABC1.html>)
- [41] See, for example, Steven Best and Douglas Kellner, *Postmodern Theory* (Guilford Press, 1991), which devotes a chapter to Deleuze and Guattari.
- [42] See, e.g., Simon Glendinning, *The Idea of Continental Philosophy* (Edinburgh University Press, 2006), p. 54.
- [43] Barry Smith (ed.), *European Philosophy and the American Academy*, p. 34.
- [44] Slavoj Žižek, *Organs without Bodies*, pp. 19-32, esp. p. 21: "Is this opposition not, yet again, that of materialism versus idealism? In Deleuze, this means *The Logic of Sense* versus *Anti-Oedipus*." See also p. 28 for "Deleuze's oscillation between the two models" of becoming.
- [45] Žižek, p. 21
- [46] Žižek, pp. 32, 20, and 184.
- [47] Žižek, p. 68: "This brings us to the topic of the *subject* that, according to Lacan, emerges in the interstice of the 'minimal difference,' in the minimal gap between two signifiers. In this sense, the subject is 'a nothingness, a void, which exists.' ... This, then, is what Deleuze seems to get wrong in his reduction of the subject to (just another) substance. Far from belonging to the level of actualization, of distinct entities in the order of constituted reality, the dimension of the 'subject' designates the *reemergence of the virtual within the order of actuality*. 'Subject' names the unique space of the explosion of virtuality within constituted reality."

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# Wilmon Henry Sheldon

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## Wilmon Henry Sheldon

Full name	Wilmon Henry Sheldon
Born	1875
Died	1981
Era	20th-century philosophy
Region	American Philosophy
School	process philosophy

**Wilmon Henry Sheldon** (1875–1981) was a twentieth century American philosopher.

### Life and career

Sheldon was educated at Harvard University and taught at Yale.<sup>[1]</sup>

### Major works

- *Strife of Systems and Productive Duality: An Essay in Philosophy*. Harvard University Press. 1918.
- *America’s Progressive Philosophy*. New Haven, CT: Yale University Press. 1942.
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# Gilbert Simondon

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## Gilbert Simondon

<b>Full name</b>	Gilbert Simondon
<b>Born</b>	October 2, 1924 Saint-Étienne
<b>Died</b>	February 7, 1989 Palaiseau
<b>Era</b>	20th-century philosophy
<b>Region</b>	Western Philosophy
<b>School</b>	Continental philosophy
<b>Main interests</b>	Philosophy of nature, epistemology, technology
<b>Notable ideas</b>	Individuation, "transduction", "concrétisation", "transindividuel", "préindividuel"

**Gilbert Simondon** (October 2, 1924 – February 7, 1989) was a French philosopher best known for his theory of individuation, a major source of inspiration for Gilles Deleuze and, today, for Bernard Stiegler.

## Career

Born in Saint-Étienne, Simondon was a student of philosopher of science Georges Canguilhem, Martial Guérault, and phenomenologist Maurice Merleau-Ponty. He studied at the Ecole Normale Supérieure and the Sorbonne. He defended his doctoral dissertations in 1958. His main thesis, *L'individuation à la lumière des notions de Forme et d'Information* (*Individuation in the light of the notions of Form and Information*), was published in two parts, the first in 1964 under the title *L'individu et sa g n se physico-biologique* (*Individuation and its physical-biological genesis*) at the Presses Universitaires de France, while it is only in 1989 that Aubier published the second part, *L'individuation psychique et collective* (*Psychic and collective individuation*). While his main thesis, which laid the foundations of his thinking, was not widely read until it was commented upon by Gilles Deleuze and, more recently, Bruno Latour and Bernard Stiegler, his complementary thesis, *Du mode d'existence des objets techniques* (*On the mode of existence of technical objects*) was published by Aubier immediately after being completed (in 1958) and had an instant impact on a wide audience. It was only in 2005 that J r me Millon published a complete edition of the main thesis.

## Individuation and technology

In *L'individuation psychique et collective*, Simondon developed a theory of individual and collective individuation, in which the individual subject is considered as an effect of individuation, rather than as a cause. Thus the individual atom is replaced by the neverending process of individuation. Simondon also conceived of "pre-individual fields" as the funds making individuation itself possible. Individuation is an always incomplete process, always leaving a "pre-individual" left-over, itself making possible future individuations. Furthermore, individuation always creates both an individual and a collective subject, which individuate themselves together.

Gilbert Simondon criticized Norbert Wiener's theory of cybernetics, arguing that, "Right from the start, Cybernetics has accepted what all theory of technology must refuse: a classification of technological objects conducted by means of established criteria and following genera and species." Simondon aimed to overcome the shortcomings of cybernetics by developing a "general phenomenology" of machines.

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## Influence

Simondon's theory of individuation through transduction in a metastable environment was the most important influence on the thought of Gilles Deleuze. Deleuze recognized it in *Logique du sens*, and this major influence is explained by Alberto Gualandi in his book *Deleuze* (Paris, Editions Perrin, 2009), and developed by Anne Sauvagnargues in her recent *Deleuze. L'empirisme transcendantal* (Paris, P.U.F., 2009).

Simondon's work has also been adopted by Bernard Stiegler, who places the theory of individuation at the very heart of his philosophical project. Stiegler nevertheless argues that, paradoxically, Simondon failed to think the constitutive role that technical individuation plays in psychic and collective individuation.<sup>[1]</sup>

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- [1] "What links the *I* with the *we* in this individuation is a preindividual milieu, which has positive conditions of effectivity, related to what I have called the retentional apparatuses. These retentional apparatuses are supported by the technical milieu, which is the condition of the meeting of the *I* and the *we*: the individuation of *I* and of *we* is equally in a sense the individuation of a technical system (this is what Simondon, strangely, didn't see)." Stiegler, *De la misère symbolique 1. L'époque hyperindustrielle* (Paris: Galilée, 2004), p. 106.

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# Theopoetics

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**Theopoetics** is an emerging field of interdisciplinary study, combining elements of poetic analysis, process theology, narrative theology, and postmodern philosophy.

Theopoetics suggests that instead of trying to develop a “scientific” theory of God such as would a Systematic Theology, theologians should instead try to find God through poetic articulations of their lived (“embodied”) experiences. It asks theologians to accept reality as a legitimate source of divine revelation, and suggests that both the divine and the real are mysterious — or, irreducible to literalist dogmas or scientific proofs.

Theopoetics makes significant use of “radical” and “ontological” metaphor for the purpose of creating a more fluid and less stringent referent for the Divine. One of the functions of theopoetics is to recalibrate theological perspectives, suggesting that theology can be more akin to poetry than physics. It belies the logical assertion of the Principle of Bivalence and stands in contrast to some rigid Biblical hermeneutics which suggest that each passage of scripture has only one, usually teleological, interpretation.

While these more strict Literalist approaches believe Scripture and theology possess inerrant factual meaning, and pay little attention to historicity, a theopoetic approach takes a positive position on faith statements that can be continuously reinterpreted. Just as a poem can take on new meaning depending on the context in which the reader interprets it, so too does theopoetics suggest that texts and experiences of the Divine can, and should, take on new meaning depending on the changing situation of the individual.

Originally developed by Stanley Hopper and David Leroy Miller in 1960s and furthered significantly by Amos Niven Wilder with his 1976 text, *Theopoetic: Theology and the Religious Imagination*. Recently, there has been a revitalized interest with new work being done by Rubem Alves, Scott Holland, Melanie May, Matt Guynn, Roland Faber, Jason Derr, Catherine Keller, John Caputo, Peter Rollins et al.

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# David Ray Griffin

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## David Ray Griffin



<b>Full name</b>	David Ray Griffin
<b>Born</b>	1939
<b>Era</b>	20th-century philosophy
<b>Region</b>	Western Philosophy
<b>School</b>	Process Theology

**David Ray Griffin** (born 1939) is a retired American professor of philosophy of religion and theology. Along with John B. Cobb, Jr., he founded the Center for Process Studies in 1973, a research center of Claremont School of Theology which seeks to promote the common good by means of the relational approach found in process thought.<sup>[1]</sup>

More recently, Griffin has published a number of books on the subject of the September 11 attacks, suggesting that there was a conspiracy involving some elements of the United States government.<sup>[2]</sup>

## Life and professional career

David Ray Griffin is a longtime resident of Santa Barbara, California, was a full-time academic from 1973 until April 2004. He is currently a co-director of the Center for Process Studies, and one of the foremost contemporary exponents of process theology, founded on the process philosophies of Alfred North Whitehead and Charles Hartshorne.

Griffin grew up in a small town in Oregon, where he was an active participant in his Disciples of Christ church. After deciding to become a minister, Griffin entered Northwest Christian College, but became disenchanted with the conservative-fundamentalist theology that was taught there. While getting his master's degree in counseling from the University of Oregon, Griffin attended a lecture series delivered by Paul Tillich at the Graduate Theological Union in Berkeley, California. At this time, Griffin made his decision to focus on philosophical theology. He eventually attended the Claremont Graduate University, where Griffin received his Ph.D. in 1970.<sup>[3]</sup>

As a student in Claremont, Griffin was initially interested in Eastern religions, particularly Vedanta. However, he started to become a process theologian while attending John B. Cobb's seminar on Whitehead's philosophy. According to Griffin, process theology, as presented by Cobb, "provided a way between the old supernaturalism, according to which God miraculously interrupted the normal causal processes now and then, and a view according to which God is something like a cosmic hydraulic jack, exerting the same pressure always and everywhere (which described rather aptly the position to which I had come)", (*Primordial Truth and Postmodern Theology*). Griffin applied Whitehead's thought to the traditional theological subjects of christology and theodicy and argued that process theology also provided a sound basis for addressing contemporary social and ecological issues.<sup>[4]</sup>

After teaching theology and Eastern religions at the University of Dayton, Griffin came to appreciate the distinctively postmodern aspects of Whitehead's thought. In particular, Griffin found Whitehead's nonsensationist

epistemology and panexperientialist ontology immensely helpful in addressing the major problems of modern philosophy, including the problems of mind-body interaction, the interaction between free and determined things, the emergence of experience from nonexperiencing matter, and the emergence of time in the evolutionary process. In 1973, Griffin returned to Claremont to establish, with Cobb, the Center for Process Studies at the Claremont School of Theology.<sup>[5]</sup>

While on research leave in 1980–81 at Cambridge University and Berkeley, the contrast between modernity and postmodernity became central to his work. Many of Griffin's writings are devoted to developing postmodern proposals for overcoming the conflicts between religion and modern science. Griffin came to believe that much of the tension between religion and science was not only the result of reactionary supernaturalism, but also the mechanistic worldview associated with the rise of modern science in the seventeenth century. In 1983, Griffin started the Center for a Postmodern World in Santa Barbara, and became editor of the SUNY Series in Constructive Postmodern Philosophy between 1987 and 2004.<sup>[6]</sup>

## Statements and publications on the September 11 attacks

Following the September 11 attacks, David Ray Griffin moved his focus from questions of philosophy and religion to ones of politics and history, specifically American expansionism and imperialism. He intended to write a book on the subject, presenting 9/11 in terms of "blowback" for aggressive United States foreign policies of the 20th century:

"Until the spring of 2003, I had not looked at any of the evidence. I was vaguely aware there were people, at least on the internet, who were offering evidence against the official account of 9/11... I knew the US government had 'fabricated' evidence to go to war several times before. Nevertheless... I did not take this possibility seriously... I was so confident that they must be wrong." <sup>[7]</sup>

After reading the work of Paul Thompson and Nafeez Ahmed, he became convinced that there was a *prima facie* case for the contention that there must have been complicity from individuals within the United States, and joined the 9/11 Truth Movement in calling for an extensive investigation from the United States media, Congress and the 9/11 Commission. At this time, he set about writing his first book on the subject, which he called *The New Pearl Harbor: Disturbing Questions About the Bush Administration and 9/11* (2004).<sup>[8]</sup>

Part One of the book looks at the events of 9/11, discussing each flight in turn and also the behaviour of President George W. Bush and his Secret Service protection. Part Two examines 9/11 in a wider context, in the form of four "disturbing questions". David Ray Griffin discussed this book and the claims within it in an interview with Nick Welsh, reported under the headline *Thinking Unthinkable Thoughts: Theologian Charges White House Complicity in 9/11 Attack*.<sup>[9]</sup>

Critics of Griffin's thesis, such as Chip Berlet, say that many of the claims in the book are refutable.<sup>[10]</sup> Griffin has rejected these criticisms<sup>[11]</sup> and debated Berlet.<sup>[12]</sup>

Griffin's second book on the subject was a direct critique of the 9/11 Commission Report, called *The 9/11 Commission Report: Omissions And Distortions* (2005).<sup>[13]</sup> Griffin's article *The 9/11 Commission Report: A 571-page Lie*<sup>[14]</sup> summarises this book, presenting 115 instances of either omissions or distortions of evidence he claims are in the report, stating that "the entire Report is constructed in support of one big lie: that the official story about 9/11 is true."<sup>[14]</sup>

In his next book, *Christian Faith and the Truth Behind 9/11: A Call to Reflection and Action* (2006), he summarizes some of what he believes is evidence for government complicity and reflects on its implications for Christians. The Presbyterian Publishing Corporation, publishers of the book, noted that Griffin is a distinguished theologian, and praised the book's religious content, but said, "The board believes the conspiracy theory is spurious and based on questionable research."<sup>[15]</sup> <sup>[16]</sup>

In 2006, Griffin, along with Peter Dale Scott, edited *9/11 and the American Empire: Intellectuals Speak Out*, a collection of essays including Steven Jones' paper *Why Indeed Did The World Trade Center Towers Collapse?*.<sup>[17]</sup>

*Debunking 9/11 Debunking* (2007) looks at the way mainstream media such as *Popular Mechanics* have sought to debunk the alternative 9/11 theories and the tactics he claims they employ to persuade the reader that they have done so.<sup>[18]</sup> In *9/11 Contradictions: An Open Letter to Congress and the Press* (2008) he presents chapters on 25 alleged contradictions involving elements of the "accepted story" of 9/11, and calls for Congress and the press to investigate and resolve them.<sup>[19]</sup>

David Ray Griffin has delivered several lectures that are popular within the 9/11 Truth Movement, and has given interviews on alternative media shows such as *The Alex Jones Show*.<sup>[20]</sup> A lecture entitled *9/11 and American Empire: How should religious people respond?*, delivered on April 18, 2005 at the University of Wisconsin–Madison, was aired by C-SPAN.<sup>[21]</sup> At the end of one of his lectures, *9/11: The Myth and the Reality*, Griffin was asked why a theologian would take such an interest in 9/11, to which he replied: "If 9/11 is not a religious issue, then I don't know what is."<sup>[22]</sup>

In a review published in the magazine *The Nation*, former Central Intelligence Agency agent Robert Baer dismissed the gist of Griffin's writings as one in a long line of conspiracy theories about national tragedies, but stated that the Bush administration had created a climate of secrecy and mistrust that helped generate such explanations.<sup>[23]</sup> He later said:

"Until we get a complete, honest, transparent investigation—not one based on 'confession' extracted by torture—we will never know what happened on 9/11. David Griffin will never let this go until we get the truth."<sup>[24]</sup>

## Affiliations

- Center for Process Studies<sup>[26]</sup>
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# Holomovement

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The **holomovement** is a key concept in David Bohm's interpretation of quantum mechanics and for his overall worldview. It brings together the holistic principle of "undivided wholeness" with the idea that everything is in a state of process or becoming (or what he calls the "universal flux"). For Bohm, wholeness is not a static oneness, but a dynamic wholeness-in-motion in which everything moves together in an interconnected process. The concept is presented most fully in *Wholeness and the Implicate Order*, published in 1980.

## Background

The basic idea came to Bohm in the early 1970s, during an extraordinary period of creativity at Birkbeck College in London. The holomovement is one of a number of new concepts which Bohm presented in an effort to move beyond the mechanistic formulations of the standard interpretation of the quantum theory and relativity theory. Along with such concepts as undivided wholeness and the implicate order, the holomovement is central to his formulation of a "new order" in physics which would move beyond the mechanistic order.

## Early development of the idea

In an essay published in 1971, Bohm continued his earlier critique (in "Causality and Chance in Modern Physics") of the mechanistic assumptions behind most modern physics and biology, and spoke of the need for a fundamentally different approach, and for a point of view which would go beyond mechanism. In particular, Bohm objected to the assumption that the world can be reduced to a set of irreducible particles within a three-dimensional Cartesian grid, or even within the four-dimensional curvilinear space of relativity theory. Bohm came instead to embrace a concept of reality as a dynamic movement of the whole: "In this view, there is no ultimate set of separately existent entities, out of which all is supposed to be constituted. Rather, unbroken and undivided movement is taken as a primary notion" (Bohm, 1988, p. 77). He then goes on to paraphrase da Vinci to the effect that movement gives shape to all forms and structure gives order to movement, but adds modern insight when he suggests that "a deeper and more extensive inner movement creates, maintains, and ultimately dissolves structure". (78).

In another article from the same period, "On the Metaphysics and Movement of Universal Fitting", Bohm identifies some of the inadequacies of the mechanistic model, particularly the inability to predict the future movement of complex wholes from the initial conditions, and suggests instead a focus on a general laws of interaction governing the relationship of the parts within a whole: "What we are doing in this essay is to consider what it means to turn this prevailing metaphysics of science 'upside down' by exploring the notion that a kind of art — a movement of fitting together — is what is universal, both in nature and in human activities" (90). This movement of the whole is what he calls here the artamovement, which he defines as the "movement of fitting" (91), and which is clearly related to what he would later call the holomovement.

## Undivided wholeness

The term holomovement is one of many neologisms which Bohm coined in his search to overcome the limitations of the standard Copenhagen interpretation of quantum mechanics. This approach involved not just a critique of the assumptions of the standard model, but a set of new concepts in physics which move beyond the conventional language of quantum mechanics. *Wholeness and the Implicate Order* is the culmination of these reflections, an attempt to show how the new insights provided by a post-Copenhagen model can be extended beyond physics into other domains, such as life, consciousness, and cosmology.

The holomovement concept is introduced in incremental steps. It is first presented under the aspect of wholeness in the lead essay, called "Fragmentation and Wholeness". There Bohm states the major claim of the book: "The new form of insight can perhaps best be called Undivided Wholeness in Flowing Movement" (Bohm, 1980, 11). This

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view implies that flow is, in some sense, prior to that of the 'things' that can be seen to form and dissolve in this flow. He notes how "each relatively autonomous and stable structure is to be understood not as something independently and permanently existent but rather as a product that has been formed in the whole flowing movement and what will ultimately dissolve back into this movement. How it forms and maintains itself, then, depends on its place function within the whole" (14). For Bohm, movement is what is primary; and what seem like permanent structures are only relatively autonomous sub-entities which emerge out of the whole of flowing movement and then dissolve back into it an unceasing process of becoming.

## **All is flux**

The general concept is further refined in the third chapter, "Reality and Knowledge considered as Process", this time under the aspect of movement, or process. "Not only is everything changing, but all is flux. That is to say, what is the process of becoming itself, while all objects, events, entities, conditions, structures, etc., are forms that can be abstracted from this process" (48). His notion of the whole is not a static Parmenidean oneness outside of space and time. Rather, the wholeness to which he refers here is more akin to the Heraclitian flux, or to the process philosophy of Whitehead.

## **Formal presentation**

The formal presentation of the concept comes late in the book, under the general framework of new notions of order in physics. After discussing the concepts of undivided wholeness and the implicate and explicate orders, he presents the formal definition under the subheading "The Holomovement and its Aspects". Consistent with his own earlier Causal Interpretation, and more generally with the de Broglie-Schroedinger approach, he posits that a new kind of description would be appropriate for giving primary relevance to the implicate order. Using the hologram as a model [[link to holographic universe](#)], Bohm argues that the implicate order is enfolded within a more generalized wave structure of the universe-in-motion, or what he calls the holomovement:

Generalizing, so as to emphasize undivided wholeness, we can say that the holomovement, which is an unbroken and undivided totality, 'carries' implicate order. In certain cases, we can abstract particular aspects of the holomovement (e.g. light, electrons, sound, etc.), but more generally, all forms of the holomovement merge and are inseparable. Thus in its totality, the holomovement is not limited in any specifiable way at all. It is not required to conform to any particular order, or to be bounded by any particular measure. Thus, the holomovement is undefinable and immeasurable." (151).

As the interconnected totality of all there is, the holomovement is potentially of an infinite order, and so cannot be pinned down to any one notion of order. It is important to note that Bohm's concepts of the implicate order and the holomovement are significant departures from the earlier "Hidden Variables" interpretation, and the conceptual framework is somewhat different from that articulated in the Bohm-Vigier interpretation, sometimes called the Causal-Stochastic Interpretation, and the interpretations of the proponents of "Bohmian Mechanics", where the general assumption is of an underlying Dirac ether (see F. David Peat's *Introduction to Quantum Implications*). While the concept of the holomovement has been criticized as being "metaphysical", it is actually subtler, while at the same time encompassing the whole range of interconnected physical phenomena.

## **The law of the holomovement: Holonomy**

The starting point for Bohm's articulation of what he means by a "new order in physics" is his notion of wholeness. Thus crucial for understanding the holomovement is his notion of how interconnected phenomena are woven together in an underlying unified fabric of physical law. In the following section, called "Law in the Holomovement", he takes up the question of order, and the laws of organization which relate the parts to each other and to the whole. This is what he calls the "law of the whole", or holonomy. Rather than starting with the parts and

explaining the whole in terms of the parts, Bohm's point of view is just the opposite: he starts with a notion of undivided wholeness and derives the parts as abstractions from the whole. The essential point is that the implicate order and the holomovement imply a way of looking at reality not merely in terms of external interactions between things, but in terms of the internal (enfolded) relationships among things: "The relationships constituting the fundamental law are between the enfolded structures that interweave and inter-penetrate each other, through the whole of space, rather than between the abstracted and separated forms that are manifest to the senses (and to our instruments)" (185).

## Extension to life, consciousness and cosmology

In the final chapter of the book, "The enfolding-unfolding universe and consciousness", Bohm elaborated further on the need for new notions of order of physics, and set forth a general view in which totalities are continually forming and dissolving out of the universal flux, or what he designates as the holomovement. He recapitulates: "Our basic proposal was that what is the holomovement, and that everything is to be explained in terms of forms derived from this holomovement. (178)." And again: "The implicate order has its ground in the holomovement which is, as we have seen, vast, rich, and in a state of unending flux of enfoldment and unfoldment, with laws most of which are only vaguely known (185). As such, the holomovement includes not just physical reality, but life, consciousness and cosmology. As Bohm sums it up at the end of the book: "Our overall approach has thus brought together questions of the nature of the cosmos, of matter in general, of life, and of consciousness. All of these have been considered to be projections of a common ground. This we may call the ground of all that is" (212).

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- 1987. *Science, Order, and Creativity*, with F. David Peat. London: Routledge. 2nd ed. 2000. ISBN 0-415-17182-2. .
- 1993. *The Undivided Universe: An ontological interpretation of quantum theory*, with B.J. Hiley, London: Routledge, ISBN 0-415-12185-X (final work)
- 1998. *On Creativity*, editor Lee Nichol. London: Routledge, hardcover: ISBN 0-415-17395-7, paperback: ISBN 0-415-17396-5, 2004 edition: ISBN 0-415-33640-6
- *Infinite Potential: the Life and Times of David Bohm*, F. David Peat, Reading, Massachusetts: Addison Wesley (1997), ISBN 0-201-40635-7 DavidPeat.com
- *Quantum Implications: Essays in Honour of David Bohm*, (B.J. Hiley, F. David Peat, editors), London: Routledge (1987), ISBN 0-415-06960-2
- *The Quantum Theory of Motion: an account of the de Broglie-Bohm Causal Interpretation of Quantum Mechanics*, Peter R. Holland, Cambridge: Cambridge University Press. (2000) ISBN 0-921-48453-9.

## External links

- "Lifework of David Bohm: River of Truth", article by Will Keepin <sup>[1]</sup>, interview with David Bohm provided and conducted by F. David Peat along with John Briggs, in first issue of *Omni*, January 1987

# David Bohm

David Bohm	
<div></div> <div>David Joseph Bohm (1917-1992)</div>	
Born	December 20, 1917 Wilkes-Barre, Pennsylvania, U.S.
Died	October 27, 1992 (aged 74) London, UK
Residence	United Kingdom
Citizenship	British
Nationality	British
Fields	Physicist
Institutions	Manhattan Project Princeton University University of São Paulo Technion University of Bristol Birkbeck College
Alma mater	Pennsylvania State College California Institute of Technology University of California, Berkeley
Doctoral advisor	Robert Oppenheimer
Doctoral students	Yakir Aharonov David Pines Jeffrey Bub Henri Bortoft
Known for	Bohm-diffusion Bohm interpretation Aharonov-Bohm effect Holographic paradigm Holonomic brain theory Bohm Dialogue
Influences	Albert Einstein Jiddu Krishnamurti Arthur Schopenhauer Georg Wilhelm Friedrich Hegel
Influenced	John Stewart Bell
Notable awards	Fellow of the Royal Society <sup>[1]</sup>

**David Joseph Bohm** FRS<sup>[1]</sup> (20 December 1917 – 27 October 1992) was an American-born British quantum physicist who contributed to theoretical physics, philosophy, neuropsychology, and the Manhattan Project.

## Biography

### Youth and college

Bohm was born in Wilkes-Barre, Pennsylvania to a Hungarian Jewish immigrant father and a Lithuanian Jewish mother. He was raised mainly by his father, a furniture store owner and assistant of the local rabbi. Bohm attended Pennsylvania State College (now The Pennsylvania State University), graduating in 1939, then attended the California Institute of Technology for a year, and then transferred to the theoretical physics group directed by Robert Oppenheimer at the University of California, Berkeley, where he eventually obtained his doctorate degree.

Bohm lived in the same neighborhood as some of Oppenheimer's other graduate students (Giovanni Rossi Lomanitz, Joseph Weinberg, and Max Friedman) and with them became increasingly involved not only with physics, but with radical politics. Bohm became active in organizations like the Young Communist League, the Campus Committee to Fight Conscription, and the Committee for Peace Mobilization all later termed Communist organizations by J. Edgar Hoover's FBI.

### Work and doctorate

#### Manhattan Project contributions

During World War II, the Manhattan Project mobilized much of Berkeley's physics research in the effort to produce the first atomic bomb. Though Oppenheimer had asked Bohm to work with him at Los Alamos (the top-secret laboratory established in 1942 to design the atom bomb), the director of the Manhattan Project, General Leslie Groves, would not approve Bohm's security clearance, after evidence about his politics (Bohm's friend, Joseph Weinberg, had also been suspected for espionage).

Bohm remained in Berkeley, teaching physics, until he completed his Ph.D. in 1943, by an unusually ironic circumstance. According to Peat (see reference below, p. 64), "the scattering calculations (of collisions of protons and deuterons) that he had completed proved useful to the Manhattan Project and were immediately classified. Without security clearance, Bohm was denied access to his own work; not only would he be barred from defending his thesis, he was not even allowed to write his own thesis in the first place!" To satisfy the university, Oppenheimer certified that Bohm had successfully completed the research. He later performed theoretical calculations for the Calutrons at the Y-12 facility in Oak Ridge, used to electromagnetically enrich uranium for use in the bomb dropped on Hiroshima in 1945.

#### McCarthyism leads to Bohm leaving the United States

After the war, Bohm became an assistant professor at Princeton University, where he worked closely with Albert Einstein. In May, 1949, at the beginning of the McCarthyism period, the House Un-American Activities Committee called upon Bohm to testify before it— because of his previous ties to suspected Communists. Bohm, however, pleaded the Fifth amendment right to refuse to testify, and refused to give evidence against his colleagues.

In 1950, Bohm was charged for refusing to answer questions of the Committee and was arrested. He was acquitted in May, 1951, but Princeton University had already suspended him. After the acquittal, Bohm's colleagues sought to have him re-instated to Princeton, and Einstein reportedly wanted Bohm to serve as his assistant. The university, however, did not renew his contract. Bohm then left for Brazil to assume a professorship of Physics at the University of São Paulo.



### Quantum theory and Bohm-diffusion

During his early period, Bohm made a number of significant contributions to physics, particularly to quantum mechanics and relativity theory. As a post-graduate at Berkeley, he developed a theory of plasmas, discovering the electron phenomenon known now as Bohm-diffusion. His first book, *Quantum Theory* published in 1951, was well-received by Einstein, among others. However, Bohm became dissatisfied with the orthodox interpretation of quantum theory, which he had written about in that book, and began to develop his own interpretation (De Broglie–Bohm theory)— a non-local hidden variable deterministic theory the predictions of which agree perfectly with the nondeterministic quantum theory. His work and the EPR argument became the major factor motivating John Bell's inequality, the consequences of which are still being investigated.

### The Aharonov-Bohm effect

In 1955, Bohm relocated to Israel, where he spent two years working at the Technion at Haifa. Here he met Sarah Woolfson (also called *Saral*). The couple married in 1956. In 1957, Bohm relocated to the United Kingdom as a research fellow at the University of Bristol. In 1959, Bohm and his student Yakir Aharonov discovered the Aharonov-Bohm effect, showing how a magnetic field could affect a region of space in which the field had been shielded, although its vector potential did not vanish there. This showed for the first time that the magnetic vector potential, hitherto a mathematical convenience, could have real physical (quantum) effects. In 1961, Bohm was made Professor of Theoretical Physics at the University of London's Birkbeck College, where his collected papers <sup>[2]</sup> are kept.

### The holonomic model of the brain

In collaboration with Stanford neuroscientist Karl Pribram Bohm was involved in the early development of the holonomic model of the functioning of the brain, a model for human cognition that is drastically different from conventionally accepted ideas.<sup>[2]</sup> Bohm worked with Pribram on the theory that the brain operates in a manner similar to a hologram, in accordance with quantum mathematical principles and the characteristics of wave patterns.<sup>[3]</sup>

### Thought as a System

Bohm was alarmed by what he considered an increasing imbalance of not only man and nature, but among peoples, as well as people, themselves. Bohm: "So one begins to wonder what is going to happen to the human race. Technology keeps on advancing with greater and greater power, either for good or for destruction." He goes on to ask:

What is the source of all this trouble? I'm saying that the source is basically in thought. Many people would think that such a statement is crazy, because thought is the one thing we have with which to solve our problems. That's part of our tradition. Yet it looks as if the thing we use to solve our problems with is the source of our problems. It's like going to the doctor and having him make you ill. In fact, in 20% of medical cases we do apparently have that going on. But in the case of thought, it's far over 20%.

In Bohm's view:

...the general tacit assumption in thought is that it's just telling you the way things are and that it's not doing anything - that 'you' are inside there, deciding what to do with the info. But you don't decide what to do with the info. Thought runs you. Thought, however, gives false info that you are running it, that you are the one who controls thought. Whereas actually thought is the one which controls each one of us.

Thought is creating divisions out of itself and then saying that they are there naturally. This is another major feature of thought: Thought doesn't know it is doing something and then it struggles against what it is doing. It doesn't want to know that it is doing it. And thought struggles against the results, trying to avoid those unpleasant results while keeping on with that way of thinking. That is what I call "sustained incoherence".

Bohm thus proposes in his book, *Thought as a System*, a pervasive, systematic nature of thought:

What I mean by "thought" is the whole thing - thought, *felt*, the body, the whole society sharing thoughts - it's all one process. It is essential for me not to break that up, because it's all one process; somebody else's thoughts becomes my thoughts, and vice versa. Therefore it would be wrong and misleading to break it up into my thoughts, your thoughts, my feelings, these feelings, those feelings... I would say that thought makes what is often called in modern language a *system*. A system means a set of connected things or parts. But the way people commonly use the word nowadays it means something all of whose parts are mutually interdependent - not only for their mutual action, but for their meaning and for their existence. A corporation is organized as a system - it has this department, that department, that department. They don't have any meaning separately; they only can function together. And also the body is a system. Society is a system in some sense. And so on.

Similarly, thought is a system. That system not only includes thoughts, "felts" and feelings, but it includes the state of the body; it includes the whole of society - as thought is passing back and forth between people in a process by which thought evolved from ancient times. A system is constantly engaged in a process of development, change, evolution and structure changes...although there are certain features of the system which become relatively fixed. We call this the *structure*.... Thought has been constantly evolving and we can't say when that structure began. But with the growth of civilization it has developed a great deal. It was probably very simple thought before civilization, and now it has become very complex and ramified and has much more incoherence than before.

Now, I say that this system has a fault in it - a "systematic fault". It is not a fault here, there or here, but it is a fault that is all throughout the system. Can you picture that? It is everywhere and nowhere. You may say "I see a problem here, so I will bring my thoughts to bear on this problem". But "my" thought is part of the system. It has the same fault as the fault I'm trying to look at, or a similar fault.

Thought is constantly creating problems that way and then trying to solve them. But as it tries to solve them it makes it worse because it doesn't notice that it's creating them, and the more it thinks, the more problems it creates. (P. 18-19)

### Bohm Dialogue

To address societal problems during his later years, Bohm wrote a proposal for a solution that has become known as "Bohm Dialogue", in which equal status and "free space" form the most important prerequisites of communication and the appreciation of differing personal beliefs. He suggested that if these *Dialogue groups* were experienced on a sufficiently wide scale, they could help overcome the isolation and fragmentation Bohm observed was inherent in society.

### Later years

Bohm continued his work in quantum physics past his retirement in 1987. His final work, the posthumously published *The Undivided Universe: An ontological interpretation of quantum theory* (1993), resulted from a decades-long collaboration with his colleague Basil Hiley. He also spoke to audiences across Europe and North America on the importance of dialogue as a form of sociotherapy, a concept he borrowed from London psychiatrist and practitioner of Group Analysis Patrick De Mare, and had a series of meetings with the Dalai Lama. He was elected Fellow of the Royal Society in 1990.<sup>[1]</sup>

Near the end of his life, Bohm began to experience a recurrence of depression which he had suffered at earlier times in his life. He was admitted to the Maudsley Hospital in South London on 10 May 1991. His condition worsened and it was decided that the only treatment that might help him was electroconvulsive therapy. Bohm's wife consulted psychiatrist David Shainberg, Bohm's long-time friend and collaborator, who agreed that electroconvulsive treatments were probably his only option. Bohm showed improvement from the treatments and was released on 29 August. However, his depression returned and was treated with medication.<sup>[4]</sup>

David Bohm died of a heart failure in Hendon,<sup>[5]</sup> London, on 27 October 1992, aged 74. He had been traveling in a London taxicab on that day; after not getting any response from the passenger in the back seat for a few seconds, the driver turned back and found that Bohm had collapsed.<sup>[6]</sup> David Bohm was widely considered one of the best quantum physicists of all time.<sup>[7]</sup>

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- 1998. *On Creativity*, editor Lee Nichol. London: Routledge, hardcover: ISBN 0-415-17395-7, paperback: ISBN 0-415-17396-5, 2004 edition: ISBN 0-415-33640-6
- 1999. *Limits of Thought: Discussions*, with Jiddu Krishnamurti, London: Routledge, ISBN 0-415-19398-2.
- 1999. *Bohm-Biederman Correspondence: Creativity and Science*, with Charles Biederman. editor Paavo Pylykänen. ISBN 0-415-16225-4.
- 2002. *The Essential David Bohm*. editor Lee Nichol. London: Routledge, ISBN 0-415-26174-0. preface by the Dalai Lama

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  - [2] Comparison between Karl Pribram's "Holographic Brain Theory" and more conventional models of neuronal computation (<http://www.acsa2000.net/bcngroup/jponkp/#chap4>)
  - [3] <http://homepages.ihug.co.nz/~sai/pribram.htm>
  - [4] F. David Peat, *Infinite Potential: The Life and Times of David Bohm*, Reading, MA: Addison Wesley, 1997, pp. 308-317. ISBN 0201328208.
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- "Bohm's Alternative to Quantum Mechanics", David Z. Albert, *Scientific American* (May, 1994)
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  - *Infinite Potential: the Life and Times of David Bohm*, F. David Peat, Reading, MA: Addison Wesley (1997), ISBN 0-201-40635-7 DavidPeat.com (<http://www.f davidpeat.com/>)
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  - *The Quantum Theory of Motion: an account of the de Broglie-Bohm Causal Interpretation of Quantum Mechanics*, Peter R. Holland, Cambridge: Cambridge University Press. (2000) ISBN 0-921-48453-9.

## External links

- David Bohm's ideas about Dialogue (<http://www.david-bohm.net>).
- the David\_Bohm\_Hub ([http://www.thinkg.net/david\\_bohm/](http://www.thinkg.net/david_bohm/)). Includes compilations of David Bohm's life and work in form of texts, audio, video, and pictures.
- Thought Knowledge Perception Institute (<http://www.tkpi.org>) A non-partisan organization that aims to preserve and continue the work of David Bohm and others.
- Lifework of David Bohm: River of Truth ([http://www.vision.net.au/~apaterson/science/david\\_bohm.htm#BOHM'S LEGACY](http://www.vision.net.au/~apaterson/science/david_bohm.htm#BOHM'S%20LEGACY)): Article by Will Keepin ( PDF-version (<http://www.gaia.dk/international/externalarticles/bohm-lifework.pdf>))
- Dialogos (<http://www.dialogos.com>): Consulting group, originally founded by Bohm colleagues William Isaacs and Peter Garrett, aiming to bring Bohm dialogue into organizations.
- quantum mind (<http://www.quantum-mind.co.uk>)
- Interview with David Bohm (<http://www.f davidpeat.com/interviews/bohm.htm>) provided and conducted by F. David Peat along with John Briggs, first issued in *Omni* magazine, January 1987
- David Bohm and Krishnamurti (<http://www.wie.org/j11/peat.asp>)
- Archive of papers at Birkbeck College relating to David Bohm (<http://www.bbk.ac.uk/lib/about/hours/bohm>) and David Bohm at the National Archives (<http://www.nationalarchives.gov.uk/a2a/records.aspx?cat=1832-ncuacs66497&cid=-1#-1>)
- Quantum-Mind (<http://www.quantum-mind.co.uk>)
- Oral History interview transcript with David Bohm 8 May 1981, American Institute of Physics, Niels Bohr Library and Archives (<http://www.aip.org/history/ohilist/4513.html>)
- William Keepin:

# Rolf Sattler

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**Rolf Sattler**, Ph.D., D.Sc. (h.c.), F.L.S., F.R.S.C., (born March 8, 1936) is a Canadian plant morphologist, biologist, philosopher, and educator. He is considered one of the most significant contributors to the field of plant morphology.<sup>[1]</sup> His contributions are not only empirical but involved also a revision of the most fundamental concepts, theories, and philosophical assumptions. As well as being the author of a number of books and nearly a hundred scientific papers, he has contributed to many national and international symposia. He also organized and chaired symposia at international congresses, edited the proceedings of two of them and published them as books.<sup>[2]</sup><sup>[3]</sup>

## Life

Rolf Sattler was born in Göppingen, Germany. He studied botany, zoology, chemistry, philosophy and pedagogy in Germany, Austria, and Switzerland. He received his doctorate, with *summa cum laude*, in systematic botany from the University of Munich. As a postdoctoral fellow, he spent a year with Ludwig von Bertalanffy, one of the founders of general systems theory, at the University of Alberta in Canada. Subsequently, he worked for another year with Ernest M. Gifford and G. Ledyard Stebbins at the University of California. For 33 years, he was first assistant, then associate, and finally full professor in the departments of botany and biology of McGill University in Montreal. He became Emeritus Professor when he retired in 1997. Since retiring he has lived in Kingston, Ontario.

At McGill University he taught botany, biology, the history and philosophy of biology, and biology in relation to the human predicament. As a visiting professor at the University of Berlin in Germany he taught plant morphology and the philosophy of biology. At Cornell University, he was consultant in the Summer Institute on the Philosophy of Biology. And at Naropa Institute he taught a summer course on Modern Biology and Zen.<sup>[4]</sup>

Sattler has lectured at many universities across the globe, including Harvard and the Universities of California, Paris, Berlin, Bonn, Heidelberg, Zurich, Delhi, Malaya, and Singapore.

As well as his research in plant morphology and the philosophy of biology, he has investigated the relation of science and spirituality and is keenly interested in healing thinking<sup>[5]</sup> and holistic alternative medicine.<sup>[6]</sup> He is also interested in developing a process language in which the verb, not the noun or pronoun, plays the primary role.<sup>[7]</sup>

In 1995, he gave a talk on science and spirituality in symposium at the 60th birthday celebrations of the Dalai Lama. There he discussed the relation between science and spirituality with special reference to life science.<sup>[8]</sup>

## Ideas

Sattler's contributions to plant morphology include the empirical, conceptual, theoretical, and philosophical. Together with his coworkers he has contributed a wealth of empirical data on leaf development<sup>[9]</sup> and flower development.<sup>[10]</sup>

His empirical findings led him to revision fundamental concepts of comparative morphology such as the concept of homology and homeosis.<sup>[11]</sup> <sup>[12]</sup> He emphasized that the concepts of homology and homeosis (replacement) should also include partial homology, partial homeosis, and quantitative homology.<sup>[13]</sup>

These revisions led him to question the theoretical and philosophical foundations of comparative morphology. In contrast to mainstream morphology, which tends to be categorical, he provided evidence for a continuum morphology.<sup>[14]</sup> Together with Bernard Jeune, he demonstrated mathematically a continuum of plant forms that spans not only organ categories such as root, stem, and leaf, but also different hierarchical levels of organ systems, organs, and tissues.<sup>[15]</sup> Rutishauser and Isler regard him as one of the major contemporary proponents of continuum morphology (or Fuzzy Arberian Morphology: FAM).<sup>[16]</sup>

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Furthermore, he developed a dynamic morphology or process morphology<sup>[14]</sup> that supersedes the structure/process dualism inherent in almost all biological research. According to process morphology, structures do not have process(es), they *are* process(es).<sup>[17]</sup> He uses principal component analysis, continuum and process morphology, and morphological distance to provide a dynamic approach to structure as process,<sup>[18]</sup> and his work has placed comparative morphology on a more objective plane...<sup>[19]</sup>

The major focus of his philosophical contributions to plant morphology and our understanding of reality has been on process philosophy, integral philosophy, holism, contextualism, perspectivism, and complementarity. Besides hierarchy (holarchy) he underlines the importance of complementary perspectives such as dialectics, holism as undivided wholeness, Yin-Yang, continuum and network views.<sup>[20]</sup> Besides Aristotelian either/or logic, he emphasizes the importance of fuzzy logic. He explores how either/or logic can lead to conflict and even war, whereas fuzzy logic and Yin-Yang thinking can be healing because they connect what either/or logic has torn apart.<sup>[21]</sup> Finally, he also emphasizes that beyond all perspectives is the unnamable, the source, emptiness (in the Buddhist sense), mystery, which is of ultimate importance for healing and total Being.<sup>[22] [23] [24] [25]</sup>

## Awards and honors

Sattler is a Fellow of the Linnean Society of London and a Fellow of the Royal Society of Canada. In 1974 he was awarded the Lawson Medal (the highest award of the Canadian Botanical Association) for his book *Organogenesis of Flowers*.

In 1995 he received an honorary doctorate (D.Sc.) from the Open International University at Colombo, Sri Lanka for his contributions to complementary alternative medicine.

A symposium was dedicated to him on the occasion of his retirement.<sup>[26]</sup>

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# Alan Turing

Alan Mathison Turing	
	
Turing at the time of his election to Fellowship of the Royal Society.	
Born	23 June 1912 Maida Vale, London, England, United Kingdom
Died	7 June 1954 (aged 41) Wilmslow, Cheshire, England, United Kingdom
Residence	United Kingdom
Nationality	British
Fields	Mathematics, Cryptanalysis, Computer science
Institutions	University of Cambridge Government Code and Cypher School National Physical Laboratory University of Manchester
Alma mater	King's College, Cambridge Princeton University
Doctoral advisor	Alonzo Church
Doctoral students	Robin Gandy
Known for	Halting problem Turing machine Cryptanalysis of the Enigma Automatic Computing Engine Turing Award Turing Test Turing patterns
Notable awards	Officer of the Order of the British Empire Fellow of the Royal Society

**Alan Mathison Turing**, OBE, FRS (  <sup>i</sup>ˈtʃʊərɪŋ *tewr-ing*; 23 June 1912 – 7 June 1954), was an English mathematician, logician, cryptanalyst, and computer scientist. He was highly influential in the development of computer science, providing a formalisation of the concepts of "algorithm" and "computation" with the Turing machine, which played a significant role in the creation of the modern computer.<sup>[1]</sup> <sup>[2]</sup> Turing is widely considered to be the father of computer science and artificial intelligence.<sup>[3]</sup>

During the Second World War, Turing worked for the Government Code and Cypher School at Bletchley Park, Britain's codebreaking centre. For a time he was head of Hut 8, the section responsible for German naval cryptanalysis. He devised a number of techniques for breaking German ciphers, including the method of the bombe, an electromechanical machine that could find settings for the Enigma machine. After the war he worked at the



National Physical Laboratory, where he created one of the first designs for a stored-program computer, the ACE.

Towards the end of his life Turing became interested in mathematical biology. He wrote a paper on the chemical basis of morphogenesis,<sup>[4]</sup> and he predicted oscillating chemical reactions such as the Belousov–Zhabotinsky reaction, which were first observed in the 1960s.

Turing's homosexuality resulted in a criminal prosecution in 1952, when homosexual acts were still illegal in the United Kingdom. He accepted treatment with female hormones (chemical castration) as an alternative to prison. He died in 1954, just over two weeks before his 42nd birthday, from cyanide poisoning. An inquest determined it was suicide; his mother and some others believed his death was accidental. On 10 September 2009, following an Internet campaign, British Prime Minister Gordon Brown made an official public apology on behalf of the British government for the way in which Turing was treated after the war.<sup>[5]</sup>

## Childhood and youth

Alan Turing was conceived in India.<sup>[6]</sup> His father, Julius Mathison Turing, was a member of the Indian Civil Service. Julius and wife Ethel Sara Stoney (1881–1976, daughter of Edward Waller Stoney, chief engineer of the Madras Railways) wanted Alan to be brought up in England, so they returned to Maida Vale,<sup>[7]</sup> London, where Alan Turing was born on 23 June 1912, as recorded by a blue plaque on the outside of the building,<sup>[8]</sup> later the Colonnade Hotel.<sup>[6]</sup> <sup>[9]</sup> He had an elder brother, John. His father's civil service commission was still active, and during Turing's childhood years his parents travelled between Hastings, England<sup>[10]</sup> and India, leaving their two sons to stay with a retired Army couple. Very early in life, Turing showed signs of the genius he was to later prominently display.<sup>[11]</sup>

His parents enrolled him at St Michael's, a day school at 20 Charles Road, St Leonards on Sea, at the age of six. The headmistress recognised his talent early on, as did many of his subsequent educators. In 1926, at the age of 14, he went on to Sherborne School, a famous independent school in the market town of Sherborne in Dorset. His first day of term coincided with the General Strike in Britain, but so determined was he to attend his first day that he rode his bicycle unaccompanied more than 60 miles (97 km) from Southampton to school, stopping overnight at an inn.<sup>[12]</sup>

Turing's natural inclination toward mathematics and science did not earn him respect with some of the teachers at Sherborne, whose definition of education placed more emphasis on the classics. His headmaster wrote to his parents: "I hope he will not fall between two stools. If he is to stay at Public School, he must aim at becoming *educated*. If he is to be solely a *Scientific Specialist*, he is wasting his time at a Public School".<sup>[13]</sup> Despite this, Turing continued to show remarkable ability in the studies he loved, solving advanced problems in 1927 without having even studied elementary calculus. In 1928, aged 16, Turing encountered Albert Einstein's work; not only did he grasp it, but he extrapolated Einstein's questioning of Newton's laws of motion from a text in which this was never made explicit.<sup>[14]</sup>



King's College, Cambridge, where the computer room is named after Turing, who became a student there in 1931 and a Fellow in 1935

Turing's hopes and ambitions at school were raised by the close friendship he developed with a slightly older fellow student, Christopher Morcom, who was Turing's first love interest. Morcom died suddenly only a few weeks into their last term at Sherborne, from complications of bovine tuberculosis, contracted after drinking infected cow's milk as a boy.<sup>[15]</sup> Turing's religious faith was shattered and he became an atheist. He adopted the conviction that all phenomena, including the workings of the human brain, must be materialistic,<sup>[16]</sup> but he still believed in the survival of the spirit after death.<sup>[17]</sup>

## University and work on computability



Alan Turing memorial statue in Sackville Park,  
Manchester

After Sherborne, Turing went to study at King's College, Cambridge. He was an undergraduate there from 1931 to 1934, graduating with first-class honours in Mathematics, and in 1935 was elected a fellow at King's on the strength of a dissertation on the central limit theorem.<sup>[18]</sup>

In 1928, German mathematician David Hilbert had called attention to the *Entscheidungsproblem* (decision problem). In his momentous paper "On Computable Numbers, with an Application to the *Entscheidungsproblem*" (submitted on 28 May 1936 and delivered 12 November),<sup>[19]</sup> Turing reformulated Kurt Gödel's 1931 results on the limits of proof and computation, replacing Gödel's universal arithmetic-based formal language with what became known as Turing machines, formal and simple devices. He proved that some such machine would be capable of performing any conceivable mathematical computation if it were representable as an algorithm. He went on to prove that there was no solution to the *Entscheidungsproblem* by first showing that the halting problem for Turing machines is undecidable: it is not possible to decide, in general, algorithmically whether a given Turing machine will ever halt. While

his proof was published subsequent to Alonzo Church's equivalent proof in respect to his lambda calculus, Turing was unaware of Church's work at the time.

Turing's approach is considerably more accessible and intuitive. It was also novel in its notion of a 'Universal (Turing) Machine', the idea that such a machine could perform the tasks of any other machine, or in other words, is provably capable of computing anything that is computable. Turing machines are to this day a central object of study in theory of computation.

In his memoirs Turing wrote that he was disappointed about the reception of this 1936 paper and that only two people had reacted – these being Heinrich Scholz and Richard Bevan Braithwaite.

The paper also introduces the notion of definable numbers.

From September 1936 to July 1938 he spent most of his time at the Institute for Advanced Study, Princeton, New Jersey, studying under Alonzo Church. In addition to his purely mathematical work, he studied cryptology and also built three of four stages of an electro-mechanical binary multiplier.<sup>[20]</sup> In June 1938 he obtained his PhD from Princeton; his dissertation (*Systems of Logic Based on Ordinals*) introduced the concept of ordinal logic and the notion of relative computing, where Turing machines are augmented with so-called oracles, allowing a study of problems that cannot be solved by a Turing machine.

Back in Cambridge, he attended lectures by Ludwig Wittgenstein about the foundations of mathematics.<sup>[21]</sup> The two argued and disagreed, with Turing defending formalism and Wittgenstein arguing that mathematics does not discover any absolute truths but rather invents them.<sup>[22]</sup> He also started to work part-time with the Government Code and Cypher School (GCCS).

## Cryptanalysis

During the Second World War, Turing was a main participant in the efforts at Bletchley Park to break German ciphers. Building on cryptanalysis work carried out in Poland by Marian Rejewski, Jerzy Różycki and Henryk Zygalski from Cipher Bureau before the war, he contributed several insights into breaking both the Enigma machine and the Lorenz SZ 40/42 (a Teleprinter (Teletype) cipher attachment codenamed *Tunny* by the British), and was, for a time, head of Hut 8, the section responsible for reading German naval signals.

From September 1938, Turing had been working part-time (notionally for the British Foreign Office) with the Government Code and Cypher School (GCCS), the British code breaking organisation. He worked on the problem of the German Enigma machine, and collaborated with Dilly Knox, a senior GCCS codebreaker.<sup>[23]</sup> On 4 September 1939, the day after the UK declared war on Germany, Turing reported to Bletchley Park, the wartime station of GCCS.<sup>[24]</sup>

In 1945, Turing was awarded the OBE for his wartime services, but his work remained secret for many years.

Turing had something of a reputation for eccentricity at Bletchley Park. Jack Good, a cryptanalyst who worked with him, is quoted by Ronald Lewin as having said of Turing:

in the first week of June each year he would get a bad attack of hay fever, and he would cycle to the office wearing a service gas mask to keep the pollen off. His bicycle had a fault: the chain would come off at regular intervals. Instead of having it mended he would count the number of times the pedals went round and would get off the bicycle in time to adjust the chain by hand. Another of his eccentricities is that he chained his mug to the radiator pipes to prevent it being stolen.<sup>[25]</sup>

While working at Bletchley, Turing, a talented long-distance runner, occasionally ran the 40 miles (64 km) to London when he was needed for high-level meetings,<sup>[26]</sup> and he was capable of world-class marathon standards.<sup>[27]</sup>

## Turing–Welchman bombe

Within weeks of arriving at Bletchley Park,<sup>[24]</sup> Turing had specified an electromechanical machine which could help break Enigma faster than bomba from 1938, the bombe, named after and building upon the original Polish-designed bomba. The bombe, with an enhancement suggested by mathematician Gordon Welchman, became one of the primary tools, and the major automated one, used to attack Enigma-protected message traffic.

Jack Good opined:

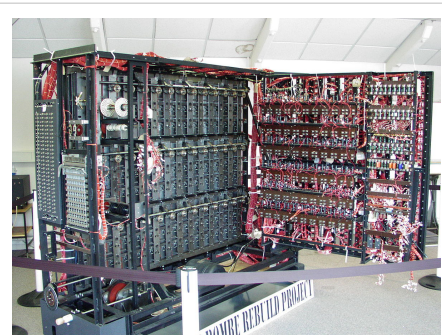
Turing's most important contribution, I *think*, was of part of the design of the bombe, the cryptanalytic machine. He had the idea that you could use, in effect, a theorem in logic which sounds to the untrained ear rather absurd; namely that from a contradiction, you can deduce *everything*.<sup>[28]</sup>

The bombe searched for possibly correct settings used for an Enigma message (i.e., rotor order, rotor settings, etc.), and used a suitable *crib*: a fragment of probable plaintext. For each possible setting of the rotors (which had of the order of  $10^{19}$  states, or  $10^{22}$  for the four-rotor U-boat

variant),<sup>[29]</sup> the bombe performed a chain of logical deductions based on the crib, implemented electrically. The bombe detected when a contradiction had occurred, and ruled out that setting, moving onto the next. Most of the



Two cottages in the stable yard at Bletchley Park. Turing worked here from 1939 to 1940, when he moved to Hut 8.



A complete and working replica of a bombe at Bletchley Park

possible settings would cause contradictions and be discarded, leaving only a few to be investigated in detail. Turing's bombe was first installed on 18 March 1940.<sup>[30]</sup> More than two hundred bombes were in operation by the end of the war.<sup>[31]</sup>

## Hut 8 and Naval Enigma

Turing decided to tackle the particularly difficult problem of German naval Enigma "because no one else was doing anything about it and I could have it to myself".<sup>[33]</sup> In December 1939, Turing solved the essential part of the naval indicator system, which was more complex than the indicator systems used by the other services.<sup>[33]</sup> <sup>[34]</sup> The same night that he solved the naval indicator system, he conceived the idea of *Banburismus*, a sequential statistical technique (what Abraham Wald later called sequential analysis) to assist in breaking naval Enigma, "though I was not sure that it would work in practice, and was not in fact sure until some days had actually broken".<sup>[33]</sup> For this he invented a measure of weight of evidence that he called the *Ban*.

*Banburismus* could rule out certain orders of the Enigma rotors, substantially reducing the time needed to test settings on the bombes.

In 1941, Turing proposed marriage to Hut 8 co-worker Joan Clarke, a fellow mathematician, but their engagement was short-lived. After admitting his homosexuality to his fiancée, who was reportedly "unfazed" by the revelation, Turing decided that he could not go through with the marriage.<sup>[35]</sup>

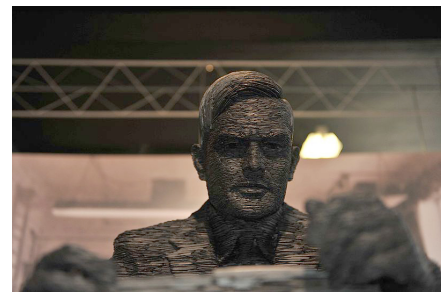
In July 1942, Turing devised a technique termed *Turingery* (or jokingly *Turingismus*)<sup>[36]</sup> for use against the Lorenz cipher messages produced by the Germans' new Geheimschreiber machine (*secret writer*). This was codenamed *Tunny* at Bletchley Park. He also introduced the Tunny team to Tommy Flowers who, under the guidance of Max Newman, went on to build the Colossus computer, the world's first programmable digital electronic computer, which replaced a simpler prior machine (the Heath Robinson) and whose superior speed allowed the brute-force decryption techniques to be applied usefully to the daily changing cyphers.<sup>[37]</sup> A frequent misconception is that Turing was a key figure in the design of Colossus; this was not the case.<sup>[38]</sup>

Turing travelled to the United States in November 1942 and worked with U.S. Navy cryptanalysts on Naval Enigma and bombe construction in Washington, and assisted at Bell Labs with the development of secure speech devices. He returned to Bletchley Park in March 1943. During his absence, Hugh Alexander had officially assumed the position of head of Hut 8, although Alexander had been *de facto* head for some time—Turing having little interest in the day-to-day running of the section. Turing became a general consultant for cryptanalysis at Bletchley Park.

Alexander wrote as follows about his contribution:

There should be no question in anyone's mind that Turing's work was the biggest factor in Hut 8's success. In the early days he was the only cryptographer who thought the problem worth tackling and not only was he primarily responsible for the main theoretical work within the Hut but he also shared with Welchman and Keen the chief credit for the invention of the Bombe. It is always difficult to say that anyone is absolutely indispensable but if anyone was indispensable to Hut 8 it was Turing. The pioneer's work always tends to be forgotten when experience and routine later make everything seem easy and many of us in Hut 8 felt that the magnitude of Turing's contribution was never fully realised by the outside world.<sup>[39]</sup>

In the latter part of the war he moved to work at Hanslope Park, where he further developed his knowledge of electronics with the assistance of engineer Donald Bayley. Together they undertook the design and construction of a portable secure voice communications machine codenamed *Delilah*.<sup>[40]</sup> It was intended for different applications,



Statue of Turing by Stephen Kettle at Bletchley Park, commissioned by the American philanthropist Sidney E Frank.<sup>[32]</sup>



lacking capability for use with long-distance radio transmissions, and in any case, Delilah was completed too late to be used during the war. Though Turing demonstrated it to officials by encrypting/decrypting a recording of a Winston Churchill speech, Delilah was not adopted for use. Turing also consulted with Bell Labs on the development of SIGSALY, a secure voice system that was used in the later years of the war.

## Early computers and the Turing test

From 1945 to 1947 Turing lived in Church Street, Hampton<sup>[41]</sup> while he worked on the design of the ACE (Automatic Computing Engine) at the National Physical Laboratory. He presented a paper on 19 February 1946, which was the first detailed design of a stored-program computer.<sup>[42]</sup> Although ACE was a feasible design, the secrecy surrounding the wartime work at Bletchley Park led to delays in starting the project and he became disillusioned. In late 1947 he returned to Cambridge for a sabbatical year. While he was at Cambridge, the Pilot ACE was built in his absence. It executed its first program on 10 May 1950.

In 1948, he was appointed Reader in the Mathematics Department at Manchester (now part of The University of Manchester). In 1949, he became Deputy Director of the computing laboratory at the University of Manchester, and worked on software for one of the earliest stored-program computers—the Manchester Mark 1. During this time he continued to do more abstract work, and in "Computing machinery and intelligence" (Mind, October 1950), Turing addressed the problem of artificial intelligence, and proposed an experiment which became known as the Turing test, an attempt to define a standard for a machine to be called "intelligent". The idea was that a computer could be said to "think" if a human interrogator could not tell it apart, through conversation, from a human being.<sup>[43]</sup> In the paper, Turing suggested that rather than building a program to simulate the adult mind, it would be better rather to produce a simpler one to simulate a child's mind and then to subject it to a course of education. A reversed form of the Turing test is widely used on the Internet; the CAPTCHA test is intended to determine whether the user is a human or a computer.

In 1948, Turing, working with his former undergraduate colleague, D. G. Champernowne, began writing a chess program for a computer that did not yet exist. In 1952, lacking a computer powerful enough to execute the program, Turing played a game in which he simulated the computer, taking about half an hour per move. The game was recorded.<sup>[44]</sup> The program lost to Turing's colleague Alick Glennie, although it is said that it won a game against Champernowne's wife.

His Turing test was a significant and characteristically provocative and lasting contribution to the debate regarding artificial intelligence, which continues after more than half a century.<sup>[45]</sup>

He also invented the LU decomposition method in 1948, used today for solving an equations matrix.<sup>[46]</sup>

## Pattern formation and mathematical biology

Turing worked from 1952 until his death in 1954 on mathematical biology, specifically morphogenesis. He published one paper on the subject called *The Chemical Basis of Morphogenesis* in 1952, putting forth the Turing hypothesis of pattern formation.<sup>[47]</sup> His central interest in the field was understanding Fibonacci phyllotaxis, the existence of Fibonacci numbers in plant structures. He used reaction–diffusion equations which are central to the field of pattern formation. Later papers went unpublished until 1992 when *Collected Works of A.M. Turing* was published. His contribution is considered a seminal piece of work in this field.<sup>[48]</sup>

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## Conviction for indecency

In January 1952, Turing met Arnold Murray outside a cinema in Manchester. After a lunch date, Turing invited Murray to spend the weekend with him at his house, an invitation which Murray accepted although he did not show up. The pair met again in Manchester the following Monday, when Murray agreed to accompany Turing to the latter's house. A few weeks later Murray visited Turing's house again, and apparently spent the night there.<sup>[49]</sup>

After Murray helped an accomplice to break into his house, Turing reported the crime to the police. During the investigation, Turing acknowledged a sexual relationship with Murray. Homosexual acts were illegal in the United Kingdom at that time,<sup>[50]</sup> and so both were charged with gross indecency under Section 11 of the Criminal Law Amendment Act 1885.<sup>[51]</sup>

Turing was given a choice between imprisonment or probation conditional on his agreement to undergo hormonal treatment designed to reduce libido. He accepted chemical castration via oestrogen hormone injections.<sup>[52]</sup>

Turing's conviction led to the removal of his security clearance, and barred him from continuing with his cryptographic consultancy for GCHQ. His British passport was not revoked, though he was denied entry to the United States after his conviction. At the time, there was acute public anxiety about spies and homosexual entrapment by Soviet agents,<sup>[53]</sup> because of the recent exposure of the first two members of the Cambridge Five, Guy Burgess and Donald Maclean, as KGB double agents. Turing was never accused of espionage but, as with all who had worked at Bletchley Park, was prevented from discussing his war work.<sup>[54]</sup>

## Death

On 8 June 1954, Turing's cleaner found him dead; he had died the previous day. A post-mortem examination established that the cause of death was cyanide poisoning. When his body was discovered an apple lay half-eaten beside his bed, and although the apple was not tested for cyanide,<sup>[55]</sup> it is speculated that this was the means by which a fatal dose was delivered. An inquest determined that he had committed suicide, and he was cremated at Woking Crematorium on 12 June 1954.<sup>[56]</sup> Turing's mother argued strenuously that the ingestion was accidental, caused by her son's careless storage of laboratory chemicals. Biographer Andrew Hodges suggests that Turing may have killed himself in an ambiguous way quite deliberately, to give his mother some plausible deniability.<sup>[57]</sup> David Leavitt has suggested that Turing was re-enacting a scene from the 1937 film *Snow White*, his favourite fairy tale, pointing out that he took "an especially keen pleasure in the scene where the Wicked Witch immerses her apple in the poisonous brew."<sup>[58]</sup>

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## Epitaph

Hyperboloids of wondrous Light  
 Rolling for aye through Space and Time  
 Harbour those Waves which somehow Might  
 Play out God's holy pantomime <sup>[59]</sup>

## Recognition and tributes

A biography published by the Royal Society shortly after Turing's death (and while his wartime work was still subject to the Official Secrets Act) recorded:

Three remarkable papers written just before the war, on three diverse mathematical subjects, show the quality of the work that might have been produced if he had settled down to work on some big problem at that critical time. For his work at the Foreign Office he was awarded the OBE.

\_\_<sup>[1]</sup>

Since 1966, the Turing Award has been given annually by the Association for Computing Machinery to a person for technical contributions to the computing community. It is widely considered to be the computing world's highest honour, equivalent to the Nobel Prize.<sup>[60]</sup>

*Breaking the Code* is a 1986 play by Hugh Whitmore about Alan Turing. The play ran in London's West End beginning in November 1986 and on Broadway from 15 November 1987 to 10 April 1988. There was also a 1996 BBC television production. In all cases, Derek Jacobi played Turing. The Broadway production was nominated for three Tony Awards including Best Actor in a Play, Best Featured Actor in a Play, and Best Direction of a Play, and for two Drama Desk Awards, for Best Actor and Best Featured Actor.

On 23 June 1998, on what would have been Turing's 86th birthday, Andrew Hodges, his biographer, unveiled an official English Heritage Blue Plaque at his birthplace and childhood home in Warrington Crescent, London, later the Colonnade hotel.<sup>[61]</sup> <sup>[62]</sup> To mark the 50th anniversary of his death, a memorial plaque was unveiled on 7 June 2004 at his former residence, Hollymeade, in Wilmslow, Cheshire.<sup>[63]</sup>

On 13 March 2000, Saint Vincent and the Grenadines issued a set of stamps to celebrate the greatest achievements of the twentieth century, one of which carries a recognisable portrait of Turing against a background of repeated 0s and 1s, and is captioned: "1937: Alan Turing's theory of digital computing".

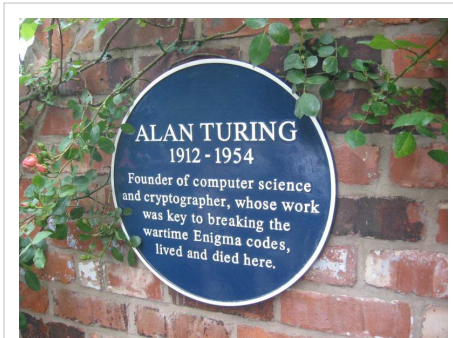
On 28 October 2004, a bronze statue of Alan Turing sculpted by John W Mills was unveiled at the University of Surrey in Guildford, marking the 50th anniversary of Turing's death; it portrays him carrying his books across the campus.<sup>[64]</sup>

In 2006, Boston Pride named Turing their Honorary Grand Marshal.<sup>[65]</sup>

Turing was one of four mathematicians examined in the 2008 BBC documentary entitled "Dangerous Knowledge".<sup>[66]</sup>

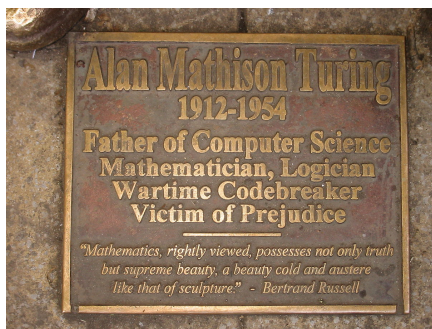
The Princeton Alumni Weekly named Turing the second most significant alumnus in the history of Princeton University, second only to President James Madison.

A 1.5-ton, life-size statue of Turing was unveiled on 19 June 2007 at Bletchley Park. Built from approximately half a million pieces of Welsh slate, it was sculpted by Stephen Kettle, having been commissioned by the late American billionaire Sidney Frank.<sup>[67]</sup>



A Blue Plaque marking Turing's home at Wilmslow, Cheshire

Turing has been honoured in various ways in Manchester, the city where he worked towards the end of his life. In 1994, a stretch of the A6010 road (the Manchester city intermediate ring road) was named Alan Turing Way. A bridge carrying this road was widened, and carries the name Alan Turing Bridge. A statue of Turing was unveiled in Manchester on 23 June 2001. It is in Sackville Park, between the University of Manchester building on Whitworth Street and the Canal Street gay village. The memorial statue, depicts the "father of Computer Science" sitting on a bench at a central position in the park. The statue was unveiled on Turing's birthday.



Turing memorial statue plaque in Sackville Park, Manchester

Turing is shown holding an apple—a symbol classically used to represent forbidden love, the object that inspired Isaac Newton's theory of gravitation, and the means of Turing's own death. The cast bronze bench carries in relief the text 'Alan Mathison Turing 1912–1954', and the motto 'Founder of Computer Science' as it would appear if encoded by an Enigma machine: 'IEKYF ROMSI ADXUO KVKZC GUBJ'.

A plinth at the statue's feet says 'Father of computer science, mathematician, logician, wartime codebreaker, victim of prejudice'. There is also a Bertrand Russell quotation saying 'Mathematics, rightly viewed, possesses not only truth, but supreme beauty—a beauty cold and austere, like that of sculpture.' The sculptor buried his old Amstrad

computer, which was an early popular home computer, under the plinth, as a tribute to "the godfather of all modern computers".<sup>[68]</sup>

In 1999, *Time Magazine* named Turing as one of the 100 Most Important People of the 20th Century for his role in the creation of the modern computer, and stated: "The fact remains that everyone who taps at a keyboard, opening a spreadsheet or a word-processing program, is working on an incarnation of a Turing machine."<sup>[2]</sup> Turing is featured in the 1999 Neal Stephenson novel "Cryptonomicon."

In 2002, Turing was ranked twenty-first on the *BBC* nationwide poll of the 100 Greatest Britons.<sup>[69]</sup>

The logo of Apple computer is often erroneously referred to as a tribute to Alan Turing, with the bite mark a reference to his method of suicide.<sup>[70]</sup> Both the designer of the logo<sup>[71]</sup> and the company deny that there is any homage to Turing in the design of the logo.<sup>[72]</sup>

In 2010, actor/playwright Jade Esteban Estrada portrayed Turing in the solo musical, "ICONS: The Lesbian and Gay History of the World, Vol. 4."

Turing is mentioned several times in the DLC for the 2K Games "Bioshock 2" He is mentioned several times by the voice actor who portrays C.M. Porter. There is also a telegram in Porter's office requesting he come to London and work with Turing. He is also mentioned in Assassin's Creed: Brotherhood, when an employee of Abstergo Industries orders him to be killed and commands the would-be executioner to "make it look biblical".

In February 2011, Turing's papers from the Second World War were bought for the nation with an 11th-hour bid by the National Heritage Memorial Fund, allowing them to stay at Bletchley Park.<sup>[73]</sup>



## Government apology

In August 2009, John Graham-Cumming started a petition urging the British Government to posthumously apologise to Alan Turing for prosecuting him as a homosexual.<sup>[74]</sup> <sup>[75]</sup> The petition received thousands of signatures.<sup>[76]</sup> <sup>[77]</sup> Prime Minister Gordon Brown acknowledged the petition, releasing a statement on 10 September 2009 apologising and describing Turing's treatment as "appalling".<sup>[5]</sup> <sup>[76]</sup>

Thousands of people have come together to demand justice for Alan Turing and recognition of the appalling way he was treated. While Turing was dealt with under the law of the time and we can't put the clock back, his treatment was of course utterly unfair and I am pleased to have the chance to say how deeply sorry I and we all are for what happened to him ... So on behalf of the British government, and all those who live freely thanks to Alan's work I am very proud to say: we're sorry, you deserved so much better.<sup>[76]</sup>

## Tributes by universities

A celebration of Turing's life and achievements arranged by the British Logic Colloquium and the British Society for the History of Mathematics was held on 5 June 2004.

- The University of Surrey has a statue of Turing on their main piazza.
- Istanbul Bilgi University organises an annual conference on the theory of computation called "Turing Days".<sup>[78]</sup>
- The University of Texas at Austin has an honours computer science programme named the Turing Scholars.<sup>[79]</sup>
- In the early 1960s Stanford University named the sole lecture room of the Polya Hall Mathematics building "Alan Turing Auditorium".<sup>[80]</sup>
- One of the amphitheatres of the Computer Science department (LIFL<sup>[81]</sup>) at the University of Lille in northern France is named in honour of Alan M. Turing (the other amphitheatre is named after Kurt Gödel).
- The Department of Computer Science at Pontifical Catholic University of Chile, the Polytechnic University of Puerto Rico, Los Andes University in Bogotá, Colombia, King's College, Cambridge and Bangor University in Wales have computer laboratories named after Turing.
- The University of Manchester, The Open University, Oxford Brookes University and Aarhus University (in Århus, Denmark) all have buildings named after Turing.
- Alan Turing Road in the Surrey Research Park is named for Alan Turing.
- Carnegie Mellon University has a granite bench, situated in The Hornbostel Mall, with the name "A. M. Turing" carved across the top, "Read" down the left leg, and "Write" down the other.
- The École Internationale des Sciences du Traitement de l'Information has named its recently acquired third building "Turing".
- The University of Ghent has one of its main computer rooms (in a building used mostly by mathematicians and computing scientists) named for Alan Turing.
- The University of Oregon has a bust of Turing on the side of the Deschutes Hall, the computer science building.



The Alan Turing Building at the University of Manchester

## Centenary commemoration

To mark the 100th anniversary of Turing's birth, the Turing Centenary Advisory Committee (TCAC) is coordinating the Alan Turing Year, a year-long programme of events around the world honouring Turing's life and achievements. The TCAC working with The University of Manchester faculty members and a broad spectrum of people from Cambridge University and Bletchley Park, is chaired by S. Barry Cooper, with Alan Turing's nephew Sir John Dermot Turing acting as TCAC Honorary President.

Events are scheduled in many countries around the world including the USA, Brazil, China, Czech Republic, the Philippines, New Zealand, Israel, Spain, Norway, Italy, Portugal and Germany. The keystone events will be a three-day conference in Manchester, UK in June examining Turing's mathematical and code-breaking achievements, and a Turing Centenary Conference in Cambridge organised by King's College, Cambridge and the association Computability in Europe.<sup>[82]</sup>



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## External links

- Alan Turing (<http://www.rkbexplorer.com/explorer/#display=person-{http://dblp.rkbexplorer.com/id/people-a27f18ebafc0d76ddb05173ce7b9873d-e0b388b7c1e0985b1371d73ee1fae8b5}>) RKBExplorer
- Alan Turing Year (<http://www.turingcentenary.eu/>)
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- Alan Turing (<http://www.turing.org.uk/>) site maintained by Andrew Hodges including a short biography (<http://www.turing.org.uk/bio/part1.html>)
- AlanTuring.net – Turing Archive for the History of Computing (<http://www.alanturing.net/>) by Jack Copeland
- The Turing Archive (<http://www.turingarchive.org/>) – contains scans of some unpublished documents and material from the Kings College, Cambridge archive
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- Sherborne School Archives ([http://www.sherborne.org/school/School\\_Archives/](http://www.sherborne.org/school/School_Archives/)) – holds papers relating to Alan Turing's time at Sherborne School

## Papers

- An extensive list of Turing's papers, reports and lectures, plus translated versions and collections ([http://bibnetwiki.org/wiki/Category:Alan\\_M.\\_Turing\\_Paper](http://bibnetwiki.org/wiki/Category:Alan_M._Turing_Paper)) BibNetWiki
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- Oral history interview with Donald W. Davies (<http://www.cbi.umn.edu/oh/display.phtml?id=116>), Charles Babbage Institute, University of Minnesota; Davies describes computer projects at the U.K. National Physical Laboratory, from the 1947 design work of Alan Turing to the development of the two ACE computers
- Oral history interview with Nicholas C. Metropolis (<http://www.cbi.umn.edu/oh/display.phtml?id=81>), Charles Babbage Institute, University of Minnesota. Metropolis was the first director of computing services at Los Alamos National Laboratory; topics include the relationship between Alan Turing and John von Neumann

# John B. Cobb

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**John B. Cobb, Jr.** (born February 9, 1925) is an American United Methodist theologian who played a crucial role in the development of process theology. He integrated Alfred North Whitehead's metaphysics into Christianity, and applied it to issues of social justice.

## Biography

John Cobb was born in Kobe, Japan in 1925 to parents who were Methodist missionaries. In 1940, he moved to Georgia to go to high school. After graduation he attended a junior college, Emory College (now Oxford College of Emory University) at Oxford, Georgia. He was deeply devout and held strong moral convictions, fighting racism and prejudice among his peers. Joining the army in 1944, he met intellectuals from other religions including Judaism and Catholicism, who showed him new perspectives. It was about this time that he had a religious experience which led him to become a minister.

These experiences gave him a taste for intellectual thought. He entered an interdepartmental program at the University of Chicago, where he tested his faith by setting out to learn all the modern world's objections to Christianity, so that he could answer to them. His faith did not come out intact. Cobb became disillusioned with much of his previous belief. Hoping to resolve his crisis of faith and reconcile the modern worldview with his Christian faith, he went to University of Chicago Divinity School in 1947. He was successful primarily with the help of Richard McKeon, a philosophical relativist, and Charles Hartshorne, who taught him Whiteheadian metaphysics and philosophy, which Hartshorne had integrated into what would become known as process theology. This gave him renewed confidence in the idea of God. Cobb received his MA in 1949 and PhD in 1952 from the University of Chicago.

After graduating he taught at Candler School of Theology of Emory University until 1958 when he moved to Claremont School of Theology, where he stayed until his retirement in 1990. He collaborated with Lewis S. Ford in 1971 to start a journal called *Process Studies*. In 1973 he worked with David Ray Griffin in founding the Center for Process Studies <sup>[26]</sup>.

## The three trajectories

Cobb came to identify his theological journey as being divided into three trajectories. In the first trajectory, he tried to reconstruct a vision of Christianity applying Whitehead's cosmology. He sought to reconcile the particularity of the Christian faith with the need for pluralism and openness, establishing a christology which demanded tolerance and open-mindedness. He did this by understanding Christ as a "creative transformation", more a process than a person. This creative transformation demanded not just tolerance, but open discourse with other faiths, with the goal of transforming both participants.

The second trajectory, initiated by his son, Cliff, confronted ecological issues from a Whiteheadian perspective. In this trajectory, the two of them collaborated with Herman Daly in writing *For the Common Good: Redirecting the Economy Toward Community, the Environment, and a Sustainable Future* (1989), which constituted Cobb's contribution to economics.

The third trajectory advocated "theology in the service of the church". Here he emphasized the central importance of Christ as the hope of the world, and the church's central importance in proclaiming Christ. He spoke to ethical and communitarian issues regarding the church.

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## Christocentric pluralism

Cobb advocated a theology that managed to be both christocentric and pluralistic in its approach to other faiths. He proclaimed that christocentrism is rooted in Sophia, or divine wisdom, which is the essence of God who is embodied in Christ. He asserted that it requires a Christian to reject arrogance, exclusivism, and dogmatism as obstacles to the christological creative transformation. In this understanding, other religions could approach Christ's essence without actually believing in Christ *per se*. Cobb saw Jesus as the center of history, but not the whole of history. He saw the need to expand this history to include those of other faiths. Even if the christological creative process leads one to displace Christ's central position in that history with something else, he says, that displacement itself is faithful and true to Christ.

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- *God and the World*, Westminster Press, 1969, online edition <sup>[3]</sup>
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- *Liberal Christianity at the Crossroads*, 1973, online edition <sup>[5]</sup>
- *Christ in a Pluralistic Age*, Westminster Press, 1975, online edition <sup>[6]</sup>
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## External links

- Boston University's biography <sup>[13]</sup> of John Cobb, Jr.
  - Center for Process Studies <sup>[26]</sup>
  - Claremont School of Theology <sup>[14]</sup>
  - Sustainable Communities Network <sup>[15]</sup>
  - Progressive Christians Uniting, co-founded by John Cobb with Rev. George Regas <sup>[16]</sup>
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# Hans Jonas

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## Hans Jonas

<b>Full name</b>	Hans Jonas
<b>Born</b>	10 May 1903 Mönchengladbach, Germany
<b>Died</b>	5 February 1993 (aged 89) New Rochelle, New York, USA
<b>Era</b>	20th-century philosophy
<b>Region</b>	Western Philosophers
<b>School</b>	Continental Philosophy
<b>Main interests</b>	Bioethics, Political Science, Religion

**Hans Jonas** (10 May 1903 – 5 February 1993) was a German-born philosopher who was, from 1955 to 1976, Alvin Johnson Professor of Philosophy at the New School for Social Research in New York City.

Jonas's writings were very influential in different spheres. For example, *The Gnostic Religion*, first published in 1958, was for many years the standard work in English on the subject of Gnosticism. *The Imperative of Responsibility* (German 1979, English 1984) centers on social and ethical problems created by technology. Jonas insists that human survival depends on our efforts to care for our planet and its future. He formulated a new and distinctive supreme principle of morality: "Act so that the effects of your action are compatible with the permanence of genuine human life".

While *The Imperative of Responsibility* has been credited with catalyzing the environmental movement in Germany, his work *The Phenomenon of Life* (1966) forms the philosophical undergirding of one major school of bioethics in America. Murray Bookchin and Leon Kass both referred to Hans Jonas's work as major, or primary, inspiration. Heavily influenced by Heidegger, *The Phenomenon of Life* attempts to synthesize the philosophy of matter with the philosophy of mind, producing a rich existential understanding of biology, which ultimately argues for a simultaneously material and moral human nature.

His writing on Gnosticism interprets the religion from an existentialist philosophical viewpoint. Jonas was the first author to write a detailed history of ancient Gnosticism. He was also one of the first philosophers to concern himself with ethical questions in biological science.<sup>[1]</sup>

Jonas's career is generally divided into three periods defined by the three works just mentioned, but in reverse order: studies of gnosticism, studies of philosophical biology, and ethical studies.<sup>[2]</sup>

## Biography

Jonas was born in Mönchengladbach, on 10 May 1903. He studied philosophy and theology in Freiburg, Berlin and Heidelberg, and finally achieved his Doctor of Philosophy at Marburg where he studied under Edmund Husserl, Martin Heidegger, and Rudolf Bultmann.<sup>[3]</sup> In Marburg he met Hannah Arendt, who was also pursuing her PhD. there, and the two of them were to remain friends for the rest of their lives.

In 1933, Heidegger joined the German Nazi party, which Jonas took personally as he was of Jewish descent and an active Zionist. The fact that the great philosopher was capable of such political folly made Jonas doubt the value of philosophy. He left Germany for England in the same year, and from England he moved to Palestine in 1934. There he met Lore Weiner, to whom he became betrothed. In 1940 he returned to Europe to join the British Army, who had been arranging a special brigade for German Jews wanting to fight against Hitler (See *The Jewish Brigade*). He was sent to Italy, and in the last phase of the war moved into Germany. Thus, he kept his promise that he would return only as a soldier in the victorious army. In this time he wrote several letters to Lore about philosophy as well as love. They finally married in 1943.

Immediately after the war he returned to Mönchengladbach to search for his mother, but found that she had been sent to the gas chambers in the Auschwitz concentration camp. Having heard this, he refused to live in Germany again. So he returned to Palestine and took part in Israel's war of independence in 1948. However, he felt that his destiny was not to live as a Zionist, but to teach philosophy. Jonas taught briefly at the Hebrew University of Jerusalem before moving to North America. In 1950 he left for Canada, teaching at Carleton University. From there he moved in 1955 to New York City, where he was to live for the rest of his life. He was a fellow of the Hastings Center and Professor of Philosophy at New School for Social Research 1955 to 1976 (where he was Alvin Johnson Professor). From 1982 to 1983 Jonas held the Eric Voegelin Visiting Professorship at the University of Munich.<sup>[4]</sup> He died at his home in New Rochelle, N.Y., on February 5, 1993, aged 89.<sup>[5]</sup>



Birth house of Hans Jonas in Mönchengladbach



In front of the house, two Stolpersteine were installed in 2008. The left one commemorates the philosopher's mother Rosa Jonas, murdered in Auschwitz in 1942

## Works

### English books

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- *The Phenomenon of Life: Toward a Philosophical Biology* (New York, Harper & Row, 1966) OCLC 373876 (Evanston, Ill. : Northwestern University Press, 2001). ISBN 0-8101-1749-5
- *The Imperative of Responsibility: In Search of Ethics for the Technological Age* (trans. of *Das Prinzip Verantwortung*) trans. Hans Jonas and David Herr (1979). ISBN 0-226-40597-4 (University of Chicago Press, 1984) ISBN 0-226-40596-6

- *Philosophical Essays: From Ancient Creed to Technological Man* (Chicago: University of Chicago Press, 1974) ISBN 0-226-40591-5
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  - "Seventeenth Century and After: The Meaning of the Scientific and Technological Revolution"
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  - "Philosophical Reflections on Experimenting with Human Subjects"
  - "Against the Stream: Comments on the Definition and Redefinition of Death"
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- *Augustin und das paulinische Freiheitsproblem. Ein philosophischer Beitrag zur Genesis der christlich-abendländischen Freiheitsidee*, Göttingen: Vandenhoeck & Ruprecht, 1930. Second edition entitled *Augustin und das paulinische Freiheitsproblem. Eine philosophische Studie zum pelagianischen Streit*, with an introduction by J. M. Robinson. Göttingen: Vandenhoeck & Ruprecht, 1965.

## French

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- [4] [http://books.google.com/books?id=rEu61KIK6FYC&pg=PA167&lpg=PA167&dq=voegelin+hans+jonas&source=web&ots=zU6iNo95S3&sig=URhgwghOXKgP8Hbo0pK0H5LAo-I&hl=en&sa=X&oi=book\\_result&resnum=10&ct=result#PPA168,M1](http://books.google.com/books?id=rEu61KIK6FYC&pg=PA167&lpg=PA167&dq=voegelin+hans+jonas&source=web&ots=zU6iNo95S3&sig=URhgwghOXKgP8Hbo0pK0H5LAo-I&hl=en&sa=X&oi=book_result&resnum=10&ct=result#PPA168,M1)
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## Further reading

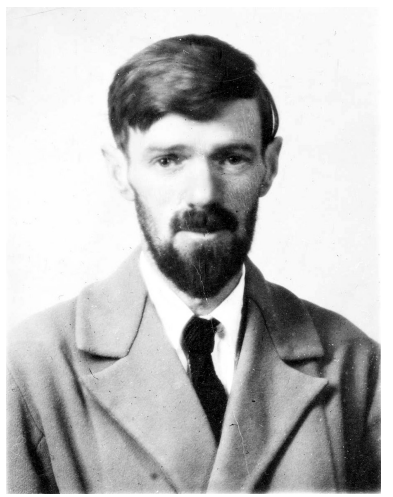
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  - Leon R. Kass, "Appreciating *The Phenomenon of Life*," p. 3.
  - Richard J. Bernstein, "Rethinking Responsibility," p. 13.
  - Strachan Donnelley, "Bioethical Troubles: Animal Individuals and Human Organisms," p. 21.
  - Lawrence Vogel, "Does Environmental Ethics Need a Metaphysical Grounding?," p. 30.
  - Christian Schütze, "The Political and Intellectual Hans Jonas," p. 40.
  - "Not Compassion Alone: On Euthanasia and Ethics" (interview with Jonas), p. 44.
- Hava Tirosh-Samuelson and Christian Wiese, eds., *The Legacy of Hans Jonas: Judaism and the Phenomenon of Life* (Brill, 2008). ISBN 90-04-16722-6, Table of contents (<http://www.sussex.ac.uk/cgjs/1-2-10-15.html>).

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## External links

- (German) Hans-Jonas-Center Berlin (<http://www.hans-jonas-zentrum.de/>)
- Review of *Memoirs* ([http://www.powells.com/review/2008\\_11\\_06.html](http://www.powells.com/review/2008_11_06.html))

# D. H. Lawrence

D. H. Lawrence	
	
<b>Born</b>	David Herbert Richards Lawrence 11 September 1885 Eastwood, Nottinghamshire, England
<b>Died</b>	2 March 1930 (aged 44) Vence, France
<b>Occupation</b>	Novelist
<b>Nationality</b>	British
<b>Period</b>	1907–1930
<b>Genres</b>	modernism
<b>Subjects</b>	the social subject, travel, literary criticism
<b>Notable work(s)</b>	<b>Novel:</b> Sons and Lovers, The Rainbow, Women in Love, Lady Chatterley's Lover <b>Short Story:</b> Odour of Chrysanthemums, Daughters of the Vicar, The Man who loved Islands <b>Play:</b> The Widowing of Mrs Holroyd

**David Herbert Richards Lawrence** (11 September 1885 – 2 March 1930) was an English novelist, poet, playwright, essayist, literary critic and painter. His collected works represent an extended reflection upon the dehumanising effects of modernity and industrialisation. In them, Lawrence confronts issues relating to emotional health and vitality, spontaneity, and instinct.

Lawrence's opinions earned him many enemies and he endured official persecution, censorship, and misrepresentation of his creative work throughout the second half of his life, much of which he spent in a voluntary exile he called his "savage pilgrimage."<sup>[1]</sup> At the time of his death, his public reputation was that of a pornographer who had wasted his considerable talents. E. M. Forster, in an obituary notice, challenged this widely held view, describing him as, "The greatest imaginative novelist of our generation."<sup>[2]</sup> Later, the influential Cambridge critic F. R. Leavis championed both his artistic integrity and his moral seriousness, placing much of Lawrence's fiction within the canonical "great tradition" of the English novel. Lawrence is now valued by many as a visionary thinker and significant representative of modernism in English literature.



## Life and career

### Early life

The fourth child of Arthur John Lawrence, a barely literate miner, and Lydia (née Beardsall), a former schoolmistress,<sup>[3]</sup> Lawrence spent his formative years in the coal mining town of Eastwood, Nottinghamshire. The house in which he was born, in Eastwood, 8a Victoria Street, is now the D.H. Lawrence Birthplace Museum.<sup>[4]</sup> His working class background and the tensions between his parents provided the raw material for a number of his early works. Lawrence would return to this locality and often wrote about nearby Underwood, calling it; "the country of my heart,"<sup>[5]</sup> as a setting for much of his fiction.

The young Lawrence attended Beauvale Board School (now renamed Greasley Beauvale D. H. Lawrence Primary School in his honour) from 1891 until 1898, becoming the first local pupil to win a County Council scholarship to Nottingham High School in nearby Nottingham. He left in 1901, working for three months as a junior clerk at Haywood's surgical appliances factory, but a severe bout of pneumonia, reportedly the result of being accosted by a group of factory girls (as detailed by school friend, George Neville), ended this career. Whilst convalescing he often visited Hagg's Farm, the home of the Chambers family, and began a friendship with Jessie Chambers. An important aspect of this relationship with Jessie and other adolescent acquaintances was a shared love of books, an interest that lasted throughout Lawrence's life. In the years 1902 to 1906 Lawrence served as a pupil teacher at the British School, Eastwood. He went on to become a full-time student and received a teaching certificate from University College Nottingham in 1908. During these early years he was working on his first poems, some short stories, and a draft of a novel, *Laetitia*, that was eventually to become *The White Peacock*. At the end of 1907 he won a short story competition in the *Nottingham Guardian*, the first time that he had gained any wider recognition for his literary talents.



D. H. Lawrence at age 21 in 1906

### Early career

In the autumn of 1908 the newly qualified Lawrence left his childhood home for London. While teaching in Davidson Road School, Croydon, he continued writing. Some of the early poetry, submitted by Jessie Chambers, came to the attention of Ford Madox Ford, then known as Ford Hermann Hueffer and editor of the influential *The English Review*. Hueffer then commissioned the story *Odour of Chrysanthemums* which, when published in that magazine, encouraged Heinemann, a London publisher, to ask Lawrence for more work. His career as a professional author now began in earnest, although he taught for a further year. Shortly after the final proofs of his first published novel *The White Peacock* appeared in 1910, Lawrence's mother died. She had been ill with cancer. The young man was devastated and he was to describe the next few months as his "sick year." It is clear that Lawrence had an extremely close relationship with his mother and his grief following her death became a major turning point in his life, just as the death of Mrs. Morel forms a major turning point in his autobiographical novel *Sons and Lovers*, a work that draws upon much of the writer's provincial upbringing.

In 1911 Lawrence was introduced to Edward Garnett, a publisher's reader, who acted as a mentor, provided further encouragement, and became a valued friend, as Garnett's son David was also. Throughout these months the young author revised *Paul Morel*, the first draft of what became *Sons and Lovers*. In addition, a teaching colleague, Helen Corke, gave him access to her intimate diaries about an unhappy love affair, which formed the basis of *The Trespasser*, his second novel. In November 1911, he came down with a pneumonia again; once he recovered,

Lawrence decided to abandon teaching in order to become a full time author. He also broke off an engagement to Louie Burrows, an old friend from his days in Nottingham and Eastwood.

In March 1912 Lawrence met Frieda Weekley (*nee* von Richthofen), with whom he was to share the rest of his life. She was six years older than her new lover, married to Lawrence's former modern languages professor from University College, Nottingham, Ernest Weekley, and with three young children. She eloped with Lawrence to her parents' home in Metz, a garrison town then in Germany near the disputed border with France. Their stay here included Lawrence's first brush with militarism, when he was arrested and accused of being a British spy, before being released following an intervention from Frieda Weekley's father. After this encounter Lawrence left for a small hamlet to the south of Munich, where he was joined by Weekley for their "honeymoon", later memorialised in the series of love poems titled *Look! We Have Come Through* (1917).

From Germany they walked southwards across the Alps to Italy, a journey that was recorded in the first of his travel books, a collection of linked essays titled *Twilight in Italy* and the unfinished novel, *Mr Noon*. During his stay in Italy, Lawrence completed the final version of *Sons and Lovers* that, when published in 1913, was acknowledged to represent a vivid portrait of the realities of working class provincial life. Lawrence though, had become so tired of the work that he allowed Edward Garnett to cut about a hundred pages from the text.

Lawrence and Frieda returned to England in 1913 for a short visit. At this time, he now encountered and befriended critic John Middleton Murry and New Zealand-born short story writer Katherine Mansfield. Lawrence and Weekley soon went back to Italy, staying in a cottage in Fiascherino on the Gulf of Spezia. Here he started writing the first draft of a work of fiction that was to be transformed into two of his better-known novels, *The Rainbow* and *Women in Love*. While writing *Women in Love* in Cornwall during 1916–17, Lawrence developed a strong and possibly romantic relationship with a Cornish farmer named William Henry Hocking.<sup>[6]</sup> Although it is not absolutely clear if their relationship was sexual, Lawrence's wife, Frieda Weekley, said she believed it was. Lawrence's fascination with themes of homosexuality could also be related to his own sexual orientation. This theme is also overtly manifested in *Women in Love*. Indeed, in a letter written during 1913, he writes, "I should like to know why nearly every man that approaches greatness tends to homosexuality, whether he admits it or not..."<sup>[7]</sup> He is also quoted as saying, "I believe the nearest I've come to perfect love was with a young coal-miner when I was about 16."<sup>[8]</sup>

Eventually, Weekley obtained her divorce. The couple returned to England shortly before the outbreak of World War I and were married on 13 July 1914. In this time, Lawrence worked with London intellectuals and writers such as Dora Marsden and the people involved with *The Egoist* (T.S. Eliot, Ezra Pound, and others). *The Egoist*, an important Modernist literary magazine, published some of his work. He was also reading and adapting Marinetti's *Futurist Manifesto*.<sup>[9]</sup> He also met at this time the young Jewish artist Mark Gertler, and they became for a time good friends; Lawrence would describe Gertler's 1916 anti-war painting, 'The Merry-Go-Round' as 'the best *modern* picture I have seen: I think it is great and true.'<sup>[10]</sup> Gertler would inspire the character Loerke (a sculptor) in *Women in Love*. Weekley's German parentage and Lawrence's open contempt for militarism meant that they were viewed with suspicion in wartime England and lived in near destitution. *The Rainbow* (1915) was suppressed after an investigation into its alleged obscenity in 1915. Later, they were accused of spying and signalling to German submarines off the coast of Cornwall where they lived at Zennor. During this period he finished *Women in Love*. In it Lawrence explores the destructive features of contemporary civilization through the evolving relationships of four major characters as they reflect upon the value of the arts, politics, economics, sexual experience, friendship and marriage. This book is a bleak, bitter vision of humanity and proved impossible to publish in wartime conditions. Not published until 1920, it is now widely recognised as an English novel of great dramatic force and intellectual subtlety.

In late 1917, after constant harassment by the armed forces authorities, Lawrence was forced to leave Cornwall at three days' notice under the terms of the Defence of the Realm Act (DORA). This persecution was later described in an autobiographical chapter of his Australian novel *Kangaroo*, published in 1923. He spent some months in early 1918 in the small, rural village of Hermitage near Newbury, Berkshire. He then lived for just under a year (mid-1918

to early 1919) at Mountain Cottage, Middleton-by-Wirksworth, Derbyshire, where he wrote one of his most poetic short stories, *The Wintry Peacock*. Until 1919 he was compelled by poverty to shift from address to address and barely survived a severe attack of influenza.

## Exile

After the traumatic experience of the war years, Lawrence began what he termed his 'savage pilgrimage', a time of voluntary exile. He escaped from England at the earliest practical opportunity, to return only twice for brief visits, and with his wife spent the remainder of his life travelling. This wanderlust took him to Australia, Italy, Ceylon (now called Sri Lanka), the United States, Mexico and the South of France.

Lawrence abandoned England in November 1919 and headed south, first to the Abruzzi region in central Italy and then onwards to Capri and the Fontana Vecchia in Taormina, Sicily. From Sicily he made brief excursions to Sardinia, Monte Cassino, Malta, Northern Italy, Austria and Southern Germany. Many of these places appeared in his writings. New novels included *The Lost Girl* (for which he won the James Tait Black Memorial Prize for fiction), *Aaron's Rod* and the fragment titled *Mr Noon* (the first part of which was published in the Phoenix anthology of his works, and the entirety in 1984). He experimented with shorter novels or novellas, such as *The Captain's Doll*, *The Fox* and *The Ladybird*. In addition, some of his short stories were issued in the collection *England, My England and Other Stories*. During these years he produced a number of poems about the natural world in *Birds, Beasts and Flowers*. Lawrence is widely recognised as one of the finest travel writers in the English language. *Sea and Sardinia*, a book that describes a brief journey from Taormina undertaken in January 1921, is a recreation of the life of the inhabitants of this part of the Mediterranean. Less well known is the brilliant memoir of Maurice Magnus, *Memoirs of the Foreign Legion*, in which Lawrence recalls his visit to the monastery of Monte Cassino. Other non-fiction books include two studies of Freudian psychoanalysis and *Movements in European History*, a school textbook that was published under a pseudonym, a reflection of his blighted reputation in England.

## Later life and career

In late February 1922 the Lawrences left Europe behind with the intention of migrating to the United States. They sailed in an easterly direction, first to Ceylon and then on to Australia. A short residence in Darlington, Western Australia, which included an encounter with local writer Mollie Skinner, was followed by a brief stop in the small coastal town of Thirroul, New South Wales, during which Lawrence completed *Kangaroo*, a novel about local fringe politics that also revealed a lot about his wartime experiences in Cornwall.

The Lawrences finally arrived in the US in September 1922. Here they encountered Mabel Dodge Luhan, a prominent socialite, and considered establishing a utopian community on what was then known as the 160-acre (0.65 km<sup>2</sup>) Kiowa Ranch near Taos, New Mexico. They acquired the property, now called the D. H. Lawrence Ranch, in 1924 in exchange for the manuscript of *Sons and Lovers*. He stayed in New Mexico for two years, with extended visits to Lake Chapala and Oaxaca in Mexico. While Lawrence was in New Mexico, he was visited by Aldous Huxley.

While in the U.S., Lawrence rewrote and published *Studies in Classic American Literature*, a set of critical essays begun in 1917, and later described by Edmund Wilson as "one of the few first-rate books that have ever been written on the subject." These interpretations, with their insights into symbolism, New England Transcendentalism and the puritan sensibility, were a significant factor in the revival of the reputation of Herman Melville during the early 1920s. In addition, Lawrence completed a number of new fictional works, including *The Boy in the Bush*, *The Plumed Serpent*, *St Mawr*, *The Woman who Rode Away*, *The Princess* and assorted short stories. He also found time to produce some more travel writing, such as the collection of linked excursions that became *Mornings in Mexico*.

A brief voyage to England at the end of 1923 was a failure and he soon returned to Taos, convinced that his life as an author now lay in America. However, in March 1925 he suffered a near fatal attack of malaria and tuberculosis while on a third visit to Mexico. Although he eventually recovered, the diagnosis of his condition obliged him to return

once again to Europe. He was dangerously ill and poor health limited his ability to travel for the remainder of his life. The Lawrences made their home in a villa in Northern Italy, living near to Florence while he wrote *The Virgin and the Gipsy* and the various versions of *Lady Chatterley's Lover* (1928). The latter book, his last major novel, was initially published in private editions in Florence and Paris and reinforced his notoriety. Lawrence responded robustly to those who claimed to be offended, penning a large number of satirical poems, published under the title of "Pansies" and "Nettles", as well as a tract on *Pornography and Obscenity*.

The return to Italy allowed Lawrence to renew old friendships; during these years he was particularly close to Aldous Huxley, who was to edit the first collection of Lawrence's letters after his death, along with a memoir. With artist Earl Brewster, Lawrence visited a number of local archaeological sites in April 1927. The resulting essays describing these visits to old tombs were written up and collected together as *Sketches of Etruscan Places*, a book that contrasts the lively past with Benito Mussolini's fascism. Lawrence continued to produce fiction, including short stories and *The Escaped Cock* (also published as *The Man Who Died*), an unorthodox reworking of the story of Jesus Christ's Resurrection. During these final years Lawrence renewed a serious interest in oil painting. Official harassment persisted and an exhibition of some of these pictures at the Warren Gallery in London was raided by the police in mid 1929 and a number of works were confiscated. Nine of the Lawrence oils have been on permanent display in the La Fonda Hotel in Taos<sup>[11]</sup> since shortly after Frieda's death. They hang in a small gallery just off the main lobby and are available for viewing.

## Death

Lawrence continued to write despite his failing health. In his last months he wrote numerous poems, reviews and essays, as well as a robust defence of his last novel against those who sought to suppress it. His last significant work was a reflection on the Book of Revelation, *Apocalypse*. After being discharged from a sanatorium, he died at the Villa Robermond in Vence, France, from complications of tuberculosis. Frieda Weekley commissioned an elaborate headstone for his grave bearing a mosaic of his adopted emblem of the phoenix.<sup>[12]</sup> After Lawrence's death, Frieda married Angelo Ravagli. She returned to live on the ranch in Taos and later her third husband brought Lawrence's ashes to rest there in a small chapel set amid the mountains of New Mexico. The headstone has recently been donated to D.H. Lawrence Heritage and is now on display in the D.H. Lawrence Birthplace Museum in his home town of Eastwood, Nottinghamshire.

## Views



Final resting place, east of Taos, New Mexico, USA



D.H. Lawrence Birthplace Museum in Eastwood, Nottinghamshire.

Critic and admirer Terry Eagleton situates Lawrence on the radical right wing, as hostile to democracy, liberalism, socialism, and egalitarianism, though never actually embracing fascism.<sup>[13]</sup> Some of Lawrence's beliefs can be seen in his letters to Bertrand Russell around the year 1915, where he voices his opposition to enfranchising the working class, his hostility to the burgeoning labour movements, and disparages the French Revolution, referring to "Liberty, Equality, and Fraternity" as the "three-fanged serpent." Rather than a republic, Lawrence called for an absolute Dictator and equivalent Dictatrix to lord over the lower peoples.<sup>[14]</sup>

Lawrence continued throughout his life to develop his highly personal philosophy, many aspects of which would prefigure the counterculture of the 1960s. His unpublished introduction to *Sons and Lovers* established the duality central to much of his fiction. This is done with reference to the Holy Trinity. As his philosophy develops, Lawrence moves away from more direct Christian analogies and instead touches upon Mysticism, Buddhism, and Pagan theologies. In some respects, Lawrence was a forerunner of the growing interest in the occult that occurred in the 20th century.

## Written works

### Novels

Lawrence is perhaps best known for his novels *Sons and Lovers*, *The Rainbow*, *Women in Love* and *Lady Chatterley's Lover*. Within these Lawrence explores the possibilities for life and living within an industrial setting. In particular Lawrence is concerned with the nature of relationships that can be had within such settings. Though often classed as a realist, Lawrence's use of his characters can be better understood with reference to his philosophy. His depiction of sexual activity, though shocking at the time, has its roots in this highly personal way of thinking and being. It is worth noting that Lawrence was very interested in human touch behaviour (see Haptics) and that his interest in physical intimacy has its roots in a desire to restore our emphasis on the body, and re-balance it with what he perceived to be western civilisation's slow process of over-emphasis on the mind. In his later years Lawrence developed the potentialities of the short novel form in *St Mawr*, *The Virgin and the Gypsy* and *The Escaped Cock*.

### Short stories

Lawrence's best-known short stories include *The Captain's Doll*, *The Fox*, *The Ladybird*, *Odour of Chrysanthemums*, *The Princess*, *The Rocking-Horse Winner*, *St Mawr*, *The Virgin and the Gypsy* and *The Woman who Rode Away*. (*The Virgin and the Gypsy* was published as a novella after he died.) Among his most praised collections is *The Prussian Officer and Other Stories*, published in 1914. His collection *The Woman Who Rode Away and Other Stories*, published in 1928, develops his themes of leadership that he also explored in novels such as *Kangaroo*, *The Plumed Serpent* and *Fanny and Annie*.

### Poetry

Although best known for his novels, Lawrence wrote almost 800 poems, most of them relatively short. His first poems were written in 1904 and two of his poems, *Dreams Old* and *Dreams Nascent*, were among his earliest published works in *The English Review*. His early works clearly place him in the school of Georgian poets, a group not only named after the reigning monarch but also to the romantic poets of the previous Georgian period whose work they were trying to emulate. What typified the entire movement, and Lawrence's poems of the time, were well-worn poetic tropes and deliberately archaic language. Many of these poems displayed what John Ruskin referred to as the "pathetic fallacy, which is the tendency to ascribe human emotions to animals and even inanimate objects.

Just as World War I dramatically changed the work of many of the poets who saw service in the trenches, Lawrence's own work saw a dramatic change, during his years in Cornwall. During this time, he wrote free verse influenced by Walt Whitman. He set forth his manifesto for much of his later verse in the introduction to *New*

*Poems*. "We can get rid of the stereotyped movements and the old hackneyed associations of sound or sense. We can break down those artificial conduits and canals through which we do so love to force our utterance. We can break the stiff neck of habit...But we cannot positively prescribe any motion, any rhythm."

Lawrence rewrote many of his novels several times to perfect them and similarly he returned to some of his early poems when they were collected in 1928. This was in part to fictionalise them, but also to remove some of the artifice of his first works. As he put in himself: "A young man is afraid of his demon and puts his hand over the demon's mouth sometimes and speaks for him." His best known poems are probably those dealing with nature such as those in *Birds Beasts and Flowers* and *Tortoises*. *Snake*, one of his most frequently anthologised, displays some of his most frequent concerns; those of man's modern distance from nature and subtle hints at religious themes.

In the deep, strange-scented shade of the great dark carob tree  
I came down the steps with my pitcher  
And must wait, must stand and wait, for there he was at the trough before me.  
(Excerpt, "Snake")

*Look! We have come through!* is his other work from the period of the end of the war and it reveals another important element common to much of his writings; his inclination to lay himself bare in his writings. Although Lawrence could be regarded as a writer of love poems, his usually deal in the less romantic aspects of love such as sexual frustration or the sex act itself. Ezra Pound in his *Literary Essays* complained of Lawrence's interest in his own "disagreeable sensations" but praised him for his "low-life narrative." This is a reference to Lawrence's dialect poems akin to the Scots poems of Robert Burns, in which he reproduced the language and concerns of the people of Nottinghamshire from his youth.

Tha thought tha wanted ter be rid o' me.  
'Appen tha did, an' a'.  
Tha thought tha wanted ter marry an' se  
If ter couldna be master an' th' woman's boss,  
Tha'd need a woman different from me,  
An' tha knowed it; ay, yet tha comes across  
Ter say goodbye! an' a'.  
(Excerpt, "The Drained Cup")

Although Lawrence's works after his Georgian period are clearly in the modernist tradition, they were often very different to many other modernist writers, such as Pound. Modernist works were often austere in which every word was carefully worked on and hard-fought for. Lawrence felt all poems had to be personal sentiments and that spontaneity was vital for any work. He called one collection of poems *Pansies* partly for the simple ephemeral nature of the verse but also a pun on the French word *panser*, to dress or bandage a wound. "The Noble Englishman" and "Don't Look at Me" were removed from the official edition of *Pansies* on the grounds of obscenity, which he felt wounded by. Even though he lived most of the last ten years of his life abroad, his thoughts were often still on England. Published in 1930, just eleven days after his death, his last work *Nettles* was a series of bitter, nettling but often wry attacks on the moral climate of England.

O the stale old dogs who pretend to guard  
the morals of the masses,  
how smelly they make the great back-yard  
wetting after everyone that passes.  
(Excerpt, "The Young and Their Moral Guardians")

Two notebooks of Lawrence's unprinted verse were posthumously published as *Last Poems* and *More Pansies*. These contain two of Lawrence's most famous poems about death, *Bavarian Gentians* and *The Ship of Death*.

## Literary criticism

Lawrence's criticism of other authors often provides great insight into his own thinking and writing. Of particular note is his *Study of Thomas Hardy and Other Essays* and *Studies in Classic American Literature*. In the latter, Lawrence's responses to Whitman, Melville and Edgar Allan Poe shed particular light on the nature of Lawrence's craft.

## Lady Chatterley trial

A heavily censored abridgement of *Lady Chatterley's Lover* was published in America by Alfred A. Knopf in 1928. This edition was posthumously re-issued in paperback in America both by Signet Books and by Penguin Books in 1946. When the full unexpurgated edition of *Lady Chatterley's Lover* was published by Penguin Books in Britain in 1960, the trial of Penguin under the Obscene Publications Act of 1959 became a major public event and a test of the new obscenity law. The 1959 act (introduced by Roy Jenkins) had made it possible for publishers to escape conviction if they could show that a work was of literary merit. One of the objections was to the frequent use of the word "fuck" and its derivatives and the word "cunt".

Various academic critics and experts of diverse kinds, including E. M. Forster, Helen Gardner, Richard Hoggart, Raymond Williams and Norman St John-Stevan, were called as witnesses, and the verdict, delivered on 2 November 1960, was "not guilty". This resulted in a far greater degree of freedom for publishing explicit material in the UK. The prosecution was ridiculed for being out of touch with changing social norms when the chief prosecutor, Mervyn Griffith-Jones, asked if it were the kind of book "you would wish your wife or servants to read".

The Penguin second edition, published in 1961, contains a publisher's dedication, which reads: "For having published this book, Penguin Books were prosecuted under the Obscene Publications Act, 1959 at the Old Bailey in London from 20 October to 2 November 1960. This edition is therefore dedicated to the twelve jurors, three women and nine men, who returned a verdict of 'Not Guilty' and thus made D. H. Lawrence's last novel available for the first time to the public in the United Kingdom."

## Posthumous reputation

The obituaries shortly after Lawrence's death were, with the notable exception of E. M. Forster, unsympathetic or hostile. However, there were those who articulated a more favourable recognition of the significance of this author's life and works. For example, his longtime friend Catherine Carswell summed up his life in a letter to the periodical *Time and Tide* published on 16 March 1930. In response to his critics, she claimed:

In the face of formidable initial disadvantages and life-long delicacy, poverty that lasted for three quarters of his life and hostility that survives his death, he did nothing that he did not really want to do, and all that he most wanted to do he did. He went all over the world, he owned a ranch, he lived in the most beautiful corners of Europe, and met whom he wanted to meet and told them that they were wrong and he was right. He painted and made things, and sang, and rode. He wrote something like three dozen books, of which even the worst page dances with life that could be mistaken for no other man's, while the best are admitted, even by those who hate him, to be unsurpassed. Without vices, with most human virtues, the husband of one wife, scrupulously honest, this estimable citizen yet managed to keep free from the shackles of civilization and the cant of literary cliques. He would have laughed lightly and cursed venomously in passing at the solemn owls—each one secretly chained by the leg—who now conduct his inquest. To do his work and lead his life in spite of them took some doing, but he did it, and long after they are forgotten, sensitive and innocent people—if any are left—will turn Lawrence's pages and will know from them what sort of a rare man

Lawrence was.

Aldous Huxley also defended Lawrence in his introduction to a collection of letters published in 1932. However, the most influential advocate of Lawrence's contribution to literature was the Cambridge literary critic F. R. Leavis who asserted that the author had made an important contribution to the tradition of English fiction. Leavis stressed that *The Rainbow*, *Women in Love*, and the short stories and tales were major works of art. Later, the Lady Chatterley Trial of 1960, and subsequent publication of the book, ensured Lawrence's popularity (and notoriety) with a wider public.

Lawrence held seemingly contradictory views of feminism. The evidence of his written works indicates an overwhelming commitment to representing women as strong, independent and complex; he produced major works in which young, self-directing female characters were central. However, Harrison<sup>[15]</sup> drew attention to the vein of sadism that runs through Lawrence's writing, and a number of feminist critics, notably Kate Millett, have criticised, indeed ridiculed Lawrence's sexual politics, Millett claiming that he uses his female characters as mouthpieces to promote his creed of male supremacy.<sup>[16]</sup> This damaged his reputation in some quarters, although Norman Mailer came to Lawrence's defence in *The Prisoner of Sex* in 1971.<sup>[17]</sup> Yet Lawrence continues to find an audience, and the ongoing publication of a new scholarly edition of his letters and writings has demonstrated the range of his achievement.

## Painting

D. H. Lawrence had a lifelong interest in painting, which became one of his main forms of expression in his last years. These were exhibited at the Warren Gallery in London's Mayfair in 1929. The exhibition was extremely controversial, with many of the 13,000 people visiting mainly to gawk. The *Daily Express* claimed "*Fight with an Amazon* represents a hideous, bearded man holding a fair-haired woman in his lascivious grip while wolves with dripping jaws look on expectantly, [this] is frankly indecent", but several artists and art experts praised the paintings. Gwen John, reviewing the exhibition in *Everyman*, spoke of Lawrence's "stupendous gift of self-expression" and singled out *The Finding of Moses*, *Red Willow Trees* and *Boccaccio Story* as "pictures of real beauty and great vitality". Others singled out *Contadini* for special praise. After a complaint from a member of the public, the police seized thirteen of the twenty-five paintings on view (including *Boccaccio Story* and *Contadini*). Despite declarations of support from many writers, artists and members of parliament, Lawrence was able to recover his paintings only by undertaking never to exhibit them in England again. The largest collection of the paintings is now at La Fonda de Taos<sup>[18]</sup> hotel in Taos, New Mexico. Several, including *Boccaccio Story* and *Resurrection* are at the Humanities Research Centre of the University of Texas at Austin.

## Selected depictions of Lawrence's life

- *Look! We Have Come Through!* play based on the letters and works of D. H. Lawrence and his wife, Frieda. Scripted by James Petosa and Carole Graham Lehan. Nominated for Helen Hayes Award 1998<sup>[19]</sup>
- *Scandalous!* Musical based on the life of D. H. Lawrence. Created by Glyn Bailey, Keith Thomas and Theasa Tuohy. Scandalousthemusical.com<sup>[20]</sup>

## List of works

### Novels

- *The White Peacock* (1911), edited by Andrew Robertson, Cambridge University Press, 1983, ISBN 0-521-22267-2
- *The Trespasser* (1912), edited by Elizabeth Mansfield, Cambridge University Press, 1981, ISBN 0-521-22264-8



- *Sons and Lovers* (1913), edited by Helen Baron and Carl Baron, Cambridge University Press, 1992, ISBN 0-521-24276-2
- *The Rainbow* (1915), edited by Mark Kinkead-Weekes, Cambridge University Press, 1989, ISBN 0-521-00944-8
- *Women in Love* (1920), edited by David Farmer, Lindeth Vasey and John Worthen, Cambridge University Press, 1987, ISBN 0-521-23565-0
- *The Lost Girl* (1920), edited by John Worthen, Cambridge University Press, 1981, ISBN 0-521-22263-X
- *Aaron's Rod* (1922) edited by Mara Kalnins, Cambridge University Press, 1988, ISBN 0-521-25250-4
- *Kangaroo* (1923) edited by Bruce Steele, Cambridge University Press, 1994, ISBN 0-521-38455-9
- *The Boy in the Bush* (1924), edited by Paul Eggert, Cambridge University Press, 1990, ISBN 0-521-30704-X
- *The Plumed Serpent* (1926), edited by L. D. Clark, Cambridge University Press, 1987, ISBN 0-521-22262-1
- *Lady Chatterley's Lover* (1928), edited by Michael Squires, Cambridge University Press, 1993, ISBN 0-521-22266-4
- *The Escaped Cock* (1929), later re-published as *The Man Who Died*
- *The Virgin and the Gypsy* (1930)

### Short stories collections

- *The Prussian Officer and Other Stories* (1914), edited by John Worthen, Cambridge University Press, 1983
- *England, My England and Other Stories* (1922), edited by Bruce Steele, Cambridge University Press, 1990, ISBN 0-521-35267-3
- *The Horse Dealer's Daughter* (1922)
- *The Fox, The Captain's Doll, The Ladybird* (1923), edited by Dieter Mehl, Cambridge University Press, 1992, ISBN 0-521-35266-5
- *St Mawr and other stories* (1925), edited by Brian Finney, Cambridge University Press, 1983, ISBN 0-521-22265-6
- *The Woman who Rode Away and other stories* (1928) edited by Dieter Mehl and Christa Jansohn, Cambridge University Press, 1995, ISBN 0-521-22270-2.
- *The Rocking-Horse Winner* (1926)
- *The Virgin and the Gipsy and Other Stories* (1930), edited by Michael Herbert, Bethan Jones, Lindeth Vasey, Cambridge University Press, 2006 (forthcoming), ISBN 0-521-36607-0
- *Love Among the Haystacks and other stories* (1930), edited by John Worthen, Cambridge University Press, 1987, ISBN 0-521-26836-2
- *Collected Stories* (1994) – Everyman's Library

### Collected letters

- *The Letters of D. H. Lawrence, Volume I, September 1901 – May 1913*, ed. James T. Boulton, Cambridge University Press, 1979, ISBN 0-521-22147-1
- *The Letters of D. H. Lawrence, Volume II, June 1913 – October 1916*, ed. George J. Zytaruk and James T. Boulton, Cambridge University Press, 1981, ISBN 0-521-23111-6
- *The Letters of D. H. Lawrence, Volume III, October 1916 – June 1921*, ed. James T. Boulton and Andrew Robertson, Cambridge University Press, 1984, ISBN 0-521-23112-4
- *The Letters of D. H. Lawrence, Volume IV, June 1921 – March 1924*, ed. Warren Roberts, James T. Boulton and Elizabeth Mansfield, Cambridge University Press, 1987, ISBN 0-521-00695-3
- *The Letters of D. H. Lawrence, Volume V, March 1924 – March 1927*, ed. James T. Boulton and Lindeth Vasey, Cambridge University Press, 1989, ISBN 0-521-00696-1
- *The Letters of D. H. Lawrence, Volume VI, March 1927 – November 1928*, ed. James T. Boulton and Margaret Boulton with Gerald M. Lacy, Cambridge University Press, 1991, ISBN 0-521-00698-8

- *The Letters of D. H. Lawrence, Volume VII, November 1928 – February 1930*, ed. Keith Sagar and James T. Boulton, Cambridge University Press, 1993, ISBN 0-521-00699-6
- *The Letters of D. H. Lawrence, with index, Volume VIII*, ed. James T. Boulton, Cambridge University Press, 2001, ISBN 0-521-23117-5
- *The Selected Letters of D H Lawrence*, Compiled and edited by James T. Boulton, Cambridge University Press, 1997, ISBN 0-521-40115-1

## Poetry collections

- *Love Poems and others* (1913)
- *Amores* (1916)
- *Look! We have come through!* (1917)
- *New Poems* (1918)
- *Bay: a book of poems* (1919)
- *Tortoises* (1921)
- *Birds, Beasts and Flowers* (1923)
- *The Collected Poems of D H Lawrence* (1928)
- *Pansies* (1929)
- *Nettles* (1930)
- *Last Poems* (1932)
- *Fire and other poems* (1940)
- *The Complete Poems of D H Lawrence* (1964), ed. Vivian de Sola Pinto and F. Warren Roberts
- *The White Horse* (1964)
- *D. H. Lawrence: Selected Poems* (1972), ed. Keith Sagar.

## Plays

- *The Daughter-in-Law* (1912)
  - *The Widowing of Mrs Holroyd* (1914)
  - *Touch and Go* (1920)
  - *David* (1926)
  - *The Fight for Barbara* (1933)
  - *A Collier's Friday Night* (1934)
  - *The Married Man* <sup>[21]</sup> (1940)
  - *The Merry-Go-Round* <sup>[22]</sup> (1941)
  - *The Complete Plays of D H Lawrence* (1965)
  - *The Plays*, edited by Hans-Wilhelm Schwarze and John Worthen, Cambridge University Press, 1999, ISBN 0-521-24277-0
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### Non-fiction books and pamphlets

- *Study of Thomas Hardy and other essays* (1914), edited by Bruce Steele, Cambridge University Press, 1985, ISBN 0-521-25252-0, Literary criticism and metaphysics
- *Movements in European History* (1921), edited by Philip Crumpton, Cambridge University Press, 1989, ISBN 0-521-26201-1, Originally published under the name of Lawrence H. Davison
- *Psychoanalysis and the Unconscious* and *Fantasia of the Unconscious* (1921/1922), edited by Bruce Steele, Cambridge University Press, 2004 ISBN 0-521-32791-1
- *Studies in Classic American Literature* (1923), edited by Ezra Greenspan, Lindeth Vasey and John Worthen, Cambridge University Press, 2003, ISBN 0-521-55016-5
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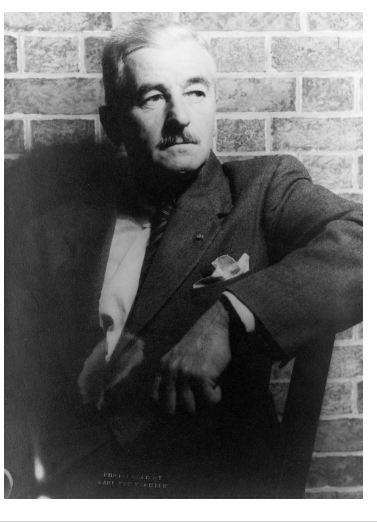

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# William Faulkner

William Faulkner	
<div></div> <div>1954 photo by Carl Van Vechten</div>	
Born	William Cuthbert Falkner September 25, 1897 New Albany, Mississippi, United States
Died	July 6, 1962 (aged 64) Byhalia, Mississippi, United States
Language	English
Nationality	American
Period	1919–1962
Notable work(s)	<i>The Sound and the Fury</i> <i>As I Lay Dying</i> <i>Light in August</i> <i>Absalom, Absalom!</i>
Notable award(s)	Nobel Prize in Literature (1949) Pulitzer Prize for Fiction (1955, 1963)
Spouse(s)	Estelle Oldham (1929–1962)
Signature	<div></div>

**William Cuthbert Faulkner** (born **Falkner**, September 25, 1897 – July 6, 1962) was an American writer from Oxford, Mississippi. Faulkner worked in a variety of media; he wrote novels, short stories, a play, poetry, essays and screenplays during his career. He is primarily known and acclaimed for his novels and short stories, many of which are set in the fictional Yoknapatawpha County, a setting Faulkner created based on Lafayette County, where he spent most of his childhood.<sup>[1]</sup>



Faulkner is considered one of the most important writers of the Southern literature of the United States, along with Mark Twain, Robert Penn Warren, Flannery O'Connor, Truman Capote, Eudora Welty, Thomas Wolfe, Harper Lee and Tennessee Williams. Though his work was published as early as 1919, and largely during the 1920s and 1930s, Faulkner was relatively unknown until receiving the 1949 Nobel Prize in Literature.<sup>[2]</sup> Two of his works, *A Fable* (1954) and his last novel *The Reivers* (1962), both won the Pulitzer Prize for Fiction.

In 1998, the Modern Library ranked his 1929 novel *The Sound and the Fury* sixth on its list of the 100 best English-language novels of the 20th century; also on the list were 1930's *As I Lay Dying* and *Light in August* (1932).

## Biography

William Cuthbert Faulkner was born in New Albany, Mississippi, the first of four sons to Murry Cuthbert Faulkner (August 17, 1870 – August 7, 1932) and Maud Butler (November 27, 1871 – October 19, 1960).<sup>[3]</sup> He had three younger brothers: Murry Charles "Jack" Faulkner (June 26, 1899 – December 24, 1975), author John Faulkner (September 24, 1901 – March 28, 1963) and Dean Swift Faulkner (August 15, 1907 – November 10, 1935).

Faulkner was born and raised in, and heavily influenced by, his home state of Mississippi, as well as by the history and culture of the American South altogether. Only four days prior to his fifth birthday, the Faulkner family settled in Oxford, Mississippi on September 21, 1902,<sup>[3] [4]</sup> where he resided on and off for the remainder of his life.

Family, particularly his mother Maud, his maternal grandmother Lelia Butler, and Caroline Barr (the black woman who raised him from infancy) crucially influenced the development of his artistic imagination: both his mother and grandmother were great readers and also painters and photographers, educating him in visual language. His life-long education by Callie Barr is central to his novels' preoccupations with the politics of sexuality and race.<sup>[5]</sup> In adolescence, Faulkner began writing poetry almost exclusively. He did not write his first novel until 1925. His literary influences are deep and wide. He once stated that he modeled his early writing on the Romantic era in late 18th century and early 19th century in England.<sup>[3]</sup> He attended the University of Mississippi (Ole Miss) in Oxford, and was a member of Sigma Alpha Epsilon social fraternity. He enrolled at Ole Miss in 1919, and attended three semesters before dropping out in November 1920.<sup>[6]</sup>

The younger Faulkner was greatly influenced by the history of his family and the region in which he lived. Mississippi marked his sense of humor, his sense of the tragic position of Black and White Americans, his characterization of Southern characters, and his timeless themes, including fiercely intelligent people dwelling behind the façades of good old boys and simpletons. Unable to join the United States Army due to his height (he was 5' 5½"), Faulkner enlisted in the British Royal Flying Corps, later training at RFC bases in Canada and Britain, yet never experienced wartime action during the First World War.<sup>[3] [4]</sup>

In 1918, upon enlisting in the RFC, Faulkner himself made the change to his surname from the original "Falkner". However, according to one story, a careless typesetter simply made an error. When the misprint appeared on the title page of his first book, Faulkner was asked whether he wanted a change. He supposedly replied, "Either way suits me."<sup>[7]</sup> Although Faulkner is heavily identified with Mississippi, he was residing in New Orleans, Louisiana in 1925 when he wrote his first novel, *Soldiers' Pay*,<sup>[3]</sup> after being directly influenced by Sherwood Anderson to attempt fiction writing. The miniature house at 624 Pirate's Alley, just around the corner from St. Louis Cathedral in New Orleans is now the premises of Faulkner House Books, where it also serves as the headquarters of the Pirate's Alley Faulkner Society.<sup>[8]</sup>

Faulkner served as Writer-in-Residence at the University of Virginia at Charlottesville from February to June 1957 and again in 1958.<sup>[9]</sup> He suffered serious injuries in a horse-riding accident in 1959, and died from a myocardial infarction, aged 64, on July 6, 1962, at Wright's Sanitorium in Byhalia, Mississippi.<sup>[3] [4]</sup> He is buried along with his family in St. Peter's Cemetery in Oxford, along with a family friend with the mysterious initials E.T.<sup>[10]</sup>

## In California

In the early 1940s, Howard Hawks invited Faulkner to come to Hollywood to become a screenwriter for the films Hawks was directing. Faulkner happily accepted because he badly needed the money, and Hollywood paid well. Thus Faulkner contributed to the scripts for the films Hawks made from Raymond Chandler's *The Big Sleep* and Ernest Hemingway's *To Have and Have Not*. Faulkner became good friends with Hawks, the screenwriter A. I. Bezzerides, and the actors Humphrey Bogart and Lauren Bacall.

An apocryphal story regarding Faulkner during his Hollywood years found him with a case of writer's block at the studio. He told Hawks he was having a hard time concentrating and would like to write at home. Hawks was agreeable, and Faulkner left. Several days passed, with no word from the writer. Hawks telephoned Faulkner's hotel and found that Faulkner had checked out several days earlier. It seems Faulkner had spoken quite literally, and had returned home to Mississippi to finish the screenplay.



William Faulkner's Underwood Universal Portable typewriter in his office at Rowan Oak, which is now maintained by the University of Mississippi in Oxford as a museum

## Personal life

As a teenager in Oxford, Faulkner dated Estelle Oldham, the popular daughter of Major Lemuel and Lida Oldham, and believed he would some day marry her.<sup>[11]</sup> However, Estelle dated other boys during their romance, and one of them, Cornell Franklin, ended up proposing marriage to her before Faulkner did, in 1918. Estelle's parents insisted she marry Cornell, as he was an Ole Miss law graduate, had recently been commissioned as a major in the Hawaiian Territorial Forces, and came from a respectable family with which they were old friends.<sup>[12]</sup> Fortunately for Faulkner, Estelle's marriage to Franklin fell apart ten years later, and she was divorced in April 1929.<sup>[13]</sup> Faulkner married Estelle in June 1929 at College Hill Presbyterian Church just outside of Oxford, Mississippi.<sup>[14]</sup> They honeymooned on the Mississippi Gulf Coast at Pascagoula, then returned to Oxford, first living with relatives while they searched for a home of their own to purchase. In 1930 Faulkner purchased the antebellum home Rowan Oak, known at that time as "The Bailey Place." He and his daughter, Jill, lived there until after her mother's death. The property was sold to the University of Mississippi in 1972. The house and furnishings are maintained much as they were in Faulkner's day. Faulkner's scribbings are still preserved on the wall there, including the day-by-day outline covering an entire week that he wrote out on the walls of his small study to help him keep track of the plot twists in the novel *A Fable*.

The quality and quantity of Faulkner's literary output were achieved despite a lifelong drinking problem. Since he rarely drank while writing, instead preferring to binge after a project's completion, it is generally agreed that his alcohol use was an escape from the pressures of everyday life and unrelated to his creativity.<sup>[15]</sup> Whatever the source of his addiction, it undoubtedly weakened his health.

Faulkner is known to have had several extramarital affairs. One was with Howard Hawks's secretary and script girl, Meta Carpenter.<sup>[16]</sup> Another, from 1949–53, was with a young writer, Joan Williams, who made her relationship with Faulkner the subject of her 1971 novel, *The Wintering*.<sup>[17]</sup>

When Faulkner visited Stockholm in December 1950 to receive the Nobel Prize, he met Else Jonsson (1912–1996) and they had an affair that lasted until the end of 1953. Else was the widow of journalist Thorsten Jonsson (1910–1950), reporter for *Dagens Nyheter* in New York 1943–1946, who had interviewed Faulkner in 1946 and introduced his works to the Swedish readers. At the banquet in 1950 where they met, publisher Tor Bonnier referred to Else as widow of the man responsible for Faulkner being awarded the prize.<sup>[18]</sup>

Faulkner also had a romance with Jean Stein, an editor, author, and daughter of movie mogul Jules Stein.

## Writing

From the early 1920s to the outbreak of World War II, when Faulkner left for California, he published 13 novels and numerous short stories. This body of work formed the basis of his reputation and led to him being awarded the Nobel Prize at age 52. This prodigious output, mainly driven by an obscure writer's need for money, includes his most celebrated **novels** such as *The Sound and the Fury* (1929), *As I Lay Dying* (1930), *Light in August* (1932), and *Absalom, Absalom!* (1936). Faulkner was also a prolific writer of short stories.

His first short story collection, *These 13* (1931), includes many of his most acclaimed (and most frequently anthologized) stories, including "A Rose for Emily", "Red Leaves", "That Evening Sun", and "Dry September". Faulkner set many of his short stories and novels in Yoknapatawpha County<sup>[19]</sup>—based on, and nearly geographically identical to, Lafayette County, of which his hometown of Oxford, Mississippi is the county seat. Yoknapatawpha was Faulkner's "postage stamp", and the bulk of work that it represents is widely considered by critics to amount to one of the most monumental fictional creations in the history of literature. Three novels, *The Hamlet*, *The Town* and *The Mansion*, known collectively as the *Snopes Trilogy*, document the town of Jefferson and its environs, as an extended family headed by Flem Snopes insinuates itself into the lives and psyches of the general populace.

Faulkner was known for his experimental style with meticulous attention to diction and cadence. In contrast to the minimalist understatement of his contemporary Ernest Hemingway, Faulkner made frequent use of "stream of consciousness" in his writing, and wrote often highly emotional, subtle, cerebral, complex, and sometimes Gothic or grotesque stories of a wide variety of characters including former slaves or descendants of slaves, poor white, agrarian, or working-class Southerners, and Southern aristocrats.

In an interview with *The Paris Review* in 1956, Faulkner remarked, "Let the writer take up surgery or bricklaying if he is interested in technique. There is no mechanical way to get the writing done, no shortcut. The young writer would be a fool to follow a theory. Teach yourself by your own mistakes; people learn only by error. The good artist believes that nobody is good enough to give him advice. He has supreme vanity. No matter how much he admires the old writer, he wants to beat him." Another esteemed Southern writer, Flannery O'Connor, stated that "the presence alone of Faulkner in our midst makes a great difference in what the writer can and cannot permit himself to do. Nobody wants his mule and wagon stalled on the same track the Dixie Limited is roaring down."

Faulkner wrote two volumes of poetry which were published in small printings, *The Marble Faun* (1924)<sup>[20]</sup> and *A Green Bough* (1933), and a collection of crime-fiction short stories, *Knight's Gambit* (1949).

## Awards

Faulkner received the 1949 Nobel Prize for Literature for "his powerful and artistically unique contribution to the modern American novel."<sup>[21]</sup> Though he won the Nobel prize for 1949, it was not awarded until the 1950 awards banquet, when Faulkner was awarded the 1949 prize and Bertrand Russell the 1950 prize.<sup>[22]</sup> Although this was a great honor, Faulkner detested the fame and glory that resulted from his recognition. His aversion was so great that he did not even tell his 17-year-old daughter. She only heard of her father's honor when she was called to the principal's office during the school day.<sup>[23]</sup>

He donated a portion of his Nobel winnings "to establish a fund to support and encourage new fiction writers", eventually resulting in the PEN/Faulkner Award for Fiction. He donated another portion to a local Oxford bank to establish an account to provide scholarship funds to help educate African-American education majors at nearby Rust College in Holly Springs, Mississippi. Faulkner won two Pulitzer Prizes for what are considered as his "minor" novels: his 1954 novel *A Fable*, which took the Pulitzer in 1955, and the 1962 novel, *The Reivers*, which was posthumously awarded the Pulitzer in 1963. He also won two National Book Awards, first for his *Collected Stories* in 1951 and once again for his novel *A Fable* in 1955. And in 1946, Faulkner was one of three finalists for the first *Ellery Queen Mystery Magazine* Award. He came in second to Manly Wade Wellman.<sup>[24]</sup> On August 3, 1987, the

United States Postal Service issued a 22-cent postage stamp in his honor.<sup>[25]</sup>

## Audio recordings

- *The William Faulkner Audio Collection*. Caedmon, 2003. Five hours on five discs includes Faulkner reading his 1949 Nobel Prize acceptance speech and excerpts from *As I Lay Dying*, *The Old Man* and *A Fable*, plus readings by Debra Winger ("A Rose for Emily", "Barn Burning"), Keith Carradine ("Spotted Horses") and Arliss Howard ("That Evening Sun", "Wash"). Winner of AudioFile Earphones Award.
- *William Faulkner Reads: The Nobel Prize Acceptance Speech, Selections from As I Lay Dying, A Fable, The Old Man*. Caedmon/Harper Audio, 1992. Cassette. ISBN 1-55994-572-9
- *William Faulkner Reads from His Work*. Arcady Series, MGM E3617 ARC, 1957. Faulkner reads from *The Sound and The Fury* (side one) and *Light in August* (side two). Produced by Jean Stein, who also did the liner notes with Edward Cole. Cover photograph by Robert Capa (Magnum).
- From 1957–1958, William Faulkner was the University of Virginia's Writer in Residence (the first). There are audio recordings of his time at the University of Virginia, and they have now been made available online at Faulkner at Virginia<sup>[26]</sup>

## Notes

- [1] Obituary *Variety*, July 11, 1962.
- [2] *New York Times* (<http://www.nytimes.com/aponline/arts/AP-Nobel-Literature.html>), October 12, 2006:
- [3] MWP: William Faulkner (1897–1962) ([http://www.olemiss.edu/mwp/dir/faulkner\\_william/](http://www.olemiss.edu/mwp/dir/faulkner_william/)) at Ole Miss.edu.
- [4] I WASSSS HHHUUUURRRRRR^\_^ William Faulkner – Biography ([http://nobelprize.org/nobel\\_prizes/literature/laureates/1949/faulkner-bio.html](http://nobelprize.org/nobel_prizes/literature/laureates/1949/faulkner-bio.html)) at Nobelprize.org
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- [15] "Was Faulkner an alcoholic?" (<http://www.mcsr.olemiss.edu/~egjbp/faulkner/wf-faq.html#alcoholic>). *William Faulkner: Frequently Asked Questions*. . Retrieved August 31, 2010.
- [16] Parini, Jay (2004). *One Matchless Time: A Life of William Faulkner*. New York: HarperCollins. pp. 198–199. ISBN 0066210720.
- [17] Parini, Jay (2004). *One Matchless Time: A Life of William Faulkner*. New York: HarperCollins. pp. 309–310. ISBN 0066210720.
- [18] En kärlekshistoria i Nobelprisklass (<http://www.dn.se/dnbok/en-karlekshistoria-i-nobelprisklass-1.1023972>), *Dagens Nyheter*, Januari 9, 2010.
- [19] [http://nobelprize.org/nobel\\_prizes/literature/laureates/1949/faulkner-bio.html](http://nobelprize.org/nobel_prizes/literature/laureates/1949/faulkner-bio.html)
- [20] This book shares a title with *The Marble Faun* (1860), one of the novels of Nathaniel Hawthorne.
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- Teaching Faulkner ([http://www6.semo.edu/cfs/teaching\\_faulkner.htm](http://www6.semo.edu/cfs/teaching_faulkner.htm)) site maintained by the Center for Faulkner Studies ([http://www6.semo.edu/cfs/the\\_center.htm](http://www6.semo.edu/cfs/the_center.htm)) at Southeast Missouri State University
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- Faulkner and Love: The Women Who Shaped His Art, A Biography (<http://sites.google.com/a/asu.edu/judith-l-sensibar/faulkner-and-love>) on his two "mothers", his wife, and their Jim Crow world.
- (Audio) William Faulkner reads the 1949 Nobel Prize acceptance speech and excerpts from *As I Lay Dying*, *The Old Man* and *A Fable*. ([http://town.hall.org/radio/HarperAudio/080294\\_harp\\_ITH.html](http://town.hall.org/radio/HarperAudio/080294_harp_ITH.html))
- William Faulkner (<http://www.shmoop.com/william-faulkner/>) biography, quotes, multimedia, & teacher resources
- Faulkner Link to Plantation Diary Discovered (<http://www.nytimes.com/2010/02/11/books/11faulkner.html>), the diary of Francis Terry Leak and their connection to the work of William Faulkner

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- Works by or about William Faulkner (<http://worldcat.org/identities/lccn-n79-3304>) in libraries (WorldCat catalog)
- William Faulkner (<http://www.findagrave.com/cgi-bin/fg.cgi?page=gr&GRid=328>) at Find a Grave

## Charles Olson

**Charles Olson** (27 December 1910 – 10 January 1970), was a second generation American modernist poet who was a link between earlier figures such as Ezra Pound and William Carlos Williams and the New American poets, which includes the New York School, the Black Mountain School, the Beat poets, and the San Francisco Renaissance. Consequently, many postmodern groups, such as the poets of the Language School, include Olson as a primary and precedent figure. He described himself not so much as a poet or writer but as "an archeologist of morning."

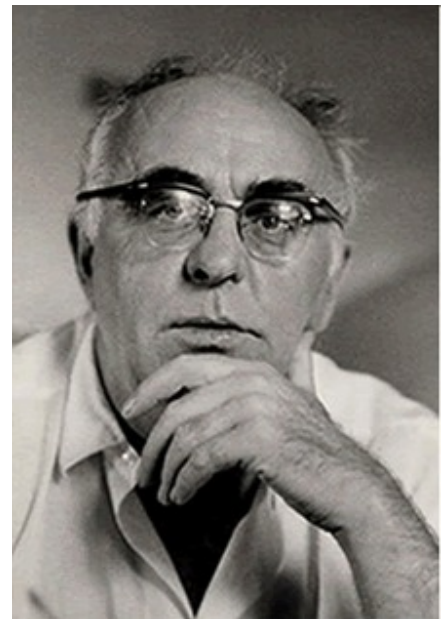
### Life

Olson was born to Karl Joseph and Mary Hines Olson, and grew up in Worcester, Massachusetts, where his father worked as a mailman. Olson spent summers in Gloucester, Massachusetts, which was to become the focus of his writing. At high school he was a champion orator, winning a tour of Europe as a prize.<sup>[1]</sup> He studied literature and American studies, gaining a B.A and M.A at Wesleyan University.<sup>[2]</sup>

For two years Olson taught English at Clark University then entered Harvard University in 1936 where he finished his coursework for a Ph.D. in American civilization but failed to complete his degree.<sup>[1]</sup> He then received a Guggenheim fellowship for his studies of Herman Melville.<sup>[2]</sup> His first poems were written in 1940.<sup>[3]</sup>

In 1941, Olson moved to New York and joined Constance Wilcock in civil marriage, together having one child, Katherine. Olson became the publicity director for the American Civil Liberties Union. One year later, he and his wife moved to Washington, D.C. where he worked in the Foreign Language Division of the Office of War Information, where he spent the rest of the war years, eventually rising to Assistant Chief of the division.<sup>[2]</sup> (The chief of the division was future senator Alan Cranston.) In 1944, Olson went to work for the Foreign Languages Division of the Democratic National Committee. He also participated in the Franklin Delano Roosevelt campaign, organizing a large campaign rally at New York's Madison Square Garden called "Everyone for Roosevelt". After Roosevelt's death, upset over both the ascendancy of Harry Truman and the increasing censorship of his news releases, Olson left politics and dedicated himself to writing, moving to Key West, Florida, in 1945.<sup>[1]</sup> From 1946 to 1948 Olson visited poet Ezra Pound at St. Elizabeths psychiatric hospital (sic) in Washington D.C., but was repelled by Pound's increasingly fascist tendencies.<sup>[3]</sup>

In 1951, Olson became a visiting professor at Black Mountain College in North Carolina, working and studying here beside artists such as John Cage and Robert Creeley.<sup>[2]</sup> At about this time, he married his second wife, Betty Kaiser. Olson's ideas came to deeply influence a generation of poets, including writers such as Denise Levertov, Paul Blackburn, and Robert Duncan.<sup>[2]</sup> At 6'8 (204 cm), Olson was described as "a bear of a man", his stature possibly



Charles Olson

influencing the title of his *Maximus* work.<sup>[4]</sup> Olson wrote copious personal letters, and helped and encouraged many young writers. He was fascinated with Mayan writing. Shortly before his death, he examined the possibility that Chinese and Indo-European languages derived from a common source. When Black Mountain College closed in 1956, Olson settled in Gloucester, Massachusetts. Olson served as a visiting professor at the State University of New York at Buffalo (1963-1965) and at the University of Connecticut (1969).<sup>[2]</sup> The last years of his life were a mixture of extreme isolation and frenzied work.<sup>[3]</sup> Olson's life was marred by alcoholism, which contributed to his early death from liver cancer. He died in New York in 1970, two weeks past his fifty-ninth birthday, having completed *The Maximus Poems* a month earlier.<sup>[1]</sup>

## Work

### Early writings

Olson's first book, *Call Me Ishmael* (1947), a study of Herman Melville's novel *Moby Dick*, was a continuation of his M.A. thesis from Wesleyan University.<sup>[5]</sup> In *Projective Verse* (1950), Olson called for a poetic meter based on the breath of the poet and an open construction based on sound and the linking of perceptions rather than syntax and logic. The poem "The Kingfishers", first published in 1949 and collected in his first book of poetry, *In Cold Hell, in Thicket* (1953), is an application of the manifesto.

His second collection, *The Distances*, was published in 1960. Olson served as rector of the Black Mountain College from 1951 to 1956. During this period, the college supported work by John Cage, Robert Creeley, Allen Ginsberg, Robert Duncan, Fielding Dawson, Cy Twombly, Jonathan Williams, Ed Dorn, Stan Brakhage and many other members of the 1950s American *avant garde*. Olson is listed as an influence on artists including Carolee Schneemann and James Tenney.<sup>[6]</sup>

Olson's reputation rests in the main on his complex, sometimes difficult poems such as "The Kingfishers", "In Cold Hell, in Thicket", and *The Maximus Poems*, work that tends to explore social, historical, and political concerns. His shorter verse, poems such as "Only The Red Fox, Only The Crow", "Other Than", "An Ode on Nativity", "Love", and "The Ring Of" are more immediately accessible and manifest a sincere, original, emotionally powerful voice. "Letter 27 [withheld]" from *The Maximus Poems* weds Olson's lyric, historic, and aesthetic concerns (a short film of Olson reading this poem in the kitchen of his house in Gloucester is available on You Tube). Olson coined the term postmodern in a letter of August 1951 to his friend and fellow poet, Robert Creeley.

### *The Maximus Poems*

In 1950, inspired by the example of Pound's *Cantos* (though Olson denied any direct relation between the two epics), Olson began writing *The Maximus Poems*, a project that was completed shortly before his death. An exploration of American history in the broadest sense, *Maximus* is also an epic of place, Massachusetts and specifically the city of Gloucester where Olson had settled. Dogtown, the wild, rock-strewn centre of Cape Ann, next to Gloucester, is an important place in *The Maximus Poems*. (Olson used to write outside on a tree stump in Dogtown.) The whole work is also mediated through the voice of Maximus, based partly on Maximus of Tyre, an itinerant Greek philosopher, and partly on Olson himself. The final, unfinished volume imagines an ideal Gloucester in which communal values have replaced commercial ones.

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## Georg Wilhelm Friedrich Hegel

### Georg Wilhelm Friedrich Hegel



<b>Full name</b>	Georg Wilhelm Friedrich Hegel
<b>Born</b>	August 27, 1770 Stuttgart, Württemberg
<b>Died</b>	November 14, 1831 (aged 61) Berlin, Prussia
<b>Era</b>	19th-century philosophy
<b>Region</b>	Western Philosophy
<b>School</b>	German Idealism; Founder of Hegelianism; Historicism
<b>Main interests</b>	Logic, Philosophy of history, Aesthetics, Religion, Metaphysics, Epistemology, Political Philosophy,
<b>Notable ideas</b>	Absolute idealism, Dialectic, Sublation, master-slave dialectic

**Georg Wilhelm Friedrich Hegel** (German pronunciation: [ˈɡeɔ̯k ˈvɪlhɛlm ˈfʁiːdʁɪç ˈheːɡəl]) (August 27, 1770 – November 14, 1831) was a German philosopher, one of the creators of German Idealism. His historicist and idealist account of reality as a whole revolutionized European philosophy and was an important precursor to Continental philosophy and Marxism.

Hegel developed a comprehensive philosophical framework, or "system", of Absolute idealism to account in an integrated and developmental way for the relation of mind and nature, the subject and object of knowledge, and psychology, the state, history, art, religion and philosophy. In particular, he developed the concept that mind or spirit manifested itself in a set of contradictions and oppositions that it ultimately integrated and united, without eliminating either pole or reducing one to the other. Examples of such contradictions include those between nature and freedom, and between immanence and transcendence.



The birthplace of Hegel in Stuttgart, which now houses The Hegel Museum

Hegel influenced writers of widely varying positions, including both his admirers (Strauss, Bauer, Feuerbach, T. H. Green, Marx, F. H. Bradley, Dewey, Sartre, Küng, Kojève, Fukuyama, Žižek, Brandom, Iqbal) and his detractors (Schopenhauer, Schelling, Kierkegaard, Nietzsche, Stirner, Peirce, Popper, Russell, Heidegger).<sup>[1]</sup> His influential conceptions are of speculative logic or "dialectic", "absolute idealism", "Spirit", negativity, sublation (*Aufhebung* in German), the "Master/Slave" dialectic, "ethical life" and the importance of history.

## Life

### Early years

#### Childhood

Hegel was born on August 27, 1770 in Stuttgart, in the Duchy Württemberg in southwestern Germany. Christened Georg Wilhelm Friedrich, he was known as Wilhelm to his close family. His father, Georg Ludwig, was *Rentkammersekretär* (secretary to the revenue office) at the court of Karl Eugen, Duke of Württemberg.<sup>[2]</sup> Hegel's mother, Maria Magdalena Louisa (*née* Fromm), was the daughter of a lawyer at the High Court of Justice at the Württemberg court. She died of a "bilious fever" (*Gallenfieber*) when Hegel was eleven. Hegel and his father also caught the disease but narrowly survived.<sup>[3]</sup> Hegel had a sister, Christiane Luise (1773–1832), and a brother, Georg Ludwig (1776–1812), who was to perish as an officer in Napoleon's Russian campaign of 1812.<sup>[4]</sup>

At the age of three Hegel went to the "German School". When he entered the "Latin School" aged five, he already knew the first declension, having been taught it by his mother.

In 1776 Hegel entered Stuttgart's *Gymnasium Illustre*. During his adolescence Hegel read voraciously, copying lengthy extracts in his diary. Authors he read include the poet Klopstock and writers associated with the Enlightenment such as Christian Garve and Gotthold Ephraim Lessing. Hegel's studies at the *Gymnasium* were concluded with his *Abiturrede* ("graduation speech") entitled "The abortive state of art and scholarship in Turkey."

#### Tübingen (1788-93)

At the age of eighteen Hegel entered the Tübinger Stift (a Protestant seminary attached to the University of Tübingen), where two fellow students were to become vital to his development—his exact contemporary, the poet Friedrich Hölderlin, and the younger brilliant philosopher-to-be Friedrich Wilhelm Joseph Schelling. Sharing a dislike for what they regarded as the restrictive environment of the Seminary, the three became close friends and mutually influenced each other's ideas. They watched the unfolding of the French Revolution with shared enthusiasm. Schelling and Hölderlin immersed themselves in theoretical debates on Kantian philosophy, from which Hegel remained aloof. Hegel at this time envisaged his future as that of a *Popularphilosoph*, i.e., a "man of letters" who serves to make the abstruse ideas of philosophers accessible to a wider public; his own felt need to engage critically with the central ideas of Kantianism did not come until 1800.

#### Bern (1793–96) and Frankfurt (1797–1801)

Having received his theological certificate (*Konsistorialexamen*) from the Tübingen Seminary, Hegel became *Hofmeister* (house tutor) to an aristocratic family in Bern (1793–96). During this period he composed the text which has become known as the "Life of Jesus" and a book-length manuscript entitled "The Positivity of the Christian Religion". His relations with his employers having become strained, Hegel gladly accepted an offer mediated by Hölderlin to take up a similar position with a wine merchant's family in Frankfurt, where he moved in 1797. Here Hölderlin exerted an important influence on Hegel's thought.<sup>[5]</sup> While in Frankfurt Hegel composed the essay "Fragments on Religion and Love". In 1799 he wrote another essay entitled "The Spirit of Christianity and Its Fate" which was not published during his lifetime.

## Career years

### Jena, Bamberg and Nuremberg: 1801-1816

In 1801 Hegel came to Jena with the encouragement of his old friend Schelling, who was Extraordinary Professor at the University there. Hegel secured a position at the University as a *Privatdozent* (unsalaried lecturer) after submitting a *Habilitationsschrift* (dissertation) on the orbits of the planets. Later in the year Hegel's first book, *The Difference Between Fichte's and Schelling's Systems of Philosophy*, appeared. He lectured on "Logic and Metaphysics" and, with Schelling, gave joint lectures on an "Introduction to the Idea and Limits of True Philosophy" and held a "Philosophical Disputorium". In 1802 Schelling and Hegel founded a journal, the *Kritische Journal der Philosophie* ("Critical Journal of Philosophy") to which they each contributed pieces until the collaboration was ended by Schelling's departure for Würzburg in 1803.

In 1805 the University promoted Hegel to the position of Extraordinary Professor (unsalaried), after Hegel wrote a letter to the poet and minister of culture Johann Wolfgang von Goethe protesting at the promotion of his philosophical adversary Jakob Friedrich Fries ahead of him.<sup>[6]</sup> Hegel attempted to enlist the help of the poet and translator Johann Heinrich Voß to obtain a post at the newly renascent University of Heidelberg, but failed; to his chagrin, Fries was later in the same year made Ordinary Professor (salaried) there.<sup>[7]</sup>

His finances drying up quickly, Hegel was now under great pressure to deliver his book, the long-promised introduction to his System. Hegel was putting the finishing touches to this book, now called the *Phenomenology of Spirit*, as Napoleon engaged Prussian troops on October 14, 1806, in the Battle of Jena on a plateau outside the city. On the day before the battle, Napoleon entered the city of Jena. Hegel recounted his impressions in a letter to his friend Friedrich Immanuel Niethammer:

I saw the Emperor – this world-soul – riding out of the city on reconnaissance. It is indeed a wonderful sensation to see such an individual, who, concentrated here at a single point, astride a horse, reaches out over the world and masters it . . . this extraordinary man, whom it is impossible not to admire.<sup>[8]</sup>

Although Napoleon chose not to close down Jena as he had other universities, the city was devastated and students deserted the university in droves, making Hegel's financial prospects even worse. The following February Hegel's landlady Christiana Burkhardt (who had been abandoned by her husband) gave birth to their son Georg Ludwig Friedrich Fischer (1807–31).<sup>[9]</sup>

In March 1807, aged 37, Hegel moved to Bamberg, where Niethammer had declined and passed on to Hegel an offer to become editor of a newspaper, the *Bamberger Zeitung*. Hegel, unable to find more suitable employment, reluctantly accepted. Ludwig Fischer and his mother (whom Hegel may have offered to marry following the death of her husband) stayed behind in Jena.<sup>[10]</sup>

He was then, in November 1808, again through Niethammer, appointed headmaster of a *Gymnasium* in Nuremberg, a post he held until 1816. While in Nuremberg Hegel adapted his recently published *Phenomenology of Mind* for use in the classroom. Part of his remit being to teach a class called "Introduction to Knowledge of the Universal Coherence of the Sciences", Hegel developed the idea of an encyclopedia of the philosophical sciences, falling into three parts (logic, philosophy of nature, and philosophy of spirit).<sup>[11]</sup>



Hegel sees the "world spirit on horseback", Napoleon.

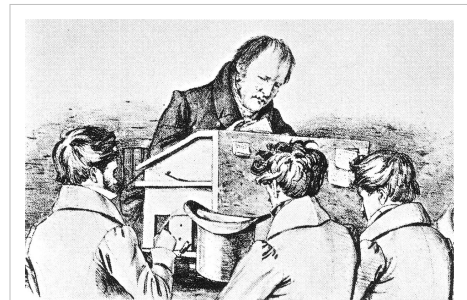
Hegel married Marie Helena Susanna von Tucher (1791–1855), the eldest daughter of a Senator, in 1811. This period saw the publication of his second major work, the *Science of Logic* (*Wissenschaft der Logik*; 3 vols., 1812, 1813, 1816), and the birth of his two legitimate sons, Karl Friedrich Wilhelm (1813–1901) and Immanuel Thomas Christian (1814–1891).

### Heidelberg and Berlin: 1816-1831

Having received offers of a post from the Universities of Erlangen, Berlin, and Heidelberg, Hegel chose Heidelberg, where he moved in 1816. Soon after, in April 1817, his illegitimate son Ludwig Fischer (now ten years old) joined the Hegel household, having thus far spent his childhood in an orphanage.<sup>[12]</sup> (Ludwig's mother had died in the meantime.)<sup>[13]</sup>

Hegel published *The Encyclopedia of the Philosophical Sciences in Outline* (1817) as a summary of his philosophy for students attending his lectures at Heidelberg.

In 1818 Hegel accepted the renewed offer of the chair of philosophy at the University of Berlin, which had remained vacant since Fichte's death in 1814. Here he published his *Philosophy of Right* (1821). Hegel devoted himself primarily to delivering his lectures; his lecture courses on aesthetics, the philosophy of religion, the philosophy of history, and the history of philosophy were published posthumously from lecture notes taken by his students. His fame spread and his lectures attracted students from all over Germany and beyond.



Hegel with his Berlin students  
Sketch by Franz Kugler

Hegel was appointed Rector of the University in 1830, when he was 60. He was deeply disturbed by the riots for reform in Berlin in that year. In 1831 Frederick William III decorated him for his service to the Prussian state. In August 1831 a cholera epidemic reached Berlin and Hegel left the city, taking up lodgings in Kreuzberg. Now in a weak state of health, Hegel seldom went out. As the new semester began in October, Hegel returned to Berlin, with the (mistaken) impression that the epidemic had largely subsided. By November 14 Hegel was dead. The physicians pronounced the cause of death as cholera, but it is likely he died from a different gastrointestinal disease.<sup>[14]</sup> He is said to have uttered the last words "And he didn't understand me" before expiring.<sup>[15]</sup> In accordance with his wishes, Hegel was buried on November 16 in the Dorotheenstadt cemetery next to Fichte and Solger.

Hegel's son Ludwig Fischer had died shortly before while serving with the Dutch army in Batavia; the news of his death never reached his father.<sup>[16]</sup> Early the following year Hegel's sister Christiane committed suicide by drowning. Hegel's sons Karl, who became a historian, and Immanuel, who followed a theological path, lived long lives during which they safeguarded their father's *Nachlaß* and produced editions of his works.

## Works

Hegel published only four books during his lifetime: the *Phenomenology of Spirit* (or *Phenomenology of Mind*), his account of the evolution of consciousness from sense-perception to absolute knowledge, published in 1807; the *Science of Logic*, the logical and metaphysical core of his philosophy, in three volumes, published in 1811, 1812, and 1816 (revised 1831); *Encyclopedia of the Philosophical Sciences*, a summary of his entire philosophical system, which was originally published in 1816 and revised in 1827 and 1830; and the *Elements of the Philosophy of Right*, his political philosophy, published in 1822. In the latter, he criticized von Haller's reactionary work, which claimed that laws were not necessary. He also published some articles early in his career and during his Berlin period. A number of other works on the philosophy of history, religion, aesthetics, and the history of philosophy were compiled from the lecture notes of his students and published posthumously.



Hegel's tombstone in Berlin

The French Revolution for Hegel constitutes the introduction of real individual political freedom into European societies for the first time in recorded history. But precisely because of its absolute novelty, it is also unlimited with regard to everything that preceded it: on the one hand the upsurge of violence required to carry out the revolution cannot cease to be itself, while on the other, it has already consumed its opponent. The revolution therefore has nowhere to turn but onto its own result: the hard-won freedom is consumed by a brutal Reign of Terror. History, however, progresses by learning from its mistakes: only after and precisely because of this experience can one posit the existence of a constitutional state of free citizens, embodying both the benevolent organizing power of rational government and the revolutionary ideals of freedom and equality. Hegel's remarks on the French revolution led German poet Heinrich Heine to label him "The Orléans of German Philosophy".

## Thought

## Freedom

Hegel's thinking can be understood as a constructive development within the broad tradition that includes Plato and Kant. To this list one could add Proclus, Meister Eckhart, Leibniz, Plotinus, Jakob Boehme, and Rousseau. What all these thinkers share, which distinguishes them from materialists like Epicurus, the Stoics, and Thomas Hobbes, and from empiricists like David Hume, is that they regard freedom or self-determination both as real and as having important ontological implications, for soul or mind or divinity. This focus on freedom is what generates Plato's notion (in the *Phaedo*, *Republic*, and *Timaeus*) of the soul as having a higher or fuller kind of reality than inanimate objects possess. While Aristotle criticizes Plato's "Forms", he preserves Plato's cornerstones of the ontological implications for self-determination: ethical reasoning, the soul's pinnacle in the hierarchy of nature, the order of the cosmos, and an assumption with reasoned arguments for a prime mover. Plato's high esteem of individual sovereignty Kant imports to his considerations of moral and noumenal freedom, and God. All three find common ground on the unique position of humans in the scheme of things, known by the discussed categorical differences from animals and inanimate objects.

In his discussion of "Spirit" in his *Encyclopedia*, Hegel praises Aristotle's *On the Soul* as "by far the most admirable, perhaps even the sole, work of philosophical value on this topic".<sup>[17]</sup> In his *Phenomenology of Spirit* and his *Science of Logic*, Hegel's concern with Kantian topics such as freedom and morality, and with their ontological implications, is pervasive. Rather than simply rejecting Kant's dualism of freedom versus nature, Hegel aims to subsume it within "true infinity", the "Concept" (or "Notion": *Begriff*), "Spirit", and "ethical life" in such a way that the Kantian duality is rendered intelligible, rather than remaining a brute "given."

The reason why this subsumption takes place in a *series* of concepts is that Hegel's method, in his *Science of Logic* and his *Encyclopedia*, is to begin with ultra-basic concepts like Being and Nothing, and to develop these through a long sequence of elaborations, including those mentioned in the previous paragraph. In this manner, a solution that is reached, in principle, in the account of "true infinity" in the *Science of Logic's* chapter on "Quality", is repeated in new guises at later stages, all the way to "Spirit" and "ethical life", in the third volume of the *Encyclopedia*.

In this way, Hegel intends to defend the germ of truth in Kantian dualism against reductive or eliminative programs like those of materialism and empiricism. Like Plato, with his dualism of soul versus bodily appetites, Kant pursues the mind's ability to question its felt inclinations or appetites and to come up with a standard of "duty" (or, in Plato's

case, "good") which transcends bodily restrictiveness. Hegel preserves this essential Platonic and Kantian concern in the form of infinity going beyond the finite (a process that Hegel in fact relates to "freedom" and the "ought"<sup>[18]</sup>), the universal going beyond the particular (in the Concept), and Spirit going beyond Nature. And Hegel renders these dualities *intelligible* by (ultimately) his argument in the "Quality" chapter of the "Science of Logic." The finite has to become infinite in order to achieve reality. The idea of the absolute excludes multiplicity so the subjective and objective must achieve synthesis to become whole. This is because, as Hegel suggests by his introduction of the concept of "reality",<sup>[19]</sup> what determines itself—rather than depending on its relations to other things for its essential character—is more fully "real" (following the Latin etymology of "real": more "thing-like") than what does not. Finite things don't determine themselves, because, as "finite" things, their essential character is determined by their boundaries, over against other finite things. So, in order to become "real", they must go beyond their finitude ("finitude *is* only as a transcending of itself"<sup>[20]</sup>).

The result of this argument is that finite and infinite—and, by extension, particular and universal, nature and freedom—don't face one another as two independent realities, but instead the latter (in each case) is the *self-transcending* of the former.<sup>[21]</sup> Rather than stress the distinct singularity of each factor that complements and conflicts with others—without explanation—the relationship between finite and infinite (and particular and universal, and nature and freedom) becomes intelligible as a progressively developing and self-perfecting whole.

## Progress

The obscure writings of Jakob Böhme had a strong effect on Hegel. Böhme had written that the Fall of Man was a necessary stage in the evolution of the universe. This evolution was, itself, the result of God's desire for complete self-awareness. Hegel was fascinated by the works of Kant, Rousseau, and Goethe, and by the French Revolution. Modern philosophy, culture, and society seemed to Hegel fraught with contradictions and tensions, such as those between the subject and object of knowledge, mind and nature, self and Other, freedom and authority, knowledge and faith, the Enlightenment and Romanticism. Hegel's main philosophical project was to take these contradictions and tensions and interpret them as part of a comprehensive, evolving, rational unity that, in different contexts, he called "the absolute idea" or "absolute knowledge".

According to Hegel, the main characteristic of this unity was that it evolved through and manifested itself in contradiction and negation. Contradiction and negation have a dynamic quality that at every point in each domain of reality—consciousness, history, philosophy, art, nature, society—leads to further development until a rational unity is reached that preserves the contradictions as phases and sub-parts by lifting them up (*Aufhebung*) to a higher unity. This whole is mental because it is mind that can comprehend all of these phases and sub-parts as steps in its own process of comprehension. It is rational because the same, underlying, logical, developmental order underlies every domain of reality and is ultimately the order of self-conscious rational thought, although only in the later stages of development does it come to full self-consciousness. The rational, self-conscious whole is not a thing or being that lies outside of other existing things or minds. Rather, it comes to completion only in the philosophical comprehension of individual existing human minds who, through their own understanding, bring this developmental process to an understanding of itself.

"Mind" and "Spirit" are the common English translations of Hegel's use of the German "Geist". Some have argued that either of these terms overly "psychologize" Hegel, implying a kind of disembodied, solipsistic consciousness like ghost or "soul." Geist combines the meaning of spirit—as in god, ghost or mind—with an intentional force. In Hegel's early philosophy of nature (draft manuscripts written during his time at the University of Jena), Hegel's notion of "Geist" was tightly bound to the notion of "Aether" from which Hegel also derived the concepts of space and time; however in his later works (after Jena) Hegel did not explicitly use his old notion of "Aether" any more.<sup>[22]</sup>

Central to Hegel's conception of knowledge and mind (and therefore also of reality) was the notion of identity in difference, that is that mind externalizes itself in various forms and objects that stand outside of it or opposed to it, and that, through recognizing itself in them, is "with itself" in these external manifestations, so that they are at one



and the same time mind and other-than-mind. This notion of identity in difference, which is intimately bound up with his conception of contradiction and negativity, is a principal feature differentiating Hegel's thought from that of other philosophers.

### Civil society

Hegel made the distinction between civil society and state in his *Elements of the Philosophy of Right*.<sup>[23]</sup> In this work, civil society (Hegel used the term "buergerliche Gesellschaft" though it is now referred to as *Zivilgesellschaft* in German to emphasize a more inclusive community) was a stage on the dialectical relationship between Hegel's perceived opposites, the macro-community of the state and the micro-community of the family.<sup>[24]</sup> Broadly speaking, the term was split, like Hegel's followers, to the political left and right. On the left, it became the foundation for Karl Marx's civil society as an economic base;<sup>[25]</sup> to the right, it became a description for all non-state aspects of society, including culture, society and politics.<sup>[26]</sup> This liberal distinction between political society and civil society was followed by Alexis de Tocqueville.<sup>[25]</sup>

### Heraclitus

According to Hegel, "Heraclitus is the one who first declared the nature of the infinite and first grasped nature as in itself infinite, that is, its essence as process. The origin of philosophy is to be dated from Heraclitus. His is the persistent Idea that is the same in all philosophers up to the present day, as it was the Idea of Plato and Aristotle."<sup>[27]</sup> For Hegel, Heraclitus's great achievements were to have understood the nature of the infinite, which for Hegel includes understanding the inherent contradictoriness and negativity of reality, and to have grasped that reality is becoming or process, and that "being" and "nothingness" are mere empty abstractions. According to Hegel, Heraclitus's "obscurity" comes from his being a true (in Hegel's terms "speculative") philosopher who grasped the ultimate philosophical truth and therefore expressed himself in a way that goes beyond the abstract and limited nature of common sense and is difficult to grasp by those who operate within common sense. Hegel asserted that in Heraclitus he had an antecedent for his logic: "... there is no proposition of Heraclitus which I have not adopted in my logic."<sup>[28]</sup>

Hegel cites a number of fragments of Heraclitus in his *Lectures on the History of Philosophy*.<sup>[29]</sup> One to which he attributes great significance is the fragment he translates as "Being is not more than Non-being", which he interprets to mean

Sein und Nichts sei dasselbe  
Being and non-being are the same.

Heraclitus does not form any abstract nouns from his ordinary use of "to be" and "to become" and in that fragment seems to be opposing any identity A to any other identity B, C, etc., which is not-A. Hegel, however, interprets not-A as not existing at all, not nothing at all, which cannot be conceived, but indeterminate or "pure" being without particularity or specificity.<sup>[30]</sup> Pure being and pure non-being or nothingness are for Hegel pure abstractions from the reality of becoming, and this is also how he interprets Heraclitus. This interpretation of Heraclitus cannot be ruled out, but even if present is not the main gist of his thought.

For Hegel, the inner movement of reality is the process of God thinking, as manifested in the evolution of the universe of nature and thought; that is, Hegel argued that, when fully and properly understood, reality is being thought by God as manifested in a person's comprehension of this process in and through philosophy. Since human thought is the image and fulfillment of God's thought, God is not ineffable (so incomprehensible as to be unutterable) but can be understood by an analysis of thought and reality. Just as humans continually correct their concepts of reality through a dialectical process, so God himself becomes more fully manifested through the dialectical process of becoming.

For his god Hegel does not take the logos of Heraclitus but refers rather to the nous of Anaxagoras, although he may well have regarded them the same, as he continues to refer to god's plan, which is identical to God. Whatever the

nous thinks at any time is actual substance and is identical to limited being, but more remains to be thought in the substrate of non-being, which is identical to pure or unlimited thought.

The universe as becoming is therefore a combination of being and non-being. The particular is never complete in itself but to find completion is continually transformed into more comprehensive, complex, self-relating particulars. The essential nature of being-for-itself is that it is free "in itself"; that is, it does not depend on anything else, such as matter, for its being. The limitations represent fetters, which it must constantly be casting off as it becomes freer and more self-determining.<sup>[31]</sup>

Although Hegel began his philosophizing with commentary on the Christian religion and often expresses the view that he is a Christian, his ideas of God are not at home among some Christians, although he has had a major influence on 19th- and 20th-century theology. At the same time, an atheistic version of his thought was adopted instead by some Marxists, who, stripping away the concepts of divinity, styled what was left dialectical materialism, which some saw as originating in Heraclitus.

## Religion

Hegel's thoughts on the person of Jesus Christ stood out from the theologies of the Enlightenment. In his posthumous book, *The Christian Religion: Lectures on Philosophy of Religion Part 3*, he espouses that, "God is not an abstraction but a concrete God...God, considered in terms of his eternal Idea, has to generate the Son, has to distinguish himself from himself; he is the process of differentiating, namely, love and Spirit". This means that Jesus as the Son of God is posited by God over against himself as other. Hegel sees both a relational unity and a metaphysical unity between Jesus and God the Father. To Hegel, Jesus is both divine and Human. Hegel further attests that God (as Jesus) not only died, but "...rather, a reversal takes place: God, that is to say, maintains himself in the process, and the latter is only the death of death. God rises again to life, and thus things are reversed." Hegel therefore maintains not only the deity of Jesus, but the resurrection as a reality.

## Legacy

There are views of Hegel's thought as a representation of the summit of early 19th century Germany's movement of philosophical idealism. It would come to have a profound impact on many future philosophical schools, including schools that opposed Hegel's specific dialectical idealism, such as Existentialism, the historical materialism of Karl Marx, historicism, and British Idealism.

Hegel's influence was immense both within philosophy and in the other sciences. Throughout the 19th century many chairs of philosophy around Europe were held by Hegelians, and Kierkegaard, Feuerbach, Marx, and Engels--among many others--were all deeply influenced by, but also strongly opposed to, many of the central themes of Hegel's philosophy. After less than a generation, Hegel's philosophy was suppressed and even banned by the Prussian right-wing, and was firmly rejected by the left-wing in multiple official writings.

After the period of Bruno Bauer, Hegel's influence did not make itself felt again until the philosophy of British Idealism and the 20th century Hegelian Western Marxism that began with Georg Lukács. The more recent movement of communitarianism has a strong Hegelian influence.

## Reading Hegel

Some of Hegel's writing was intended for those with advanced knowledge of philosophy, although his "Encyclopedia" was intended as a textbook in a university course. Nevertheless, like many philosophers, Hegel assumed that his readers would be well-versed in Western philosophy, up to and including Descartes, Hume, Kant, Fichte, and Schelling. For those wishing to read his work without this background, introductions to and commentaries about Hegel can contribute to comprehension, although the reader is faced with multiple interpretations of Hegel's writings from incompatible schools of philosophy. The German philosopher Theodor W.



Adorno devoted an essay to the difficulty of reading Hegel and asserted that there are certain passages where it is impossible to decipher what Hegel meant. Difficulties within Hegel's language and thought are magnified for those reading Hegel in translation, since his philosophical language and terminology in German often do not have direct analogues in other languages. For example, the German word "Geist" has connotations of both "mind" and "spirit" in English. English translators have to use the "phenomenology of mind" or "the phenomenology of spirit" to render Hegel's "Phaenomenologie des Geistes", thus altering the original meaning. Hegel himself argued, in his "Science of Logic", that the German language was particularly conducive to philosophical thought and writing.

One especially difficult aspect of Hegel's work is his innovation in logic. In response to Immanuel Kant's challenge to the limits of pure reason, Hegel developed a radically new form of logic, which he called *speculation*, and which is today popularly called dialectics. The difficulty in reading Hegel was perceived in Hegel's own day, and persists into the 21st century. To understand Hegel fully requires paying attention to his critique of standard logic, such as the law of contradiction and the law of the excluded middle. Many philosophers who came after Hegel and were influenced by him, whether adopting or rejecting his ideas, did so without fully absorbing his new speculative or dialectical logic.

If one wanted to provide a big piece of the Hegel puzzle to the beginner, one might present the following statement from Part One of the *Encyclopedia of Philosophical Sciences: The Logic*:

... a much misunderstood phenomenon in the history of philosophy — the refutation of one system by another, of an earlier by a later. Most commonly the refutation is taken in a purely negative sense to mean that the system refuted has ceased to count for anything, has been set aside and done for. Were it so, the history of philosophy would be, of all studies, most saddening, displaying, as it does, the refutation of every system which time has brought forth. Now although it may be admitted that every philosophy has been refuted, it must be in an equal degree maintained that no philosophy has been refuted. And that in two ways. For first, every philosophy that deserves the name always embodies the Idea: and secondly, every system represents one particular factor or particular stage in the evolution of the Idea. The refutation of a philosophy, therefore, only means that its barriers are crossed, and its special principle reduced to a factor in the completer principle that follows.

## Left and Right Hegelianism

Some historians have spoken of Hegel's influence as represented by two opposing camps. The Right Hegelians, the allegedly direct disciples of Hegel at the Friedrich-Wilhelms-Universität, advocated a Protestant orthodoxy and the political conservatism of the post-Napoleon Restoration period. The Left Hegelians, also known as the Young Hegelians, interpreted Hegel in a revolutionary sense, leading to an advocacy of atheism in religion and liberal democracy in politics.

In more recent studies, however, this paradigm has been questioned.<sup>[32]</sup> No Hegelians of the period ever referred to themselves as "Right Hegelians"; that was a term of insult originated by David Strauss, a self-styled Left Hegelian. Critiques of Hegel offered from the Left Hegelians radically diverted Hegel's thinking into new directions and eventually came to form a disproportionately large part of the literature on and about Hegel.

The Left Hegelians also spawned Marxism, which inspired global movements, encompassing the Russian Revolution, the Chinese Revolution, and myriad revolutionary practices up until the present moment.

Twentieth-century interpretations of Hegel were mostly shaped by British Idealism, logical positivism, Marxism, and Fascism. The Italian Fascist Giovanni Gentile, according to Benedetto Croce, "...holds the honor of having been the most rigorous neo-Hegelian in the entire history of Western philosophy and the dishonor of having been the official philosopher of Fascism in Italy."<sup>[33]</sup> However, since the fall of the USSR, a new wave of Hegel scholarship arose in the West, without the preconceptions of the prior schools of thought. Walter Jaeschke and Otto Pöggeler in Germany, as well as Peter Hodgson and Howard Kainz in America are notable for their recent contributions to post-USSR thinking about Hegel.

## Triads

In previous modern accounts of Hegelianism (to undergraduate classes, for example), especially those formed prior to the Hegel renaissance, Hegel's dialectic was most often characterized as a three-step process, "thesis, antithesis, synthesis"; namely, that a "thesis" (e.g. the French Revolution) would cause the creation of its "antithesis" (e.g. the Reign of Terror that followed), and would eventually result in a "synthesis" (e.g. the Constitutional state of free citizens). However, Hegel used this classification only once, and he attributed the terminology to Immanuel Kant. The terminology was largely developed earlier by Johann Fichte. It was spread by Heinrich Moritz Chalybäus in a popular account of Hegelian philosophy, and since then the misfit terms have stuck. What is wrong with the "thesis-antithesis-synthesis" approach is that it gives the sense that things or ideas are contradicted or opposed by things that come from outside them. To the contrary, the fundamental notion of Hegel's dialectic is that things or ideas have internal contradictions. From Hegel's point of view, analysis or comprehension of a thing or idea reveals that underneath its apparently simple identity or unity is an underlying inner contradiction. This contradiction leads to the dissolution of the thing or idea in the simple form in which it presented itself and to a higher-level, more complex thing or idea that more adequately incorporates the contradiction. The triadic form that appears in many places in Hegel (e.g. being-nothingness-becoming, immediate-mediate-concrete, abstract-negative-concrete) is about this movement from inner contradiction to higher-level integration or unification.

Believing that the traditional description of Hegel's philosophy in terms of thesis-antithesis-synthesis was mistaken, a few scholars, like Raya Dunayevskaya, a devout Marxist who was once Leon Trotsky's secretary, have attempted to discard the triadic approach altogether. According to their argument, although Hegel refers to *"the two elemental considerations: first, the idea of freedom as the absolute and final aim; secondly, the means for realising it, i.e. the subjective side of knowledge and will, with its life, movement, and activity"* (thesis and antithesis) he doesn't use "synthesis" but instead speaks of the *"Whole"*: *"We then recognised the State as the moral Whole and the Reality of Freedom, and consequently as the objective unity of these two elements."* Furthermore, in Hegel's language, the "dialectical" aspect or "moment" of thought and reality, by which things or thoughts turn into their opposites or have their inner contradictions brought to the surface, what he called *"aufhebung"*, is only preliminary to the "speculative" (and not "synthesizing") aspect or "moment", which grasps the unity of these opposites or contradiction. Thus for Hegel, reason is ultimately "speculative", not "dialectical".

It is widely admitted today <sup>[34]</sup> that the old-fashioned description of Hegel's philosophy in terms of "thesis-antithesis-synthesis" is inaccurate. Nevertheless, such is the persistence of this misnomer that the model and terminology survive in a number of scholarly works.

## Renaissance

In the latter half of the 20th century, Hegel's philosophy underwent a major renaissance. This was due to: (a) the rediscovery and reevaluation of Hegel as a possible philosophical progenitor of Marxism by philosophically oriented Marxists; (b) a resurgence of the historical perspective that Hegel brought to everything; and (c) an increasing recognition of the importance of his dialectical method. The book that did the most to reintroduce Hegel into the Marxist canon was perhaps Georg Lukács' *History and Class Consciousness*. This sparked a renewed interest in Hegel reflected in the work of Herbert Marcuse, Theodor W. Adorno, Ernst Bloch, Raya Dunayevskaya, Alexandre Kojève and Gotthard Günther among others. The Hegel renaissance also highlighted the significance of Hegel's early works, i.e. those published prior to the *Phenomenology of Spirit*. The direct and indirect influence of Kojève's lectures and writings (on the *Phenomenology of Spirit*, in particular) mean that it is not possible to understand most French philosophers from Jean-Paul Sartre to Jacques Derrida without understanding Hegel.

Beginning in the 1960s, Anglo-American Hegel scholarship has attempted to challenge the traditional interpretation of Hegel as offering a metaphysical system: this has also been the approach of Z.A. Pelczynski and Shlomo Avineri. This view, sometimes referred to as the 'non-metaphysical option', has had a decided influence on many major English language studies of Hegel in the past 40 years. U.S. neoconservative political theorist Francis Fukuyama's

controversial book *The End of History and the Last Man* was heavily influenced by Alexandre Kojève. Among modern scientists, the physicist David Bohm, the mathematician William Lawvere, the logician Kurt Gödel and the biologist Ernst Mayr have been interested in Hegel's philosophical work.

A late 20th century literature in Western Theology that is friendly to Hegel includes such writers as Dale M. Schlitt (1984), Theodore Geraets (1985), Philip M. Merklinger (1991), Stephen Rocker (1995) and Cyril O'Regan (1995). The contemporary theologian Hans Küng has also advanced contemporary scholarship in Hegel studies.

Recently, two prominent American philosophers, John McDowell and Robert Brandom (sometimes, half-seriously, referred to as the Pittsburgh Hegelians), have produced philosophical works exhibiting a marked Hegelian influence. Each is avowedly influenced by the late Wilfred Sellars, also of Pittsburgh, who referred to his seminal work, *Empiricism and the Philosophy of Mind*, as a series of "incipient *Méditations Hegeliennes*" (in homage to Edmund Husserl's treatise, *Meditations Cartesiennes*).

Beginning in the 1990s, after the fall of the USSR, a fresh reading of Hegel took place in the West. For these scholars, fairly well represented by the Hegel Society of America and in cooperation with German scholars such as Otto Pöggeler and Walter Jaeschke, Hegel's works should be read without preconceptions. Marx plays a minor role in these new readings, and some contemporary scholars have suggested that Marx's interpretation of Hegel is irrelevant to a proper reading of Hegel. Some American philosophers associated with this movement include Clark Butler, Vince Hathaway, Daniel Shannon, David Duquette, David MacGregor, Edward Beach, John Burbidge, Lawrence Stepelevich, Rudolph Siebert, Randall Jackwak, Theodore Geraets and William Desmond.

## Criticism

Criticism of Hegel has been widespread in the 19th and the 20th centuries; a diverse range of individuals including Arthur Schopenhauer, Karl Marx, Søren Kierkegaard, Friedrich Nietzsche, Bertrand Russell, G. E. Moore, Eric Voegelin and A. J. Ayer have challenged Hegelian philosophy from a variety of perspectives. Among the first to take a critical view of Hegel's system was the 19th Century German group known as the Young Hegelians, which included Ludwig Feuerbach, Karl Marx, Friedrich Engels, and their followers. In Britain, the Hegelian British Idealism school (members of which included Francis Herbert Bradley, Bernard Bosanquet, and, in the United States, Josiah Royce) was challenged and rejected by analytic philosophers G. E. Moore and Bertrand Russell; Russell, in particular, considered "almost all" of Hegel's doctrines to be false.<sup>[35]</sup> Logical positivists such as Alfred Jules Ayer and the Vienna Circle also criticized Hegelian philosophy and its supporters, such as F. H. Bradley.

Hegel's contemporary Schopenhauer was particularly critical, and wrote of Hegel's philosophy as "a pseudo-philosophy paralyzing all mental powers, stifling all real thinking"<sup>[36]</sup> Kierkegaard criticized Hegel's 'absolute knowledge' unity<sup>[37]</sup> Scientist Ludwig Boltzmann also criticized the obscure complexity of Hegel's works, referring to Hegel's writing as an "unclear thoughtless flow of words".<sup>[38]</sup> Bertrand Russell stated that Hegel was "the hardest to understand of all the great philosophers" in his *Unpopular Essays* and *A History of Western Philosophy*.

Karl Popper makes the claim in the second volume of *The Open Society and Its Enemies* that Hegel's system formed a thinly veiled justification for the absolute rule of Frederick William III, and that Hegel's idea of the ultimate goal of history was to reach a state approximating that of 1830s Prussia. Popper further proposed that Hegel's philosophy served not only as an inspiration for communist and fascist totalitarian governments of the 20th century, whose dialectics allow for any belief to be construed as rational simply if it could be said to exist. This view of Hegel as an apologist of state power and precursor of 20th century totalitarianism was criticized by Herbert Marcuse in his *Reason and Revolution: Hegel and the Rise of Social Theory*, on the grounds that Hegel was not an apologist for any state or form of authority simply because it existed: for Hegel the state must always be rational. Other scholars, e.g. Walter Kaufmann and Shlomo Avineri, have also criticized Popper's theories about Hegel.<sup>[39]</sup> Isaiah Berlin listed Hegel as one of the six architects of modern authoritarianism who undermined liberal democracy, along with Rousseau, Helvetius, Fichte, Saint-Simon, and Maistre.<sup>[40]</sup>

## Selected works

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- *The German Constitution*, 1802
- *Phänomenologie des Geistes*, 1807  
*Phenomenology of Mind*, tr. J. B. Baillie, 1910; 2nd ed. 1931  
*Hegel's Phenomenology of Spirit*, tr. A. V. Miller, 1977  
*Phenomenology of Spirit*, translated by Terry Pinkard, 2010 <sup>[41]</sup>
- *Wissenschaft der Logik*, 1812, 1813, 1816  
*Science of Logic*, tr. W. H. Johnston and L. G. Struthers, 2 vols., 1929; tr. A. V. Miller, 1969; tr. George di Giovanni, 2010
- *Enzyklopädie der philosophischen Wissenschaften*, 1817; 2nd ed. 1827; 3rd ed. 1830 (*Encyclopedia of the Philosophical Sciences*)  
(Pt. I:) *The Logic of Hegel*, tr. William Wallace, 1874, 2nd ed. 1892; tr. T. F. Geraets, W. A. Suchting and H. S. Harris, 1991; tr. Klaus Brinkmann and Daniel O. Dahlstrom 2010  
(Pt. II:) *Hegel's Philosophy of Nature*, tr. A. V. Miller, 1970  
(Pt. III:) *Hegel's Philosophy of Mind*, tr. William Wallace, 1894; rev. by A. V. Miller, 1971
- *Grundlinien der Philosophie des Rechts*, 1821  
*Elements of the Philosophy of Right*, tr. T. M. Knox, 1942; tr. H. B. Nisbet, ed. Allen W. Wood, 1991

### Published posthumously

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- *Lectures on the Philosophy of History* (also translated as *Lectures on the Philosophy of World History*) 1837
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## Notes

- [1] "One of the few things on which the analysts, pragmatists, and existentialists agree with the dialectical theologians is that Hegel is to be repudiated: their attitude toward Kant, Aristotle, Plato, and the other great philosophers is not at all unanimous even within each movement; but opposition to Hegel is part of the platform of all four, and of the Marxists, too." Walter Kaufmann, "The Hegel Myth and Its Method" (<http://www.marxists.org/reference/subject/philosophy/works/us/kaufmann.htm>), in *From Shakespeare to Existentialism: Studies in Poetry, Religion, and Philosophy* by Walter Kaufmann, Beacon Press, Boston 1959, page 88-119
- [2] Pinkard, *Hegel: A Biography*, pp. 2-3; p. 745.
- [3] Ibid., 3, incorrectly gives the date as September 20, 1781, and describes Hegel as aged eleven. Cf. the index to Pinkard's book and his "Chronology of Hegel's Life", which correctly give the date as 1783 (pp. 773, 745); see also German Wikipedia.
- [4] Ibid., 4.
- [5] Ibid., 80.
- [6] Ibid., 223.
- [7] Ibid., 224-5.
- [8] Ibid., 228.
- [9] Ibid., 192.
- [10] Ibid., 238.
- [11] Ibid., 337.
- [12] Ibid., 354-5.
- [13] Ibid., 356.
- [14] Ibid., 658-9.
- [15] Norman Davies, *Europe: A history* p. 687
- [16] Pinkard, *Hegel: A Biography*, p. 548.
- [17] par. 378



- [18] See *Science of Logic*, trans. Miller [Atlantic Highlands, NJ: Humanities, 1989], pp. 133-136 and 138, top
- [19] *Ibid.*, 111
- [20] *Ibid.*, 145
- [21] See *Ibid.*, 146, top
- [22] Stefan Gruner: "Hegel's Aether Doctrine", VDM Publ., 2010, ISBN 978-3-639-28451-5
- [23] Etext of *Philosophy of Right* Hegel, 1827 (translated by Dyde, 1897) (<http://www.marxists.org/reference/archive/hegel/works/pr/preface.htm>)
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- [26] *ibid*
- [27] Hegel, G. W. F.. "Vorlesungen über die Geschichte der Philosophie" (<http://www.zeno.org/Philosophie/M/Hegel,+Georg+Wilhelm+Friedrich/Vorlesungen+Über+die+Geschichte+der+Philosophie/Erster+Teil:+Griechische+Philosophie/Erster+Abschnitt.+Von+Thales+bis+Aristoteles/Erstes+Kapitel.+Von+Thales+bis+Anaxagoras/D.+Philosophie+des+Heraklit>). pp. 336–337. . Retrieved 2008-07-01.
- [28] Hartnack, Justus; Lars Aagaard-Mogensen, Translator (1998). *An Introduction to Hegel's Logic*. Hackett Publishing. pp. 16–17. ISBN 0872204243. Hartnack quotes Hegel, *Lectures on the History of Philosophy* Volume I.
- [29] Hegel, G. W. F.. "Vorlesungen über die Geschichte der Philosophie" (<http://www.zeno.org/Philosophie/M/Hegel,+Georg+Wilhelm+Friedrich/Vorlesungen+Über+die+Geschichte+der+Philosophie/Erster+Teil:+Griechische+Philosophie/Erster+Abschnitt.+Von+Thales+bis+Aristoteles/Erstes+Kapitel.+Von+Thales+bis+Anaxagoras/D.+Philosophie+des+Heraklit>). pp. 319–343. . Retrieved 2008-07-01.
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- [31] The notable Introduction to *Philosophy of History* expresses the historical aspects of the dialectic.
- [32] Karl Löwith, *From Hegel to Nietzsche: The Revolution in Nineteenth-Century Thought*, translated by David E. Green, New York: Columbia University Press, 1964.
- [33] Benedetto Croce, *Guide to Aesthetics*, Translated by Patrick Romanell, "Translator's Introduction", The Library of Liberal Arts, The Bobbs-Merrill Co., Inc., 1965
- [34] {{ Slavoj Žižek, *The Return to Hegel* | cite web | url=<http://www.youtube.com/watch?v=aR3vfHuOW38> | accessdate=2011-07-08 }}
- [35] B.Russell, History of western philosophy, pg 701 chapter 22, paragraph 1
- [36] On the Basis of Morality
- [37] Søren Kierkegaard Concluding Unscientific Postscript
- [38] Ludwig Boltzmann, *Theoretical physics and philosophical problems: Selected writings*, p. 155, D. Reidel, 1974, ISBN 90-277-0250-0
- [39] (See for instance Walter Kaufmann 1959, *The Hegel Myth and Its Method* (<http://www.marxists.org/reference/subject/philosophy/works/us/kaufmann.htm>))
- [40] Berlin, Isaiah, *Freedom and Betrayal: Six Enemies of Human Liberty* (Princeton University Press, 2003)

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## Audio

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## Societies

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- Hegel by HyperText (<http://www.marxists.org/reference/archive/hegel/index.htm>), reference archive on Marxists.org
- Phenomenology of Spirit. translated by Terry Pinkard ([http://web.mac.com/titpaul/Site/Phenomenology\\_of\\_Spirit\\_page.html](http://web.mac.com/titpaul/Site/Phenomenology_of_Spirit_page.html))

# Process and Reality

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In philosophy, especially metaphysics, the book *Process and Reality* by Alfred North Whitehead sets out its author's philosophy of organism, also called process philosophy. The book, published in 1929, is a revision of the Gifford Lectures he gave in 1927-28.

Process philosophy lays the groundwork for a paradigm of subjectivity, which Whitehead calls a "completed metaphysical language." (p. 18)

We diverge from Descartes by holding that what he has described as primary *attributes* of physical bodies, are really the forms of internal relationships *between* actual occasions. Such a change of thought is the shift from materialism to Organic Realism, as a basic idea of physical science.

— *Process and Reality*, p. 471.

A signal technical feature of *Process and Reality* is the way its ontology is grounded in mereotopology, a mathematical formalism combining mereological and topological notions.

## Publication data

*Process and Reality: An Essay in Cosmology* (1929). 1979 corrected edition, edited by David Ray Griffin and Donald W. Sherburne, Free Press. ISBN 0-02-934570-7 (Part V. Final Interpretation <sup>[12]</sup>)

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## External links

- Internet Encyclopedia of Philosophy: "Process Philosophy" <sup>[4]</sup> -- by J. R. Hustwit.
  - Stanford Encyclopedia of Philosophy: "Process Philosophy" <sup>[5]</sup> -- by Nicholas Rescher.
  - M. Weber:[http://en.wikipedia.org/wiki/Michel\\_Weber\\_\(philosopher\)](http://en.wikipedia.org/wiki/Michel_Weber_(philosopher))
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# Mereotopology

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In formal ontology, a branch of metaphysics, and in ontological computer science, **mereotopology** is a first-order theory, embodying mereological and topological concepts, of the relations among wholes, parts, parts of parts, and the boundaries between parts.

## History and motivation

Mereotopology begins with theories A. N. Whitehead articulated in several books and articles he published between 1916 and 1929. Whitehead's early work is discussed in Kneebone (1963: chpt. 13.5) and Simons (1987: 2.9.1). The theory of Whitehead's 1929 *Process and Reality* augmented the part-whole relation with topological notions such as contiguity and connection. Despite Whitehead's acumen as a mathematician, his theories were insufficiently formal, even flawed. By showing how Whitehead's theories could be fully formalized and repaired, Clarke (1981, 1985) founded contemporary mereotopology.<sup>[1]</sup> The theories of Clarke and Whitehead are discussed in Simons (1987: 2.10.2), and Lucas (2000: chpt. 10). The entry Whitehead's point-free geometry includes two contemporary treatments of Whitehead's theories, due to Giangiacomo Gerla, each different from the theory set out in the next section.

Although mereotopology is a mathematical theory, we owe its subsequent development to logicians and theoretical computer scientists. Lucas (2000: chpt. 10) and Casati and Varzi (1999: chpts. 4,5) are introductions to mereotopology that can be read by anyone having done a course in first-order logic. More advanced treatments of mereotopology include Cohn and Varzi (2003) and, for the mathematically sophisticated, Roeper (1997). For a mathematical treatment of point-free geometry, see Gerla (1995).

Barry Smith (1996), Anthony Cohn and his coauthors, and Varzi alone and with others, have all shown that mereotopology can be useful in formal ontology and computer science, by formalizing relations such as contact, connection, boundaries, interiors, holes, and so on.

## Preferred approach of Casati & Varzi

Casati and Varzi (1999: chpt.4) set out a variety of mereotopological theories in a consistent notation. This section sets out several nested theories that culminate in their preferred theory **GEMTC**, and follows their exposition closely. The mereological part of **GEMTC** is the conventional theory **GEM**. Casati and Varzi do not say if the models of **GEMTC** include any conventional topological spaces.

We begin with some domain of discourse, whose elements are called individuals (a synonym for mereology is "the calculus of individuals"). Casati and Varzi prefer limiting the ontology to physical objects, but others freely employ mereotopology to reason about geometric figures and events, and to solve problems posed by research in machine intelligence.

An upper case Latin letter denotes both a relation and the predicate letter referring to that relation in first-order logic. Lower case letters from the end of the alphabet denote variables ranging over the domain; letters from the start of the alphabet are names of arbitrary individuals. If a formula begins with an atomic formula followed by the biconditional, the subformula to the right of the biconditional is a definition of the atomic formula, whose variables are unbound. Otherwise, variables not explicitly quantified are tacitly universally quantified. The axiom **Cn** below corresponds to axiom **C.n** in Casati and Varzi (1999: chpt. 4).

We begin with a topological primitive, a binary relation called *connection*; the atomic formula  $Cxy$  denotes that " $x$  is connected to  $y$ ." Connection is governed, at minimum, by the axioms:

**C1.**  $Cxx$ . (reflexive)

**C2.**  $Cxy \rightarrow Cyx$ . (symmetric)

Now posit the binary relation  $E$ , defined as:

$$Exy \leftrightarrow [Czx \rightarrow Czy].$$

$Exy$  is read as "y encloses x" and is also topological in nature. A consequence of **C1-2** is that  $E$  is reflexive and transitive, and hence a preorder. If  $E$  is also assumed extensional, so that:

$$(Exa \leftrightarrow Exb) \leftrightarrow (a = b),$$

then  $E$  can be proved antisymmetric and thus becomes a partial order. Enclosure, notated  $xKy$ , is the single primitive relation of the theories in Whitehead (1919, 1925), the starting point of mereotopology.

Let *parthood* be the defining primitive binary relation of the underlying mereology, and let the atomic formula  $Pxy$  denote that "x is part of y". We assume that  $P$  is a partial order. Call the resulting minimalist mereological theory **M**.

If  $x$  is part of  $y$ , we postulate that  $y$  encloses  $x$ :

$$\mathbf{C3.} \quad Pxy \rightarrow Exy.$$

**C3** nicely connects mereological parthood to topological enclosure.

Let  $O$ , the binary relation of mereological *overlap*, be defined as:

$$Oxy \leftrightarrow \exists z[Pzx \wedge Pzy].$$

Let  $Oxy$  denote that "x and y overlap." With  $O$  in hand, a consequence of **C3** is:

$$Oxy \rightarrow Cxy.$$

Note that the converse does not necessarily hold. While things that overlap are necessarily connected, connected things do not necessarily overlap. If this were not the case, topology would merely be a model of mereology (in which "overlap" is always either primitive or defined).

Ground mereotopology (**MT**) is the theory consisting of primitive  $C$  and  $P$ , defined  $E$  and  $O$ , the axioms **C1-3**, and axioms assuring that  $P$  is a partial order. Replacing the **M** in **MT** with the standard extensional mereology **GEM** results in the theory **GEMT**.

Let  $IPxy$  denote that "x is an internal part of y."  $IP$  is defined as:

$$IPxy \leftrightarrow (Pxy \wedge (Czx \rightarrow Ozy)).$$

Let  $\sigma x \varphi(x)$  denote the mereological sum (fusion) of all individuals in the domain satisfying  $\varphi(x)$ .  $\sigma$  is a variable binding prefix operator. The axioms of **GEM** assure that this sum exists if  $\varphi(x)$  is a first-order formula. With  $\sigma$  and the relation  $IP$  in hand, we can define the interior of  $x$ ,  $\mathbf{i}x$ , as the mereological sum of all interior parts  $z$  of  $x$ , or:

$$\mathbf{i}x \leftrightarrow \sigma z[IPzx].$$

Two easy consequences of this definition are:

$$\mathbf{i}W \leftrightarrow W,$$

where  $W$  is the universal individual, and

$$\mathbf{C5.}^{[2]} \quad P(\mathbf{i}x)x. \text{ (Inclusion)}$$

The operator  $\mathbf{i}$  has two more axiomatic properties:

$$\mathbf{C6.} \quad \mathbf{i}(\mathbf{i}x) \leftrightarrow \mathbf{i}x. \text{ (Idempotence)}$$

$$\mathbf{C7.} \quad \mathbf{i}(x \times y) \leftrightarrow \mathbf{i}x \times \mathbf{i}y,$$

where  $a \times b$  is the mereological product of  $a$  and  $b$ , not defined when  $Oab$  is false.  $\mathbf{i}$  distributes over product.

It can now be seen that  $\mathbf{i}$  is isomorphic to the interior operator of topology. Hence the dual of  $\mathbf{i}$ , the topological closure operator  $\mathbf{c}$ , can be defined in terms of  $\mathbf{i}$ , and Kuratowski's axioms for  $\mathbf{c}$  are theorems. Likewise, given an axiomatization of  $\mathbf{c}$  that is analogous to **C5-7**,  $\mathbf{i}$  may be defined in terms of  $\mathbf{c}$ , and **C5-7** become theorems. Adding **C5-7** to **GEMT** results in Casati and Varzi's preferred mereotopological theory, **GEMTC**.

$x$  is *self-connected* if it satisfies the following predicate:

$$SCx \leftrightarrow ((Owx \leftrightarrow (Owy \vee Owz)) \rightarrow Cyz).$$

Note that the primitive and defined predicates of **MT** alone suffice for this definition. The predicate *SC* enables formalizing the necessary condition given in Whitehead's *Process and Reality* for the mereological sum of two individuals to exist: they must be connected. Formally:

$$\mathbf{C8.} \ Cxy \rightarrow \exists z[SCz \wedge Ozx \wedge (Pwz \rightarrow (Owx \vee Owy)).$$

Given some mereotopology **X**, adding **C8** to **X** results in what Casati and Varzi call the *Whiteheadian extension* of **X**, denoted **WX**. Hence the theory whose axioms are **C1-8** is **WGEMTC**.

The converse of **C8** is a **GEMTC** theorem. Hence given the axioms of **GEMTC**, *C* is a defined predicate if *O* and *SC* are taken as primitive predicates.

If the underlying mereology is atomless and weaker than **GEM**, the axiom that assures the absence of atoms (**P9** in Casati and Varzi 1999) may be replaced by **C9**, which postulates that no individual has a topological boundary:

$$\mathbf{C9.} \ \forall x \exists y [Pyx \wedge (Czy \rightarrow Ozx) \wedge \neg (Pxy \wedge (Czx \rightarrow Ozy))].$$

When the domain consists of geometric figures, the boundaries can be points, curves, and surfaces. What boundaries could mean, given other ontologies, is not an easy matter and is discussed in Casati and Varzi (1999: chpt. 5).

## Footnotes

[1] Casati & Varzi (1999: chpt. 4) and Biacino & Gerla (1991) have reservations about some aspects of Clarke's formulation.

[2] The axiom **C4** of Casati and Varzi (1999) is irrelevant to this entry.

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## External links

- Stanford Encyclopedia of Philosophy: Boundary (<http://plato.stanford.edu/entries/boundary/>) -- by Achille Varzi. With many references.

# Philosophy of Organism

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**Philosophy of Organism** or **Organic Realism** is how Alfred North Whitehead described his metaphysics. It is now known as process philosophy.

Central to this school is the idea of concrescence. Concrescence means *growing together* (com/con from Latin for "together", crescence from Latin crescere/cret- *grow*), the present is given by a consense of subjective forms. We are multiple individuals, but there are also multiple individual agents of consciousness operant in the construction of the given. Marvin Minsky calls this the "society of mind" in his book *Society of Mind*.

Whitehead's "subjective forms" complement "eternal objects" in his metaphysical system; eternal objects being entities not unlike Plato's archetypal Forms. In *Process and Reality*, Whitehead proposes that his 'organic realism' be used in place of classical materialism.

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# Whitehead's point-free geometry

In mathematics, **point-free geometry** is a geometry whose primitive ontological notion is *region* rather than point. Two axiomatic systems are set out below, one grounded in mereology, the other in mereotopology and known as *connection theory*. A point can mark a space or objects.

## Motivation

Point-free geometry was first formulated in Whitehead (1919, 1920), not as a theory of geometry or of spacetime, but of "events" and of an "extension relation" between events. Whitehead's purposes were as much philosophical as scientific and mathematical.<sup>[1]</sup>

Whitehead did not set out his theories in a manner that would satisfy present-day canons of formality. The two formal first order theories described in this entry were devised by others in order to clarify and refine Whitehead's theories. The domain for both theories consists of "regions." All unquantified variables in this entry should be taken as tacitly universally quantified; hence all axioms should be taken as universal closures. No axiom requires more than three quantified variables; hence a translation of first order theories into relation algebra is possible. Each set of axioms has but four existential quantifiers.

## Inclusion-based point-free geometry

The axioms **G1–G7** are, but for numbering, those of Def. 2.1 in Gerla and Miranda (2008). The identifiers of the form **WPn**, included in the verbal description of each axiom, refer to the corresponding axiom in Simons (1987: 83).

The fundamental primitive binary relation is *Inclusion*, denoted by infix " $\leq$ ". (*Inclusion* corresponds to the binary *Parthood* relation that is a standard feature of all mereological theories.) The intuitive meaning of  $x \leq y$  is " $x$  is part of  $y$ ." Assuming that identity, denoted by infix "=", is part of the background logic, the binary relation *Proper Part*, denoted by infix "<", is defined as:

$$x < y \leftrightarrow (x \leq y \wedge x \neq y).$$

The axioms are:

- Inclusion partially orders the domain.

$$\mathbf{G1.} \ x \leq x. \text{ (reflexive)}$$

$$\mathbf{G2.} \ (x \leq z \wedge z \leq y) \rightarrow x \leq y. \text{ (transitive) } \mathbf{WP4.}$$

$$\mathbf{G3.} \ (x \leq y \wedge y \leq x) \rightarrow x = y. \text{ (anti-symmetric)}$$

- Given any two regions, there exists a region that includes both of them. **WP6.**

$$\mathbf{G4.} \ \exists z[x \leq z \wedge y \leq z].$$

- Proper Part densely orders the domain. **WP5.**

$$\mathbf{G5.} \ x < y \rightarrow \exists z[x < z < y].$$

- Both atomic regions and a universal region do not exist. Hence the domain has neither an upper nor a lower bound. **WP2.**

$$\mathbf{G6.} \ \exists yz[y < x \wedge x < z].$$

- Proper Parts Principle. If all the proper parts of  $x$  are proper parts of  $y$ , then  $x$  is included in  $y$ . **WP3.**

$$\mathbf{G7.} \ \forall z[z < x \rightarrow z < y] \rightarrow x \leq y.$$

A model of **G1–G7** is an *inclusion space*.

**Definition** (Gerla and Miranda 2008: Def. 4.1). Given some inclusion space, an **abstractive class** is a class  $G$  of regions such that  $G$  is totally ordered by Inclusion. Moreover, there does not exist a region included in all of the



regions included in  $G$ .

Intuitively, an abstractive class defines a geometrical entity whose dimensionality is less than that of the inclusion space. For example, if the inclusion space is the Euclidean plane, then the corresponding abstractive classes are points and lines.

Inclusion-based point-free geometry (henceforth "point-free geometry") is essentially an axiomatization of Simons's (1987: 83) system **W**. In turn, **W** formalizes a theory in Whitehead (1919) whose axioms are not made explicit. Point-free geometry is **W** with this defect repaired. Simons (1987) did not repair this defect, instead proposing in a footnote that the reader do so as an exercise. The primitive relation of **W** is Proper Part, a strict partial order. The theory<sup>[2]</sup> of Whitehead (1919) has a single primitive binary relation  $K$  defined as  $xKy \leftrightarrow y < x$ . Hence  $K$  is the converse of Proper Part. Simons's **WP1** asserts that Proper Part is irreflexive and so corresponds to **G1**. **G3** establishes that inclusion, unlike Proper Part, is anti-symmetric.

Point-free geometry is closely related to a dense linear order **D**, whose axioms are **G1-3**, **G5**, and the totality axiom  $x \leq y \vee y \leq x$ .<sup>[3]</sup> Hence inclusion-based point-free geometry would be a proper extension of **D** (namely  $\mathbf{D} \cup \{\mathbf{G4}, \mathbf{G6}, \mathbf{G7}\}$ ), were it not that the **D** relation " $\leq$ " is a total order.

## Connection theory

In his 1929 *Process and Reality*, A. N. Whitehead proposed a different approach, one inspired by De Laguna (1922). Whitehead took as primitive the topological notion of "contact" between two regions, resulting in a primitive "connection relation" between events. Connection theory **C** is a first order theory that distills the first 12 of the 31 assumptions in chpt. 2 of *Process and Reality* into 6 axioms, **C1-C6**. **C** is a proper fragment of the theories proposed in Clarke (1981), who noted their mereological character. Theories that, like **C**, feature both inclusion and topological primitives, are called mereotopologies.

**C** has one primitive relation, binary "connection," denoted by the prefixed predicate letter  $C$ . That  $x$  is included in  $y$  can now be defined as  $x \leq y \leftrightarrow \forall z[Czx \rightarrow Czy]$ . Unlike the case with inclusion spaces, connection theory enables defining "non-tangential" inclusion,<sup>[4]</sup> a total order that enables the construction of abstractive classes. Gerla and Miranda (2008) argue that only thus can mereotopology unambiguously define a point.

The axioms **C1-C6** below are, but for numbering, those of Def. 3.1 in Gerla and Miranda (2008).

- $C$  is reflexive. **C.1.**  
 $\mathbf{C1.} \ Cxx.$
- $C$  is symmetric. **C.2.**  
 $\mathbf{C2.} \ Cxy \rightarrow Cyx.$
- $C$  is extensional. **C.11.**  
 $\mathbf{C3.} \ \forall z[Czx \leftrightarrow Czy] \rightarrow x = y.$
- All regions have proper parts, so that **C** is an atomless theory. **P.9.**  
 $\mathbf{C4.} \ \exists y[y < x].$
- Given any two regions, there is a region connected to both of them.  
 $\mathbf{C5.} \ \exists z[Czx \wedge Czy].$
- All regions have at least two unconnected parts. **C.14.**  
 $\mathbf{C6.} \ \exists yz[(y \leq x) \wedge (z \leq x) \wedge \neg Cyz].$

A model of **C** is a *connection space*.

Following the verbal description of each axiom is the identifier of the corresponding axiom in Casati and Varzi (1999). Their system **SMT** (*strong mereotopology*) consists of **C1-C3**, and is essentially due to Clarke (1981).<sup>[5]</sup> Any mereotopology can be made atomless by invoking **C4**, without risking paradox or triviality. Hence **C** extends

the atomless variant of **SMT** by means of the axioms **C5** and **C6**, suggested by chpt. 2 of *Process and Reality*. For an advanced and detailed discussion of systems related to **C**, see Roeper (1997).

Biacino and Gerla (1991) showed that every model of Clarke's theory is a Boolean algebra, and models of such algebras cannot distinguished connections from overlapping. It is doubtful whether either fact is faithful to Whitehead's intent.

## Footnotes

- [1] See Kneebone (1963), chpt. 13.5, for a gentle introduction to Whitehead's theory. Also see Lucas (2000), chpt. 10.
- [2] Kneebone (1963), p. 346.
- [3] Also see Stoll, R. R., 1963. *Set Theory and Logic*. Dover reprint, 1979. P. 423.
- [4] Presumably this is Casati and Varzi's (1999) "Internal Part" predicate,  $IPxy \leftrightarrow (x \leq y) \wedge (Czx \rightarrow \exists v[v \leq z \wedge v \leq y])$ . This definition combines their (4.8) and (3.1).
- [5] Grzegorzczuk (1960) proposed a similar theory, whose motivation was primarily topological.


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## David Hilbert

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David Hilbert	
 <p>David Hilbert (1912)</p>	
<b>Born</b>	January 23, 1862 Königsberg or Wehlau, Province of Prussia(today Znamensk, Kaliningrad Oblast, Russia)
<b>Died</b>	February 14, 1943 (aged 81) Göttingen, Germany
<b>Residence</b>	Germany
<b>Nationality</b>	German
<b>Fields</b>	Mathematician and Philosopher
<b>Institutions</b>	University of Königsberg Göttingen University
<b>Alma mater</b>	University of Königsberg
<b>Doctoral advisor</b>	Ferdinand von Lindemann
<b>Doctoral students</b>	Wilhelm Ackermann Otto Blumenthal Werner Boy Richard Courant Haskell Curry Max Dehn Paul Funk Erich Hecke Hellmuth Kneser Robert König Emanuel Lasker Erhard Schmidt Hugo Steinhaus Teiji Takagi Hermann Weyl Ernst Zermelo

Known for	Hilbert's basis theorem Hilbert's axioms Hilbert's problems Hilbert's program Einstein–Hilbert action Hilbert space
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**David Hilbert** (German pronunciation: [ˈdaːvɪt ˈhɪlbɐt]; January 23, 1862 – February 14, 1943) was a German mathematician. He is recognized as one of the most influential and universal mathematicians of the 19th and early 20th centuries. Hilbert discovered and developed a broad range of fundamental ideas in many areas, including invariant theory and the axiomatization of geometry. He also formulated the theory of Hilbert spaces,<sup>[1]</sup> one of the foundations of functional analysis.

Hilbert adopted and warmly defended Georg Cantor's set theory and transfinite numbers. A famous example of his leadership in mathematics is his 1900 presentation of a collection of problems that set the course for much of the mathematical research of the 20th century.

Hilbert and his students contributed significantly to establishing rigor and developed important tools used in modern mathematical physics. Hilbert is known as one of the founders of proof theory and mathematical logic, as well as for being among the first to distinguish between mathematics and metamathematics.<sup>[2]</sup>

Life

Hilbert, the first of two children and only son of Otto and Maria Therese (Erdtmann) Hilbert, was born in the Province of Prussia - either in Königsberg (according to Hilbert's own statement) or in Wehlau (known since 1946 as Znamensk) near Königsberg where his father worked at the time of his birth.<sup>[3]</sup> In the fall of 1872, he entered the Friedrichskolleg Gymnasium (*Collegium fridericianum*, the same school that Immanuel Kant had attended 140 years before), but after an unhappy duration he transferred (fall 1879) to and graduated from (spring 1880) the more science-oriented Wilhelm Gymnasium.<sup>[4]</sup> Upon graduation he enrolled (autumn 1880) at the University of Königsberg, the "Albertina". In the spring of 1882, Hermann Minkowski (two years younger than Hilbert and also a native of Königsberg but so talented he had graduated early from his gymnasium and gone to Berlin for three semesters),<sup>[5]</sup> returned to Königsberg and entered the university. "Hilbert knew his luck when he saw it. In spite of his father's disapproval, he soon became friends with the shy, gifted Minkowski."<sup>[6]</sup> In 1884, Adolf Hurwitz arrived from Göttingen as an Extraordinarius, i.e., an associate professor. An intense and fruitful scientific exchange between the three began and especially Minkowski and Hilbert would exercise a reciprocal influence over each other at various times in their scientific careers. Hilbert obtained his doctorate in 1885, with a dissertation, written under Ferdinand von Lindemann, titled *Über invariante Eigenschaften spezieller binärer Formen, insbesondere der Kugelfunktionen* ("On the invariant properties of special binary forms, in particular the spherical harmonic functions").

Hilbert remained at the University of Königsberg as a professor from 1886 to 1895. In 1892, Hilbert married Käthe Jerosch (1864–1945), "the daughter of a Königsberg merchant, an outspoken young lady with an independence of mind that matched his own".<sup>[7]</sup> While at Königsberg they had their one child Franz Hilbert (1893–1969). In 1895, as a result of intervention on his behalf by Felix Klein he obtained the position of Chairman of Mathematics at the University of Göttingen, at that time the best research center for mathematics in the world and where he remained for the rest of his life.

His son Franz would suffer his entire life from an (undiagnosed) mental illness, his inferior intellect a terrible disappointment to his father and this tragedy a matter of distress to the mathematicians and students at Göttingen.<sup>[8]</sup> Sadly, Minkowski — Hilbert's "best and truest friend"<sup>[9]</sup> — would die prematurely of a ruptured appendix in 1909.



The Mathematical Institute in Göttingen. Its new building, constructed with funds from the Rockefeller Foundation, was opened by Hilbert and Courant in 1930.

## The Göttingen school

Among the students of Hilbert were: Hermann Weyl, chess champion Emanuel Lasker, Ernst Zermelo, and Carl Gustav Hempel. John von Neumann was his assistant. At the University of Göttingen, Hilbert was surrounded by a social circle of some of the most important mathematicians of the 20th century, such as Emmy Noether and Alonzo Church.

Among his 69 Ph.D. students in Göttingen were many who later became famous mathematicians, including (with date of thesis): Otto Blumenthal (1898), Felix Bernstein (1901), Hermann Weyl (1908), Richard Courant (1910), Erich Hecke (1910), Hugo Steinhaus (1911), Wilhelm Ackermann (1925).<sup>[10]</sup> Between 1902 and 1939 Hilbert was editor of the *Mathematische Annalen*, the leading mathematical journal of the time.

"Good, he did not have enough imagination to become a mathematician".

—Hilbert's response upon hearing that one of his students had dropped out to study poetry.<sup>[11]</sup>

## Later years

Hilbert lived to see the Nazis purge many of the prominent faculty members at University of Göttingen in 1933.<sup>[12]</sup> Those forced out included Hermann Weyl (who had taken Hilbert's chair when he retired in 1930), Emmy Noether and Edmund Landau. One who had to leave Germany, Paul Bernays, had collaborated with Hilbert in mathematical logic, and co-authored with him the important book *Grundlagen der Mathematik* (which eventually appeared in two volumes, in 1934 and 1939). This was a sequel to the Hilbert-Ackermann book *Principles of Mathematical Logic* from 1928.

About a year later, Hilbert attended a banquet and was seated next to the new Minister of Education, Bernhard Rust. Rust asked, "How is mathematics in Göttingen now that it has been freed of the Jewish influence?" Hilbert replied, "Mathematics in Göttingen? There is really none any more."<sup>[13]</sup>

By the time Hilbert died in 1943, the Nazis had nearly completely restaffed the university, inasmuch as many of the former faculty had either been Jewish or married to Jews. Hilbert's funeral was attended by fewer than a dozen people, only two of whom were fellow academics, among them Arnold Sommerfeld, a theoretical physicist and also a native of Königsberg.<sup>[14]</sup> News of his death only became known to the wider world six months after he had died.

The epitaph on his tombstone in Göttingen is the famous lines he had spoken at the conclusion of his retirement address to the Society of German Scientists and Physicians in the fall of 1930:<sup>[15]</sup>

*Wir müssen wissen.*

*Wir werden wissen.*

In English:

We must know.

We will know.

The day before Hilbert pronounced these phrases at the 1930 annual meeting of the Society of German Scientists and Physicians, Kurt Gödel—in a roundtable discussion during the Conference on Epistemology held jointly with the Society meetings—tentatively announced the first expression of his incompleteness theorem.<sup>[16]</sup>



Hilbert's tomb:  
*Wir müssen wissen*  
*Wir werden wissen*

## The finiteness theorem

Hilbert's first work on invariant functions led him to the demonstration in 1888 of his famous *finiteness theorem*. Twenty years earlier, Paul Gordan had demonstrated the theorem of the finiteness of generators for binary forms using a complex computational approach. Attempts to generalize his method to functions with more than two variables failed because of the enormous difficulty of the calculations involved. Hilbert realized that it was necessary to take a completely different path. As a result, he demonstrated *Hilbert's basis theorem*: showing the existence of a finite set of generators, for the invariants of quantics in any number of variables, but in an abstract form. That is, while demonstrating the existence of such a set, it was not a constructive proof — it did not display "an object" — but rather, it was an existence proof<sup>[17]</sup> and relied on use of the Law of Excluded Middle in an infinite extension.

Hilbert sent his results to the *Mathematische Annalen*. Gordan, the house expert on the theory of invariants for the *Mathematische Annalen*, was not able to appreciate the revolutionary nature of Hilbert's theorem and rejected the article, criticizing the exposition because it was insufficiently comprehensive. His comment was:

*Das ist nicht Mathematik. Das ist Theologie.*

*(This is not Mathematics. This is Theology.)*<sup>[18]</sup>

Klein, on the other hand, recognized the importance of the work, and guaranteed that it would be published without any alterations. Encouraged by Klein and by the comments of Gordan, Hilbert in a second article extended his method, providing estimations on the maximum degree of the minimum set of generators, and he sent it once more to the *Annalen*. After having read the manuscript, Klein wrote to him, saying:

*Without doubt this is the most important work on general algebra that the Annalen has ever published.*<sup>[19]</sup>

Later, after the usefulness of Hilbert's method was universally recognized, Gordan himself would say:

*I have convinced myself that even theology has its merits.*<sup>[20]</sup>

For all his successes, the nature of his proof stirred up more trouble than Hilbert could have imagined at the time. Although Kronecker had conceded, Hilbert would later respond to others' similar criticisms that "many different

constructions are subsumed under one fundamental idea" — in other words (to quote Reid): "Through a proof of existence, Hilbert had been able to obtain a construction"; "the proof" (i.e. the symbols on the page) was "the object".<sup>[20]</sup> Not all were convinced. While Kronecker would die soon after, his constructivist philosophy would continue with the young Brouwer and his developing intuitionist "school", much to Hilbert's torment in his later years.<sup>[21]</sup> Indeed Hilbert would lose his "gifted pupil" Weyl to intuitionism — "Hilbert was disturbed by his former student's fascination with the ideas of Brouwer, which aroused in Hilbert the memory of Kronecker".<sup>[22]</sup> Brouwer the intuitionist in particular opposed the use of the Law of Excluded Middle over infinite sets (as Hilbert had used it). Hilbert would respond:

*Taking the Principle of the Excluded Middle from the mathematician ... is the same as ... prohibiting the boxer the use of his fists.*<sup>[23]</sup>

## Axiomatization of geometry

The text *Grundlagen der Geometrie* (tr.: *Foundations of Geometry*) published by Hilbert in 1899 proposes a formal set, the Hilbert's axioms, substituting the traditional axioms of Euclid. They avoid weaknesses identified in those of Euclid, whose works at the time were still used textbook-fashion. Independently and contemporaneously, a 19-year-old American student named Robert Lee Moore published an equivalent set of axioms. Some of the axioms coincide, while some of the axioms in Moore's system are theorems in Hilbert's and vice-versa.

Hilbert's approach signaled the shift to the modern axiomatic method. In this, Hilbert was anticipated by Peano's work from 1889. Axioms are not taken as self-evident truths. Geometry may treat *things*, about which we have powerful intuitions, but it is not necessary to assign any explicit meaning to the undefined concepts. The elements, such as point, line, plane, and others, could be substituted, as Hilbert says, by tables, chairs, glasses of beer and other such objects. It is their defined relationships that are discussed.

Hilbert first enumerates the undefined concepts: point, line, plane, lying on (a relation between points and planes), betweenness, congruence of pairs of points, and congruence of angles. The axioms unify both the plane geometry and solid geometry of Euclid in a single system.

## The 23 Problems

Hilbert put forth a most influential list of 23 unsolved problems at the International Congress of Mathematicians in Paris in 1900. This is generally reckoned the most successful and deeply considered compilation of open problems ever to be produced by an individual mathematician.

After re-working the foundations of classical geometry, Hilbert could have extrapolated to the rest of mathematics. His approach differed, however, from the later 'foundationalist' Russell-Whitehead or 'encyclopedist' Nicolas Bourbaki, and from his contemporary Giuseppe Peano. The mathematical community as a whole could enlist in problems, which he had identified as crucial aspects of the areas of mathematics he took to be key.

The problem set was launched as a talk "The Problems of Mathematics" presented during the course of the Second International Congress of Mathematicians held in Paris. Here is the introduction of the speech that Hilbert gave:

*Who among us would not be happy to lift the veil behind which is hidden the future; to gaze at the coming developments of our science and at the secrets of its development in the centuries to come? What will be the ends toward which the spirit of future generations of mathematicians will tend? What methods, what new facts will the new century reveal in the vast and rich field of mathematical thought?*<sup>[24]</sup>

He presented fewer than half the problems at the Congress, which were published in the acts of the Congress. In a subsequent publication, he extended the panorama, and arrived at the formulation of the now-canonical 23 Problems of Hilbert. The full text is important, since the exegesis of the questions still can be a matter of inevitable debate, whenever it is asked how many have been solved.

Some of these were solved within a short time. Others have been discussed throughout the 20th century, with a few now taken to be unsuitably open-ended to come to closure. Some even continue to this day to remain a challenge for mathematicians.

## Formalism

In an account that had become standard by the mid-century, Hilbert's problem set was also a kind of manifesto, that opened the way for the development of the formalist school, one of three major schools of mathematics of the 20th century. According to the formalist, mathematics is manipulation of symbols according to agreed upon formal rules. It is therefore an autonomous activity of thought. There is, however, room to doubt whether Hilbert's own views were simplistically formalist in this sense.

## Hilbert's program

In 1920 he proposed explicitly a research project (in *metamathematics*, as it was then termed) that became known as Hilbert's program. He wanted mathematics to be formulated on a solid and complete logical foundation. He believed that in principle this could be done, by showing that:

1. all of mathematics follows from a correctly chosen finite system of axioms; and
2. that some such axiom system is provably consistent through some means such as the epsilon calculus.

He seems to have had both technical and philosophical reasons for formulating this proposal. It affirmed his dislike of what had become known as the *ignorabimus*, still an active issue in his time in German thought, and traced back in that formulation to Emil du Bois-Reymond.

This program is still recognizable in the most popular philosophy of mathematics, where it is usually called *formalism*. For example, the Bourbaki group adopted a watered-down and selective version of it as adequate to the requirements of their twin projects of (a) writing encyclopedic foundational works, and (b) supporting the axiomatic method as a research tool. This approach has been successful and influential in relation with Hilbert's work in algebra and functional analysis, but has failed to engage in the same way with his interests in physics and logic.

Hilbert wrote in 1919:

We are not speaking here of arbitrariness in any sense. Mathematics is not like a game whose tasks are determined by arbitrarily stipulated rules. Rather, it is a conceptual system possessing internal necessity that can only be so and by no means otherwise.

Hilbert published his views on the foundations of mathematics in the 2-volume work *Grundlagen der Mathematik*.

## Gödel's work

Hilbert and the mathematicians who worked with him in his enterprise were committed to the project. His attempt to support axiomatized mathematics with definitive principles, which could banish theoretical uncertainties, was however to end in failure.

Gödel demonstrated that any non-contradictory formal system, which was comprehensive enough to include at least arithmetic, cannot demonstrate its completeness by way of its own axioms. In 1931 his incompleteness theorem showed that Hilbert's grand plan was impossible as stated. The second point cannot in any reasonable way be combined with the first point, as long as the axiom system is genuinely finitary.

Nevertheless, the subsequent achievements of proof theory at the very least *clarified* consistency as it relates to theories of central concern to mathematicians. Hilbert's work had started logic on this course of clarification; the need to understand Gödel's work then led to the development of recursion theory and then mathematical logic as an autonomous discipline in the 1930s. The basis for later theoretical computer science, in Alonzo Church and Alan Turing also grew directly out of this 'debate'.



## Functional analysis

Around 1909, Hilbert dedicated himself to the study of differential and integral equations; his work had direct consequences for important parts of modern functional analysis. In order to carry out these studies, Hilbert introduced the concept of an infinite dimensional Euclidean space, later called Hilbert space. His work in this part of analysis provided the basis for important contributions to the mathematics of physics in the next two decades, though from an unanticipated direction. Later on, Stefan Banach amplified the concept, defining Banach spaces. Hilbert space is the most important single idea in the area of functional analysis, particularly of the spectral theory of self-adjoint linear operators, that grew up around it during the 20th century.

## Physics

Until 1912, Hilbert was almost exclusively a "pure" mathematician. When planning a visit from Bonn, where he was immersed in studying physics, his fellow mathematician and friend Hermann Minkowski joked he had to spend 10 days in quarantine before being able to visit Hilbert. In fact, Minkowski seems responsible for most of Hilbert's physics investigations prior to 1912, including their joint seminar in the subject in 1905.

In 1912, three years after his friend's death, Hilbert turned his focus to the subject almost exclusively. He arranged to have a "physics tutor" for himself.<sup>[25]</sup> He started studying kinetic gas theory and moved on to elementary radiation theory and the molecular theory of matter. Even after the war started in 1914, he continued seminars and classes where the works of Albert Einstein and others were followed closely.

By 1907 Einstein had framed the fundamentals of the theory of gravity, but then struggled for nearly 8 years with a confounding problem of putting the theory into final form.<sup>[26]</sup> By early summer 1915, Hilbert's interest in physics had focused him on general relativity, and he invited Einstein to Göttingen to deliver a week of lectures on the subject.<sup>[27]</sup> Einstein received an enthusiastic reception at Göttingen.<sup>[28]</sup> Over the summer Einstein learned that Hilbert was also working on the field equations and redoubled his own efforts. During November 1915 Einstein published several papers culminating in "The Field Equations of Gravitation" (see Einstein field equations). Nearly simultaneously David Hilbert published "The Foundations of Physics", an axiomatic derivation of the field equations (see Einstein–Hilbert action). Hilbert fully credited Einstein as the originator of the theory, and no public priority dispute concerning the field equations ever arose between the two men during their lives<sup>[29]</sup> (see more at priority).

Additionally, Hilbert's work anticipated and assisted several advances in the mathematical formulation of quantum mechanics. His work was a key aspect of Hermann Weyl and John von Neumann's work on the mathematical equivalence of Werner Heisenberg's matrix mechanics and Erwin Schrödinger's wave equation and his namesake Hilbert space plays an important part in quantum theory. In 1926 von Neuman showed that if atomic states were understood as vectors in Hilbert space, then they would correspond with both Schrödinger's wave function theory and Heisenberg's matrices.<sup>[30]</sup>

Throughout this immersion in physics, Hilbert worked on putting rigor into the mathematics of physics. While highly dependent on higher math, physicists tended to be "sloppy" with it. To a "pure" mathematician like Hilbert, this was both "ugly" and difficult to understand. As he began to understand physics and how physicists were using mathematics, he developed a coherent mathematical theory for what he found, most importantly in the area of integral equations. When his colleague Richard Courant wrote the now classic *Methods of Mathematical Physics* including some of Hilbert's ideas, he added Hilbert's name as author even though Hilbert had not directly contributed to the writing. Hilbert said "Physics is too hard for physicists", implying that the necessary mathematics was generally beyond them; the Courant-Hilbert book made it easier for them.

## Number theory

Hilbert unified the field of algebraic number theory with his 1897 treatise *Zahlbericht* (literally "report on numbers"). He also resolved a significant number-theory problem formulated by Waring in 1770. As with the finiteness theorem, he used an existence proof that shows there must be solutions for the problem rather than providing a mechanism to produce the answers.<sup>[31]</sup> He then had little more to publish on the subject; but the emergence of Hilbert modular forms in the dissertation of a student means his name is further attached to a major area.

He made a series of conjectures on class field theory. The concepts were highly influential, and his own contribution lives on in the names of the Hilbert class field and of the Hilbert symbol of local class field theory. Results on them were mostly proved by 1930, after work by Teiji Takagi.<sup>[32]</sup>

Hilbert did not work in the central areas of analytic number theory, but his name has become known for the Hilbert–Pólya conjecture, for reasons that are anecdotal.

## Miscellaneous talks, essays, and contributions

- Hilbert's paradox of the Grand Hotel, a meditation on strange properties of the infinite, is often used in popular accounts of infinite cardinal numbers.
- His Erdős number is (at most) 4.<sup>[33]</sup>
- He was a Foreign member of the Royal Society.
- He received the second Bolyai Prize in 1910.
- His collected works (*Gesammelte Abhandlungen*) have been published several times. The original versions of his papers contained errors; when the collection was first published, the errors were corrected and it was found that this could be done without major changes in the statements of the theorems, with one exception—a claimed proof of the Continuum hypothesis.<sup>[34]</sup> The errors were nonetheless so numerous and significant that it took Olga Taussky-Todd three years to make the corrections.<sup>[34]</sup>

## Quotes

- *We are not speaking here of arbitrariness in any sense. Mathematics is not like a game whose tasks are determined by arbitrarily stipulated rules. Rather, it is a conceptual system possessing internal necessity that can only be so and by no means otherwise.*<sup>[35]</sup>

## Notes

- [1] "David Hilbert" (<http://www.britannica.com/eb/article-9040439/David-Hilbert>). Encyclopædia Britannica. 2007. . Retrieved 2007-09-08.
- [2] Zach, Richard (2003-07-31). "Hilbert's Program" (<http://plato.stanford.edu/entries/hilbert-program/>). *Stanford Encyclopedia of Philosophy*. . Retrieved 2009-03-23.
- [3] Reid 1996, pp. 1–2; also on p. 8, Reid notes that there is some ambiguity of exactly where Hilbert was born. Hilbert himself stated that he was born in Königsberg.
- [4] Reid 1996, pp. 4–7.
- [5] Reid 1996, p. 11.
- [6] Reid 1996, p. 12.
- [7] Reid 1996, p. 36.
- [8] Reid 1996, p. 139.
- [9] Reid 1996, p. 121.
- [10] "The Mathematics Genealogy Project - David Hilbert" (<http://genealogy.math.ndsu.nodak.edu/html/id.phtml?id=7298>). . Retrieved 2007-07-07.
- [11] David J. Darling (2004). *The Universal Book of Mathematics* (<http://books.google.com/?id=nnpChqstvG0C&pg=PA151&dq=He+did+not+have+enough+imagination+to+become+a+mathematician>). John Wiley and Sons. p. 151. ISBN 9780471270478. .
- [12] ""Shame" at Göttingen" ([http://www.mphpa.org/index.php?option=com\\_content&task=view&id=167](http://www.mphpa.org/index.php?option=com_content&task=view&id=167)). . (Hilbert's colleagues exiled)
- [13] Reid 1996, p. 205.

- [14] Reid 1996, p. 213.
- [15] Reid 1996, p. 192
- [16] "The Conference on Epistemology of the Exact Sciences ran for three days, from 5 to 7 September" (Dawson 1997:68). "It ... was held in conjunction with and just before the ninety-first annual meeting of the Society of German Scientists and Physicians ... and the sixth Assembly of German Physicists and Mathematicians.... Gödel's contributed talk took place on Saturday, 6 September [1930], from 3 until 3:20 in the afternoon, and on Sunday the meeting concluded with a round table discussion of the first day's addresses. During the latter event, without warning and almost offhandedly, Gödel quietly announced that "one can even give examples of propositions (and in fact of those of the type of Goldbach or Fermat) that, while contentually true, are unprovable in the formal system of classical mathematics [153]" (Dawson:69) "... As it happened, Hilbert himself was present at Königsberg, though apparently not at the Conference on Epistemology. The day after the roundtable discussion he delivered the opening address before the Society of German Scientists and Physicians -- his famous lecture *Naturerkennen und Logik* (Logic and the knowledge of nature), at the end of which he declared: 'For the mathematician there is no Ignorabimus, and, in my opinion, not at all for natural science either. ... The true reason why [no one] has succeeded in finding an unsolvable problem is, in my opinion, that there is *no* unsolvable problem. In contrast to the foolish Ignorabimus, our credo avers: We must know, We shall know [159]" (Dawson:71). Gödel's paper was received on November 17, 1930 (cf Reid p. 197, van Heijenoort 1976:592) and published on 25 March 1931 (Dawson 1997:74). But Gödel had given a talk about it beforehand... "An abstract had been presented on October 1930 to the Vienna Academy of Sciences by Hans Hahn" (van Heijenoort:592); this abstract and the full paper both appear in van Heijenoort:583ff.
- [17] Reid 1996, pp. 36–37.
- [18] Reid 1996, p. 34.
- [19] Rowe, p. 195
- [20] Reid 1996, p. 37.
- [21] cf. Reid 1996, pp. 148–149.
- [22] Reid 1996, p. 148.
- [23] Reid 1996, p. 150.
- [24] [www.seas.harvard.edu/courses/cs121/handouts/Hilbert.pdf](http://www.seas.harvard.edu/courses/cs121/handouts/Hilbert.pdf)
- [25] Reid 1996, p. 129.
- [26] Isaacson 2007:218
- [27] Sauer 1999, Folsing 1998, Isaacson 2007:212
- [28] Isaacson 2007:213
- [29] Since 1971 there have been some spirited and scholarly discussions about which of the two men first presented the now accepted form of the field equations. "Hilbert freely admitted, and frequently stated in lectures, that the great idea was Einstein's." "Every boy in the streets of Göttingen understands more about four dimensional geometry than Einstein," he once remarked. "Yet, in spite of that, Einstein did the work and not the mathematicians" (Reid 1996, pp. 141-142, also Isaacson 2007:222 quoting Thorne p. 119).
- [30] It is of interest to note that in 1926, the year after the matrix mechanics formulation of quantum theory by Max Born and Werner Heisenberg, the mathematician John von Neumann became an assistant to David Hilbert at Göttingen. When von Neumann left in 1932, von Neumann's book on the mathematical foundations of quantum mechanics, based on Hilbert's mathematics, was published under the title *Mathematische Grundlagen der Quantenmechanik*. See: Norman Macrae, *John von Neumann: The Scientific Genius Who Pioneered the Modern Computer, Game Theory, Nuclear Deterrence, and Much More* (Reprinted by the American Mathematical Society, 1999) and Reid 1996.
- [31] Reid 1996, p. 114
- [32] This work established Takagi as Japan's first mathematician of international stature.
- [33] "Some Famous People with Finite Erdős Numbers" (<http://www.oakland.edu/enp/erdpdpaths.html>). .
- [34] Rota G.-C. (1997), "Ten lessons I wish I had been taught (<http://www.ams.org/notices/199701/comm-rota.pdf>)", *Notices of the AMS*, 44: 22-25.
- [35] Hilbert, D. (1919-20), *Natur und Mathematisches Erkennen: Vorlesungen, gehalten 1919-1920 in Göttingen. Nach der Ausarbeitung von Paul Bernays* (Edited and with an English introduction by David E. Rowe), Basel, Birkhäuser (1992).

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  - 1931. "The grounding of elementary number theory," 1148–56.
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  - 1925. "On the infinite," 367–92.
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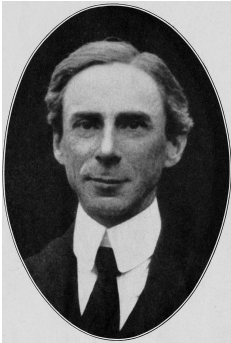
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  - Hilbert Bernays Project (<http://www.ags.uni-sb.de/~cp/p/hilbertbernays/goal.htm>)
  - Hilbert's 23 Problems Address (<http://aleph0.clarku.edu/~djoyce/hilbert/problems.html>)
  - Hilbert's Program (<http://plato.stanford.edu/entries/hilbert-program/>)
  - Works by David Hilbert (<http://www.gutenberg.org/author/David+Hilbert>) at Project Gutenberg
  - Hilbert's radio speech recorded in Königsberg 1930 (in German) (<http://math.sfsu.edu/smith/Documents/HilbertRadio/HilbertRadio.mp3>), with English translation (<http://math.sfsu.edu/smith/Documents/HilbertRadio/HilbertRadio.pdf>)
  - 'From Hilbert's Problems to the Future' (<http://www.gresham.ac.uk/event.asp?PageId=45&EventId=628>), lecture by Professor Robin Wilson, Gresham College, 27 February 2008 (available in text, audio and video formats).
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# Bertrand Russell

## Bertrand Arthur William Russell, 3rd Earl Russell

	
Full name	Bertrand Arthur William Russell, 3rd Earl Russell
Born	18 May 1872 Trellech, Monmouthshire, UK
Died	2 February 1970 (aged 97) Penrhyndeudraeth, Wales, UK
Era	20th century philosophy
Region	Western philosophy
School	Analytic philosophy Nobel Prize in Literature 1950
Main interests	Metaphysics, epistemology, logic, mathematics, philosophy of language, philosophy of science, ethics, philosophy of religion, history of philosophy
Notable ideas	Analytic philosophy, logical atomism, theory of descriptions, knowledge by acquaintance and knowledge by description, Russell's paradox, Russell's teapot

**Bertrand Arthur William Russell, 3rd Earl Russell**, OM, FRS<sup>[1]</sup> (18 May 1872 – 2 February 1970) was a British philosopher, logician, mathematician, historian, and social critic.<sup>[2]</sup> At various points in his life he imagined himself a liberal, a socialist, and a pacifist, but he also admitted that he had never been any of these things in any profound sense.<sup>[3]</sup> He was born in Wales, into one of the most prominent aristocratic families in Britain.<sup>[4]</sup>

Russell led the British "revolt against idealism" in the early 1900s. He is considered one of the founders of analytic philosophy along with his predecessor Gottlob Frege and his protégé Ludwig Wittgenstein, and is widely held to be one of the 20th century's premier logicians.<sup>[2]</sup> He co-authored, with A. N. Whitehead, *Principia Mathematica*, an attempt to ground mathematics on logic. His philosophical essay "On Denoting" has been considered a "paradigm of philosophy."<sup>[5]</sup> His work has had a considerable influence on logic, mathematics, set theory, linguistics, computer science (see type theory and type system), and philosophy, especially philosophy of language, epistemology, and metaphysics.

Russell was a prominent anti-war activist; he championed free trade and anti-imperialism.<sup>[6]</sup> <sup>[7]</sup> Russell went to prison for his pacifism during World War I.<sup>[8]</sup> Later, he campaigned against Adolf Hitler, then criticised Stalinist totalitarianism, attacked the United States of America's involvement in the Vietnam War, and was an outspoken proponent of nuclear disarmament.<sup>[9]</sup> One of his last acts was to issue a statement which condemned Israeli aggression in the Middle East.<sup>[10]</sup>

In 1950, Russell was awarded the Nobel Prize in Literature, "in recognition of his varied and significant writings in which he champions humanitarian ideals and freedom of thought."<sup>[11]</sup>

## Biography

### Ancestry

Bertrand Russell was born on 18 May 1872 at Ravenscroft, Trellech, Monmouthshire, Wales, into an influential and liberal family of the British aristocracy.<sup>[12]</sup> His paternal grandfather, John Russell, 1st Earl Russell, was the third son of John Russell, 6th Duke of Bedford, and had twice been asked by Queen Victoria to form a government, serving her as Prime Minister in the 1840s and 1860s.<sup>[13]</sup>

The Russells had been prominent in England for several centuries before this, coming to power and the peerage with the rise of the Tudor dynasty. They established themselves as one of Britain's leading Whig families, and participated in every great political event from the Dissolution of the Monasteries in 1536–40 to the Glorious Revolution in 1688–89 to the Great Reform Act in 1832.<sup>[13]</sup> <sup>[14]</sup>

Russell's mother Katharine Louisa (1844–1874) was the daughter of Edward Stanley, 2nd Baron Stanley of Alderley, and was the sister of Rosalind Howard, Countess of Carlisle.<sup>[9]</sup> Kate and Rosalind's mother was one of the founders of Girton College, Cambridge.<sup>[15]</sup>

Russell's parents were radical for their times. Russell's father, Viscount Amberley, was an atheist and consented to his wife's affair with their children's tutor, the biologist Douglas Spalding. Both were early advocates of birth control at a time when this was considered scandalous.<sup>[16]</sup> John Russell's atheism was evident when he asked the philosopher John Stuart Mill to act as Russell's secular godfather.<sup>[17]</sup> Mill died the year after Russell's birth, but his writings had a great effect on Russell's life.



Bertrand Russell's father, John Russell,  
Viscount Amberley

### Childhood and adolescence

Russell had two siblings: Frank (nearly seven years older than Bertrand), and Rachel (four years older). In June 1874 Russell's mother died of diphtheria, followed shortly by Rachel's death. In January 1876, his father also died of bronchitis following a long period of depression. Frank and Bertrand were placed in the care of their staunchly Victorian grandparents, who lived at Pembroke Lodge in Richmond Park. John Russell, 1st Earl Russell, his grandfather, who had been Prime Minister, died in 1878, and was remembered by Russell as a kindly old man in a wheelchair. As a result, his widow, the Countess Russell (née Lady Frances Elliot), was the dominant family figure for the rest of Russell's childhood and youth.<sup>[9]</sup> <sup>[16]</sup>

The countess was from a Scottish Presbyterian family, and successfully petitioned the Court of Chancery to set aside a provision in Amberley's will requiring the children to be raised as agnostics. Despite her religious conservatism, she held progressive views in other areas (accepting Darwinism and supporting Irish Home Rule), and her influence on Bertrand Russell's outlook on social justice and standing up for principle remained with him throughout his life — her favourite Bible verse, 'Thou shalt not follow a multitude to do evil' (Exodus 23:2), became his motto. The atmosphere at Pembroke Lodge was one of frequent prayer, emotional repression and formality; Frank reacted to this with open rebellion, but the young Bertrand learned to hide his feelings.

Russell's adolescence was very lonely, and he often contemplated suicide. He remarked in his autobiography that his keenest interests were in religion and mathematics, and that only the wish to know more mathematics kept him from suicide.<sup>[18]</sup> He was educated at home by a series of tutors.<sup>[11]</sup> His brother Frank introduced him to the work of Euclid, which transformed Russell's life.<sup>[16]</sup> <sup>[19]</sup>

Also, during these formative years, he discovered the works of Percy Bysshe Shelley. In his autobiography, he writes: "I spent all my spare time reading him, and learning him by heart, knowing no one to whom I could speak of what I thought or felt, I used to reflect how wonderful it would have been to know Shelley, and to wonder whether I should meet any live human being with whom I should feel so much sympathy."<sup>[20]</sup> Russell claimed that beginning at age 15, he spent considerable time thinking about the validity of Christian religious dogma, and by 18 had decided to discard the last of it.<sup>[21]</sup>

## University and first marriage

Russell won a scholarship to read for the Mathematical Tripos at Trinity College, Cambridge, and commenced his studies there in 1890.<sup>[22]</sup> He became acquainted with the younger G.E. Moore and came under the influence of Alfred North Whitehead, who recommended him to the Cambridge Apostles. He quickly distinguished himself in mathematics and philosophy, graduating as a high Wrangler in 1893 and becoming a Fellow in the latter in 1895.<sup>[23]</sup>  
[24]

Russell first met the American Quaker Alys Pearsall Smith when he was 17 years old. He became a friend of the Pearsall Smith family—they knew him primarily as 'Lord John's grandson' and enjoyed showing him off—and travelled with them to the continent; it was in their company that Russell visited the Paris Exhibition of 1889 and was able to climb the Eiffel Tower soon after it was completed.<sup>[25]</sup>

He soon fell in love with the puritanical, high-minded Alys, who was a graduate of Bryn Mawr College near Philadelphia, and, contrary to his grandmother's wishes, married her on 13 December 1894. Their marriage began to fall apart in 1901 when it occurred to Russell, while he was cycling, that he no longer loved her. She asked him if he loved her and he replied that he didn't. Russell also disliked Alys's mother, finding her controlling and cruel. It was to be a hollow shell of a marriage and they finally divorced in 1921, after a lengthy period of separation.<sup>[26]</sup> During this period, Russell had passionate (and often simultaneous) affairs with a number of women, including Lady Ottoline Morrell and the actress Lady Constance Malleston.<sup>[27]</sup>

## Early career

Russell began his published work in 1896 with *German Social Democracy*, a study in politics that was an early indication of a lifelong interest in political and social theory. In 1896, he taught German social democracy at the London School of Economics, where he also lectured on the science of power in the autumn of 1937.<sup>[28]</sup> He was also a member of the Coefficients dining club of social reformers set up in 1902 by the Fabian campaigners Sidney and Beatrice Webb.<sup>[29]</sup>

He now started an intensive study of the foundations of mathematics at Trinity during which he discovered Russell's paradox which challenged the foundations of set theory. In 1903 he published his first important book on mathematical logic, *The Principles of Mathematics* showing that mathematics could be deduced from a very small number of principles, and contributing significantly to the cause of logicism.<sup>[30]</sup>

In 1905 he wrote the essay "On Denoting", which was published in the philosophical journal *Mind*. Russell became a fellow of the Royal Society in 1908.<sup>[1]</sup> [9] The first of three volumes of *Principia Mathematica*, written with Whitehead, was published in 1910, which, along with the earlier *The Principles of Mathematics*, soon made Russell world famous in his field.

In 1910 he became a lecturer in the University of Cambridge where he soon received an approach from the Austrian engineering student Ludwig Wittgenstein, who became his PhD student and whom he viewed as a genius and a successor who would continue his work on logic. He spent hours dealing with Wittgenstein's various phobias and his frequent bouts of despair. This was often a drain on Russell's energy, but Russell continued to be fascinated by him and encouraged his academic development, including the publication of Wittgenstein's *Tractatus Logico-Philosophicus* in 1922.<sup>[31]</sup> Russell delivered his lectures on Logical Atomism, his version of these ideas, in 1918 before the end of the First World War and whilst Wittgenstein was still a prisoner of war.



## First World War

During the First World War, Russell was one of a very small number of intellectuals engaged in pacifist activities,<sup>[32]</sup> and, in 1916, he was dismissed from Trinity College following his conviction under the Defence of the Realm Act. He was charged a fine of 100 Pounds Sterling which he refused to pay, hoping that he would be sent to prison, but they instead sold his books at auction to raise the money. The books were bought by friends and he later treasured his copy of the King James Bible that was stamped "Confiscated by Cambridge Police." Russell was released from prison in September 1918. He was reinstated 1919, resigned 1920, was Turner Lecturer 1926, and became a Fellow again 1944–1949.<sup>[33]</sup> A later conviction for publicly lecturing against inviting the US to enter the war on Britain's side, resulted in six months' imprisonment in Brixton prison (see *Bertrand Russell's views on society*).<sup>[34]</sup>

## Between the wars, and second marriage

In August 1920, Russell travelled to Russia as part of an official delegation sent by the British government to investigate the effects of the Russian Revolution.<sup>[35]</sup> He met Vladimir Lenin and had an hour-long conversation with him. In his autobiography, he mentions that he found Lenin rather disappointing, sensing an "impish cruelty" in him and comparing him to "an opinionated professor". He also cruised down the Volga on a steam-ship. Russell's lover Dora Black also visited Russia independently at the same time — she was enthusiastic about the revolution, but Russell's experiences destroyed his previous tentative support for it. He wrote a book "The Practice and Theory of Bolshevism" about his experiences on this trip, which included 24 others from Britain, all of whom came home thinking well of the regime, despite Russell's attempts to change their mind. For example, he told them that he heard shots fired in the middle of the night and was sure these were clandestine executions, but the others maintained that it was only cars backfiring.



Russell

Russell subsequently lectured in Beijing on philosophy for one year, accompanied by Dora. He went there with optimism and hope, as China was then on a new path. Among other scholars there was Rabindranath Tagore, the Indian poet and also a Nobel Laureate.<sup>[11]</sup> While in China, Russell became gravely ill with pneumonia, and incorrect reports of his death were published in the Japanese press.<sup>[36]</sup> When the couple visited Japan on their return journey, Dora notified the world that "Mr. Bertrand Russell, having died according to the Japanese press, is unable to give interviews to Japanese journalists." The press were not amused and did not appreciate the sarcasm.<sup>[37]</sup>

On the couple's return to England on 26 August 1921, Dora was six months pregnant, and Russell arranged a hasty divorce from Alys, marrying Dora six days after the divorce was finalised, on 27 September 1921. Their children were John Conrad Russell, 4th Earl Russell, born on 16 November 1921 and Katharine Jane Russell (now Lady Katharine Tait) born on 29 December 1923. Russell supported himself during this time by writing popular books explaining matters of physics, ethics, and education to the layman. Some have suggested that at this point he had an affair with Vivienne Haigh-Wood, first wife of T. S. Eliot.<sup>[38]</sup>

Together with Dora, he also founded the experimental Beacon Hill School in 1927. The school was run from a succession of different locations, including its original premises at the Russells' residence, Telegraph House, near Harting, West Sussex. On 8 July 1930 Dora welcomed her third child, a daughter, Harriet Ruth. After he left the school in 1932, Dora continued it until 1943.<sup>[39]</sup> <sup>[40]</sup>

Upon the death of his elder brother Frank, in 1931, Russell became the 3rd Earl Russell. He once said that his title was primarily useful for securing hotel rooms.

Russell's marriage to Dora grew increasingly tenuous, and it reached a breaking point over her having two children with an American journalist, Griffin Barry.<sup>[40]</sup> They separated in 1932 and finally divorced. On 18 January 1936, Russell married his third wife, an Oxford undergraduate named Patricia ("Peter") Spence, who had been his children's governess since the summer of 1930. Russell and Peter had one son, Conrad Sebastian Robert Russell, 5th Earl Russell, who became a prominent historian and one of the leading figures in the Liberal Democratic party.<sup>[9]</sup>

## Second World War

Russell opposed rearmament against Nazi Germany, but in 1940 changed his view that avoiding a full scale world war was more important than defeating Hitler. He concluded that Adolf Hitler taking over all of Europe would be a permanent threat to democracy. In 1943, he adopted a stance toward large-scale warfare, "Relative Political Pacifism": War was always a great evil, but in some particularly extreme circumstances, it may be the lesser of two evils.<sup>[41]</sup>

## Post-Second World War

Before the Second World War, Russell taught at the University of Chicago, later moving on to Los Angeles to lecture at the University of California, Los Angeles. He was appointed professor at the City College of New York in 1940, but after a public outcry, the appointment was annulled by a court judgement: his opinions (especially those relating to sexual morality, detailed in *Marriage and Morals* ten years earlier) made him "morally unfit" to teach at the college. The protest was started by the mother of a student who would not have been eligible for his graduate-level course in mathematical logic. Many intellectuals, led by John Dewey, protested against his treatment.<sup>[42]</sup> Albert Einstein's often-quoted aphorism that "Great spirits have always encountered violent opposition from mediocre minds..." originated in his open letter in support of Russell, during this time.<sup>[43]</sup> Dewey and Horace M. Kallen edited a collection of articles on the CCNY affair in *The Bertrand Russell Case*. He soon joined the Barnes Foundation, lecturing to a varied audience on the history of philosophy; these lectures formed the basis of *A History of Western Philosophy*. His relationship with the eccentric Albert C. Barnes soon soured, and he returned to Britain in 1944 to rejoin the faculty of Trinity College.<sup>[44]</sup>

## Later life

During the 1940s and 1950s, Russell participated in many broadcasts over the BBC, particularly The Brains Trust and the Third Programme, on various topical and philosophical subjects. By this time Russell was world famous outside of academic circles, frequently the subject or author of magazine and newspaper articles, and was called upon to offer up opinions on a wide variety of subjects, even mundane ones. En route to one of his lectures in Trondheim, Russell was one of 24 survivors (among a total of 43 passengers) in an aeroplane crash in Hommelvik in October 1948.<sup>[45]</sup> *A History of Western Philosophy* (1945) became a best-seller, and provided Russell with a steady income for the remainder of his life.

In a speech in 1948,<sup>[46]</sup> Russell said that if the USSR's aggression continued, it would be morally worse to go to war after the USSR possessed an atomic bomb than before it possessed one, because if the USSR had no bomb the West's victory would come more swiftly and with fewer casualties than if there were atom bombs on both sides. At that time, only the USA possessed an atomic bomb, and the USSR was pursuing an extremely aggressive policy towards the countries in Eastern Europe which it was absorbing into its sphere of influence. Many understood Russell's comments to mean that Russell approved of a first strike in a war with the USSR, including Lawson, who was present when Russell spoke. Others, including Griffin who obtained a transcript of the speech, have argued that he was merely explaining the usefulness of America's atomic arsenal in deterring the USSR from continuing its domination of Eastern Europe.<sup>[45]</sup>

In 1948, Russell was invited by the BBC to deliver the inaugural Reith Lectures<sup>[47]</sup> - what was to become an annual series of lectures, still broadcast by the BBC. His series of six broadcasts, titled *Authority and the Individual*<sup>[48]</sup> explored themes such as the role of individual initiative in the development of a community and the role of state control in a progressive society. Russell also continued to write about philosophy. He wrote a foreword to *Words and Things* by Ernest Gellner which was highly critical of the later thought of Ludwig Wittgenstein and of Ordinary language philosophy. Gilbert Ryle refused to have the book reviewed in the philosophical journal *Mind* which caused Russell to respond via the Times. The result was a month-long correspondence in the Times, between the supporters and detractors of Ordinary language philosophy which was only ended when the Times published an editorial about the matter, which was critical of both sides but agreeing with the opponents of Ordinary language philosophy.<sup>[47]</sup>

In the King's Birthday Honours of 9 June 1949, Russell was awarded the Order of Merit,<sup>[48]</sup> and the following year he was awarded the Nobel Prize in Literature.<sup>[9] [11]</sup> When he was given the Order of Merit, King George VI was affable but slightly embarrassed at decorating a former jailbird, saying that "You have sometimes behaved in a manner that would not do if generally adopted."<sup>[49]</sup> Russell merely smiled, but afterwards claimed that the reply "That's right, just like your brother" immediately came to mind.

In 1952, Russell was divorced by Spence, with whom he had been very unhappy. Conrad, Russell's son by Spence, did not see his father between the time of the divorce and 1968 (at which time his decision to meet his father caused a permanent breach with his mother).

Russell married his fourth wife, Edith Finch, soon after the divorce, on 15 December 1952. They had known each other since 1925, and Edith had taught English at Bryn Mawr College near Philadelphia, Pennsylvania, sharing a house for 20 years with Russell's old friend Lucy Donnelly. Edith remained with him until his death, and, by all accounts, their marriage was a happy, close, and loving one. Russell's eldest son, John, suffered from serious mental illness, which was the source of ongoing disputes between Russell and John's mother, Russell's former wife, Dora. John's wife Susan was also mentally ill, and eventually Russell and Edith became the legal guardians of their three daughters (two of whom were later found to have schizophrenia).

In 1962, Russell played a public role in the Cuban Missile Crisis: in an exchange of telegrams with the Soviet Union leader Nikita Khrushchev, Khrushchev assured him that the Soviet government would not be reckless.<sup>[50]</sup> Russell also wrote to President Kennedy, who returned his telegram unopened.

## Political causes

Russell spent the 1950s and 1960s engaged in various political causes, primarily related to nuclear disarmament and opposing the Vietnam war (see also Russell Vietnam War Crimes Tribunal). The 1955 Russell–Einstein Manifesto was a document calling for nuclear disarmament and was signed by 11 of the most prominent nuclear physicists and intellectuals of the time.<sup>[51]</sup> He wrote a great many letters to world leaders during this period. He was in contact with Lionel Rogosin while the latter was filming his anti-war film *Good Times, Wonderful Times* in the 1960s. He also became a hero to many of the youthful members of the New Left. In early 1963, in particular, Russell became increasingly vocal about his disapproval of what he felt to be the US government's near-genocidal policies in South Vietnam. In 1963 he became the inaugural recipient of the Jerusalem Prize, an award for writers concerned with the freedom of the individual in society.<sup>[52]</sup> In October 1965 he tore up his Labour Party card because he suspected the party was going to send soldiers to support the USA in the Vietnam War.<sup>[9]</sup>

## Views on the creation of the state of Israel

In an essay titled 'On Israel and bombing' written in 1970, Russell says:

"...The tragedy of the people of Palestine is that their country was "given" by a foreign Power to another people for the creation of a new State. How much longer is the world willing to endure this spectacle of wanton cruelty? It is abundantly clear that the refugees have every right to the homeland from which they were driven, and the denial of this right is at the heart of the continuing conflict. No people anywhere in the world would accept being expelled en masse from their own country; how can anyone require the people of Palestine to accept a punishment which nobody else would tolerate? A permanent just settlement of the refugees in their homeland is an essential ingredient of any genuine settlement in the Middle East. We are frequently told, "We must sympathize with Israel because of the suffering of the Jews in Europe at the hands of the Nazis." What Israel is doing today cannot be condoned, and to invoke the horrors of the past to justify those of the present is gross hypocrisy. Not only does Israel condemn a vast number of refugees to misery; not only are many Arabs under occupation condemned to military rule; but also Israel condemns the Arab nations only recently emerging from colonial status, to continued impoverishment as military demands take precedence over national development.

All who want to see an end to bloodshed in the Middle East must ensure that any settlement does not contain the seeds of future conflict. Justice requires that the first step towards a settlement must be an Israeli withdrawal from all the territories occupied in June, 1967. A new world campaign is needed to help bring justice to the long-suffering people of the Middle East."<sup>[53]</sup>

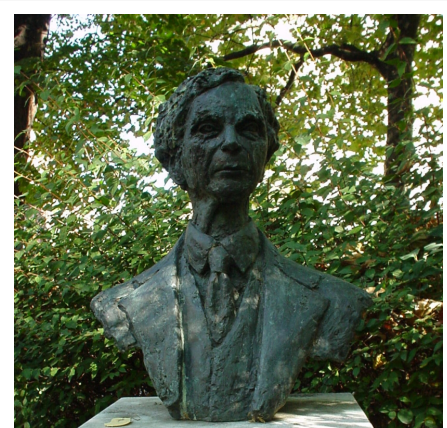
## Final years and death

Russell published his three-volume autobiography in 1967, 1968, and 1969. On 23 November 1969 he wrote to *The Times* newspaper saying that the preparation for show trials in Czechoslovakia was "highly alarming". The same month he appealed to Secretary General U Thant of the United Nations to support an international war crimes commission to investigate alleged torture and genocide by the USA in South Vietnam. The following month, he protested to Alexei Kosygin over the expulsion of Aleksandr Solzhenitsyn from the Writers Union.

On 31 January 1970, Russell issued a statement which condemned Israeli aggression in the Middle East and called for Israeli withdrawal from territory occupied in 1967. This was Russell's final political statement or act. It was read out at the International Conference of Parliamentarians in Cairo on 3 February 1970, the day after his death.<sup>[54]</sup>

Russell died of influenza on 2 February 1970 at his home, Plas Penrhyn, in Penrhyndeudraeth, Merionethshire, Wales. His body was cremated in Colwyn Bay on 5 February 1970. In accordance with his will there was no religious ceremony; his ashes were scattered over the Welsh mountains later that year.

In 1980, a memorial to Russell was commissioned by a committee including A. J. Ayer. It consists of a bust of Russell in Red Lion Square in London sculpted by Marcelle Quinton.<sup>[55]</sup>



Bust of Russell in Red Lion Square.

## Titles and honours from birth

Russell held throughout his life the following styles and honours:

- from birth until 1908: The Honourable Bertrand Arthur William Russell
- from 1908 until 1931: The Honourable Bertrand Arthur William Russell, FRS
- from 1931 until 1949: The Right Honourable The Earl Russell, FRS
- from 1949 until death: The Right Honourable The Earl Russell, OM, FRS

## Views

### Views on philosophy

Russell is generally credited with being one of the founders of analytic philosophy. He was deeply impressed by Gottfried Leibniz (1646–1716) and wrote on every major area of philosophy except aesthetics. He was particularly prolific in the field of metaphysics, the logic and the philosophy of mathematics, the philosophy of language, ethics and epistemology. When Brand Blanshard asked Russell why he didn't write on aesthetics, Russell replied that he didn't know anything about it, "but that is not a very good excuse, for my friends tell me it has not deterred me from writing on other subjects."<sup>[56]</sup>

### Views on society

Political and social activism occupied much of Russell's time for most of his life, which makes his prodigious and seminal writing on a wide range of technical and non-technical subjects all the more remarkable. Russell remained politically active almost to the end of his life, writing to and exhorting world leaders and lending his name to various causes. He was also famously noted for saying "No one can sit at the bedside of a dying child and still believe in God."<sup>[57]</sup>

Russell determined man to be "the product of causes . . . his origin, his growth, his hopes and fears, his loves and his beliefs, are but the outcome of accidental collocations of atoms, that no fire, no heroism, no intensity of thought and feeling, can preserve an individual life beyond the grave; that all the labors of the ages, all the inspiration, all the noonday brightness of human genius are destined to extinction in the vast death of the solar system, that the whole temple of man's achievement must inevitably be buried beneath the debris of a universe in ruins -- all these things, if not quite beyond dispute, are so nearly certain, that no philosophy which rejects them can hope to stand. . . ."<sup>[58]</sup>

## Selected works

### Selected bibliography of Russell's books

This is a selected bibliography of Russell's books in English sorted by year of first publication.

- 1896. *German Social Democracy*. London: Longmans, Green.
- 1897. *An Essay on the Foundations of Geometry* <sup>[61]</sup>. Cambridge: Cambridge University Press.
- 1900. *A Critical Exposition of the Philosophy of Leibniz*. Cambridge: Cambridge University Press.
- 1903. *The Principles of Mathematics* <sup>[62]</sup>, Cambridge University Press.
- 1905. *On Denoting*, Mind, vol. 14. ISSN: 00264425. Basil Blackwell.
- 1910. *Philosophical Essays*. London: Longmans, Green.
- 1910–1913. *[[Principia Mathematica* <sup>[63]]</sup> (with Alfred North Whitehead). 3 vols. Cambridge: Cambridge University Press.
- 1912. *[[The Problems of Philosophy* <sup>[64]]</sup>. London: Williams and Norgate.
- 1914. *Our Knowledge of the External World as a Field for Scientific Method in Philosophy* <sup>[65]</sup>. Chicago and London: Open CPublishing.

- 1916. *Principles of Social Reconstruction*. London: George Allen & Unwin.
- 1916. *Justice in War-time*. Chicago: Open Court.
- 1917. *Political Ideals* <sup>[66]</sup>. New York: The Century Co.
- 1918. *Mysticism and Logic and Other Essays* <sup>[67]</sup>. London: Longmans, Green.
- 1918. *Proposed Roads to Freedom: Socialism, Anarchism, and Syndicalism* <sup>[68]</sup>. London: George Allen & Unwin.
- 1919. *Introduction to Mathematical Philosophy* <sup>[69]</sup>. London: George Allen & Unwin. (ISBN 0-415-09604-9 for Routledge paperback) (Copy at Archive.org <sup>[70]</sup>).
- 1920. *The Practice and Theory of Bolshevism* <sup>[71]</sup>. London: George Allen & Unwin.
- 1921. *The Analysis of Mind* <sup>[72]</sup>. London: George Allen & Unwin.
- 1922. *The Problem of China* <sup>[73]</sup>. London: George Allen & Unwin.
- 1923. *The Prospects of Industrial Civilization*, in collaboration with Dora Russell. London: George Allen & Unwin.
- 1923. *The ABC of Atoms*, London: Kegan Paul, Trench, Trubner.
- 1924. *Icarus; or, The Future of Science*. London: Kegan Paul, Trench, Trubner.
- 1925. *The ABC of Relativity*. London: Kegan Paul, Trench, Trubner.
- 1925. *What I Believe*. London: Kegan Paul, Trench, Trubner.
- 1926. *On Education, Especially in Early Childhood*. London: George Allen & Unwin.
- 1927. *The Analysis of Matter*. London: Kegan Paul, Trench, Trubner.
- 1927. *An Outline of Philosophy*. London: George Allen & Unwin.
- 1927. *[[Why I Am Not a Christian <sup>[74]</sup>]]*. London: Watts.
- 1927. *Selected Papers of Bertrand Russell*. New York: Modern Library.
- 1928. *Sceptical Essays*. London: George Allen & Unwin.
- 1929. *Marriage and Morals*. London: George Allen & Unwin.
- 1930. *The Conquest of Happiness*. London: George Allen & Unwin.
- 1931. *The Scientific Outlook*. London: George Allen & Unwin.
- 1932. *Education and the Social Order* <sup>[75]</sup>, London: George Allen & Unwin.
- 1934. *Freedom and Organization, 1814–1914*. London: George Allen & Unwin.
- 1935. *In Praise of Idleness* <sup>[76]</sup>. London: George Allen & Unwin.
- 1935. *Religion and Science*. London: Thornton Butterworth.
- 1936. *Which Way to Peace?*. London: Jonathan Cape.
- 1937. *The Amberley Papers: The Letters and Diaries of Lord and Lady Amberley*, with Patricia Russell, 2 vols., London: Leonard & Virginia Woolf at the Hogarth Press.
- 1938. *Power: A New Social Analysis*. London: George Allen & Unwin.
- 1940. *An Inquiry into Meaning and Truth*. New York: W. W. Norton & Company.
- 1945. *[[A History of Western Philosophy]A History of Western Philosophy and Its Connection with Political and Social Circumstances from the Earliest Times to the Present Day <sup>[77]</sup>]]*. New York: Simon and Schuster.
- 1948. *Human Knowledge: Its Scope and Limits*. London: George Allen & Unwin.
- 1949. *Authority and the Individual* <sup>[78]</sup>. London: George Allen & Unwin.
- 1950. *Unpopular Essays* <sup>[79]</sup>. London: George Allen & Unwin.
- 1951. *New Hopes for a Changing World*. London: George Allen & Unwin.
- 1952. *The Impact of Science on Society*. London: George Allen & Unwin.
- 1953. *Satan in the Suburbs and Other Stories*. London: George Allen & Unwin.
- 1954. *Human Society in Ethics and Politics*. London: George Allen & Unwin.
- 1954. *Nightmares of Eminent Persons and Other Stories* <sup>[80]</sup>. London: George Allen & Unwin.
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Audio

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- Sound clips of Bertrand Russell speaking (<http://plato.stanford.edu/entries/russell/russell-soundclips.html>)

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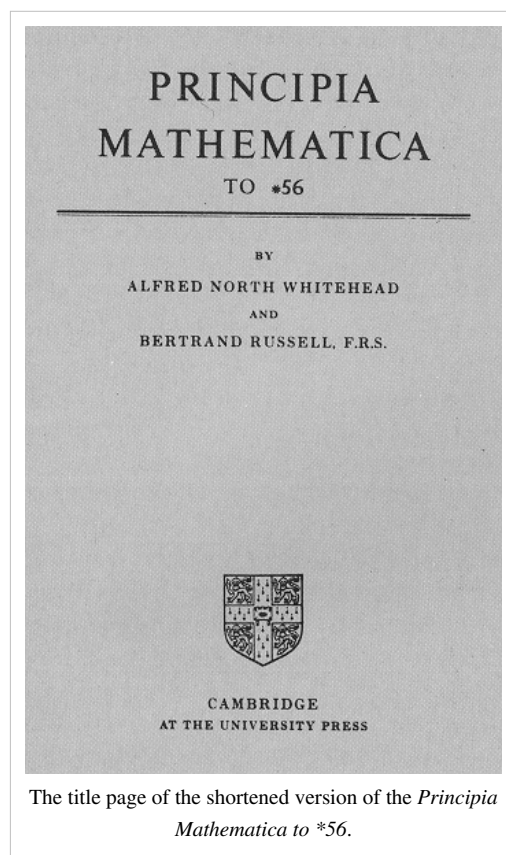
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- PM@100: LOGIC FROM 1910 TO 1927 (<http://pm100.mcmaster.ca>) Conference at the Bertrand Russell Research Centre (McMaster University, Ontario, Canada), to be held on 21–24 May 2010, celebrating the 100th anniversary of the publication of *Principia Mathematica*.
- Bertrand Russell Society Bulletin (2011-present)(Kris Notaro and David Blitz) (<http://bertrandrussell.org/>)

# Principia Mathematica

The *Principia Mathematica* is a three-volume work on the foundations of mathematics, written by Alfred North Whitehead and Bertrand Russell and published in 1910, 1912, and 1913. In 1927, it appeared in a second edition with an important *Introduction To the Second Edition*, an *Appendix A* that replaced ¶9 and an all-new *Appendix C*.

PM, as it is often abbreviated (not to be confused with Russell's 1903 *Principles of Mathematics*), is an attempt to derive all mathematical truths from a well-defined set of axioms and inference rules in symbolic logic. One of the main inspirations and motivations for *PM* was Frege's earlier work on logic, which had led to paradoxes discovered by Russell. These were avoided in *PM* by building an elaborate system of types: a set of elements is of a different type than is each of its elements (a set is not an element; one element is not the set) and one cannot speak of the "set of all sets" and similar constructs, which would lead to paradoxes (see Russell's paradox).

PM is widely considered by specialists in the subject to be one of the most important and seminal works in mathematical logic and philosophy since Aristotle's *Organon*.<sup>[1]</sup> The Modern Library placed it 23rd in a list of the top 100 English-language nonfiction books of the twentieth century.<sup>[2]</sup>



## Scope of foundations laid

The *Principia* covered only set theory, cardinal numbers, ordinal numbers, and real numbers. Deeper theorems from real analysis were not included, but by the end of the third volume it was clear to experts that a large amount of known mathematics could *in principle* be developed in the adopted formalism. It was also clear how lengthy such a development would be.

A fourth volume on the foundations of geometry had been planned, but the authors admitted to intellectual exhaustion upon completion of the third.

## The construction of the theory of *PM*

As noted in the criticism of the theory by Kurt Gödel (below), unlike a Formalist theory, the "logicistic" theory of *PM* has no "precise statement of the syntax of the formalism". Another observation is that almost immediately in the theory, *interpretations* (in the sense of model theory) are presented in terms of *truth-values* for the behavior of the symbols "⊢" (assertion of truth), "¬" (logical not), and "∨" (logical inclusive OR).

**Truth-values:** *PM* embeds the notions of "truth" and "falsity" in the notion "primitive proposition". A raw (pure) Formalist theory would not provide the meaning of the symbols that form a "primitive proposition"—the symbols themselves could be absolutely arbitrary and unfamiliar. The theory would specify only *how the symbols behave based on the grammar of the theory*. Then later, by *assignment* of "values", a model would specify an *interpretation* of what the formulas are saying. Thus in the formal Kleene symbol set below, the "interpretation" of what the symbols commonly mean, and by implication how they end up being used, is given in parentheses, e.g., "¬ (not)".

But this is not a pure Formalist theory.

### The contemporary construction of a formal theory

The following formalist theory is offered as contrast to the logicistic theory of *PM*. A contemporary formal system would be constructed as follows:

1. *Symbols used*: This set is the starting set, and other symbols can appear but only by *definition* from these beginning symbols. A starting set might be the following set derived from Kleene 1952: *logical symbols* " $\rightarrow$ " (implies, IF-THEN, " $\supset$ "), "&" (and), " $\vee$ " (or), " $\neg$ " (not), " $\forall$ " (for all), " $\exists$ " (there exists); *predicate symbol* " $=$ " (equals); *function symbols* " $+$ " (arithmetic addition), " $\cdot$ " (arithmetic multiplication), " $''$ " (successor); *individual symbol* " $0$ " (zero); *variables* " $a$ ", " $b$ ", " $c$ ", etc.; and *parentheses* "(" and ")".<sup>[3]</sup>
2. *Symbol strings*: The theory will build "strings" of these symbols by concatenation (juxtaposition).<sup>[4]</sup>
3. *Formation rules*: The theory specifies the rules of syntax (rules of grammar) usually as a recursive definition that starts with " $0$ " and specifies how to build acceptable strings or "well-formed formulas" (wffs).<sup>[5]</sup> This includes a rule for "substitution".<sup>[6]</sup> of strings for the symbols called "variables" (as opposed to the other symbol-types).
4. *Transformation rule(s)*: The axioms that specify the behaviors of the symbols and symbol sequences.
5. *Rule of inference, detachment, modus ponens*: The rule that allows the theory to "detach" a "conclusion" from the "premises" that led up to it, and thereafter to discard the "premises" (symbols to the left of the line  $|$ , or symbols above the line if horizontal). If this were not the case, then substitution would result in longer and longer strings that have to be carried forward. Indeed, after the application of modus ponens, nothing is left but the conclusion, the rest disappears forever.

Contemporary theories often specify as their first axiom the classical or modus ponens or "the rule of detachment":

$$A, A \supset B \mid B$$

The symbol " $|$ " is usually written as a horizontal line, here " $\supset$ " means "implies". The symbols  $A$  and  $B$  are "stand-ins" for strings; this form of notation is called an "axiom schema" (i.e., there is an uncountable number of specific forms the notation could take). This can be read in a manner similar to IF-THEN but with a difference: given symbol string IF  $A$  and  $A$  implies  $B$  THEN  $B$  (and retain only  $B$  for further use). But observe that the symbols have no "interpretation" (e.g., no "truth table" or "truth values" or "truth functions") and modus ponens proceeds mechanistically, by grammar alone.

### The logicistic construction of the theory of *PM*

The reader will observe both significant similarities, and similar differences, to a contemporary formal theory. Kleene states that "this deduction of mathematics from logic was offered as intuitive axiomatics. The axioms were intended to be believed, or at least to be accepted as plausible hypotheses concerning the world".<sup>[7]</sup> Indeed, unlike a Formalist theory that manipulates symbols according to rules of grammar, *PM* introduces the notion of "truth-values", i.e., truth and falsity in the *real-world* sense, and the "assertion of truth" almost immediately as the fifth and sixth elements in the structure of the theory (*PM* 1962:4-36):

- 1. *Variables*.
- 2. *Uses of various letters*.
- 3. *The fundamental functions of propositions*: "the Contradictory Function" symbolized by " $\sim$ " and the "Logical Sum or Disjunctive Function" symbolized by " $\vee$ " being taken as primitive and logical implication *defined* (the following example also used to illustrate 9. *Definition* below) as

$$p \supset q \text{ Df. } = \sim p \vee q \text{ Df. (PM 1962:11)}$$

and logical product defined as

$$p \cdot q \text{ Df. } = \sim(\sim p \vee \sim q) \text{ Df. (PM 1962:12)}$$

(See more about the confusing "dots" used as both a grammatical device and as to symbolize logical conjunction (logical AND) at the section on notation.)

- 4. *Equivalence: Logical* equivalence, not arithmetic equivalence: " $\equiv$ " given as a demonstration of how the symbols are used, i.e., "Thus ' $p \equiv q$ ' stands for ' $(p \supset q) \cdot (q \supset p)$ '." (PM 1962:7). Notice that to *discuss* a notation PM identifies a "meta"-notation with "[space] ... [space]":<sup>[8]</sup>

Logical equivalence appears again as a *definition*:

$$p \equiv q \cdot = \cdot (p \supset q) \cdot (q \supset p.) \text{ (PM 1962:12),}$$

Notice the appearance of parentheses. This *grammatical* usage is not specified and appears sporadically; parentheses do play an important role in symbol strings, however, e.g., the notation " $(x)$ " for the contemporary " $\forall x$ ".

- 5. *Truth-values*: "The 'Truth-value' of a proposition is *truth* if it is true, and 'falsehood if it is false' (this phrase is due to Frege) (PM 1962:7).
- 6. *Assertion-sign*: "' $\vdash p$ ' may be read 'it is true that' ... thus ' $\vdash p \supset q$ ' means 'it is true that  $p$  implies  $q$ ', whereas ' $\vdash p \supset \vdash q$ ' means ' $p$  is true; therefore  $q$  is true'. The first of these does not necessarily involve the truth either of  $p$  or of  $q$ , while the second involves the truth of both" (PM 1962:92).
- 7. *Inference*: PM's version of *modus ponens*. "[If] ' $\vdash p$ ' and ' $\vdash (p \supset q)$ ' have occurred, then ' $\vdash q$ ' will occur if it is desired to put it on record. The process of the inference cannot be reduced to symbols. Its sole record is the occurrence of ' $\vdash p$ ' [in other words, the symbols on the left disappear or can be erased]" (PM 1962:9).
- 8. *The Use of Dots*: See the section on notation.
- 9. *Definitions*: These use the "=" sign with "Df" at the right end. See the section on notation.
- 10. *Summary of preceding statements*: brief discussion of the primitive ideas " $\sim p$ " and " $p \vee q$ " and " $\vdash$ " prefixed to a proposition.
- 11. *Primitive propositions*: the axioms or postulates. This was significantly modified in the 2nd edition.
- 12. *Propositional functions*: The notion of "proposition" was significantly modified in the 2nd edition, including the introduction of "atomic" propositions linked by logical signs to form "molecular" propositions, and the use of substitution of molecular propositions into atomic or molecular propositions to create new expressions.
- 13. *The range of values and total variation*.
- 14. *Ambiguous assertion and the real variable*: This and the next two sections were modified or abandoned in the 2nd edition. In particular, the distinction between the concepts defined in sections 15. *Definition and the real variable* and 16 *Propositions connecting real and apparent variables* was abandoned in the second edition.
- 17. *Formal implication and formal equivalence*.
- 18. *Identity*: See the section on notation. The symbol "=" indicates "predicate" or *arithmetic equality*.
- 19. *Classes and relations*.
- 20. *Various descriptive functions of relations*.
- 21. *Plural descriptive functions*.
- 22. *Unit classes*.

## Primitive ideas

Cf. *PM* 1962:90-94, for the first edition:

- (1) *Elementary propositions.*
- (2) *Elementary propositions of functions.*
- (3) *Assertion:* introduces the notions of "truth" and "falsity".
- (4) *Assertion of a propositional function.*
- (5) *Negation:* "If  $p$  is any proposition, the proposition "not- $p$ ", or " $p$  is false," will be represented by " $\sim p$ ".
- (6) *Disjunction:* "If  $p$  and  $q$  are any propositions, the proposition " $p$  or  $q$ , i.e., "either  $p$  is true or  $q$  is true," where the alternatives are to be not mutually exclusive, will be represented by " $p \vee q$ ".
- (cf. section B)

## Primitive propositions (Pp)

The *first* edition (see discussion relative to the second edition, below) begins with a definition of the sign " $\supset$ "

¶1.01.  $p \supset q = \sim p \vee q$ . **Df.**

¶1.1. Anything implied by a true elementary proposition is true. **Pp** modus ponens

(¶1.11 was abandoned in the second edition.)

¶1.2.  $\vdash \sim p \vee p \supset p$ . **Pp** principle of tautology

¶1.3.  $\vdash \sim q \supset p \vee q$ . **Pp** principle of addition

¶1.4.  $\vdash \sim p \vee q \supset q \vee p$ . **Pp** principle of permutation

¶1.5.  $\vdash \sim p \vee (q \vee r) \supset q \vee (p \vee r)$ . **Pp** associative principle

¶1.6.  $\vdash \sim q \supset r \supset \sim p \vee q \supset p \vee r$ . **Pp** principle of summation

¶1.7. If  $p$  is an elementary proposition,  $\sim p$  is an elementary proposition. **Pp**

¶1.71. If  $p$  and  $q$  are elementary propositions,  $p \vee q$  is an elementary proposition. **Pp**

¶1.72. If  $\phi p$  and  $\psi p$  are elementary propositional functions which take elementary propositions as arguments,  $\phi p \vee \psi p$  is an elementary proposition. **Pp**

Together with the "Introduction to the Second Edition", the second edition's Appendix A abandons the entire section

¶9. This includes six primitive propositions ¶9 through ¶9.15 together with the Axioms of reducibility.

The revised theory is made difficult by the introduction of the Sheffer stroke (" $|$ ") to symbolize "incompatibility" (i.e., if both elementary propositions  $p$  and  $q$  are true, their "stroke"  $p | q$  is false), the contemporary logical NAND (not-AND). In the revised theory, the Introduction presents the notion of "atomic proposition", a "datum" that "belongs to the philosophical part of logic". These have no parts that are propositions and do not contain the notions "all" or "some". For example: "this is red", or "this is earlier than that". Such things can exist *ad finitum*, i.e., even an "infinite enumeration" of them to replace "generality" (i.e., the notion of "for all").<sup>[9]</sup> *PM* then "advance[s] to molecular propositions" that are all linked by "the stroke". Definitions give equivalences for " $\sim$ ", " $\vee$ ", " $\supset$ ", and " $|$ ".

The new introduction defines "elementary propositions" as atomic and molecular positions together. It then replaces all the primitive propositions ¶1.2 to ¶1.72 with a single primitive proposition framed in terms of the stroke:

"If  $p, q, r$  are elementary propositions, given  $p$  and  $p|(q|r)$ , we can infer  $r$ . This is a primitive proposition."

The new introduction keeps the notation for "there exists" (now recast as "sometimes true") and "for all" (recast as "always true"). Appendix A strengthens the notion of "matrix" or "predicative function" (a "primitive idea", *PM* 1962:164) and presents four new Primitive propositions as ¶8.1–¶8.13.

¶88. Multiplicative axiom

¶102. Axiom of infinity

## Notation used in *PM*

One author<sup>[1]</sup> observes that "The notation in that work has been superseded by the subsequent development of logic during the 20th century, to the extent that the beginner has trouble reading *PM* at all"; while much of the symbolic content can be converted to modern notation, the original notation itself is "a subject of scholarly dispute", and some notation "embod[y] substantive logical doctrines so that it cannot simply be replaced by contemporary symbolism".<sup>[10]</sup>

Kurt Gödel was harshly critical of the notation:

"It is to be regretted that this first comprehensive and thorough-going presentation of a mathematical logic and the derivation of mathematics from it [is] so greatly lacking in formal precision in the foundations (contained in ¶1–¶21 of *Principia* [i.e., sections ¶1–¶5 (propositional logic), ¶8–¶14 (predicate logic with identity/equality), ¶20(introduction to set theory), and ¶21 (introduction to relations theory)]) that it represents in this respect a considerable step backwards as compared with Frege. What is missing, above all, is a precise statement of the syntax of the formalism. Syntactical considerations are omitted even in cases where they are necessary for the cogency of the proofs".<sup>[11]</sup>

This is reflected in the example below of the symbols "*p*", "*q*", "*r*" and " $\supset$ " that can be formed into the string " $p \supset q \supset r$ ". *PM* requires a *definition* of what this symbol-string means in terms of other symbols; in contemporary treatments the "formation rules" (syntactical rules leading to "well formed formulas") would have prevented the formation of this string.

**Source of the notation:** Chapter I "Preliminary Explanations of Ideas and Notations" begins with the source of the notation:

"The notation adopted in the present work is based upon that of Peano, and the following explanations are to some extent modelled on those which he prefixes to his *Formulario Mathematico* [i.e., Peano 1889]. His use of dots as brackets is adopted, and so are many of his symbols" (*PM* 1927:4).<sup>[12]</sup>

*PM* adopts the assertion sign " $\vdash$ " from Frege's 1879 *Begriffsschrift*:<sup>[13]</sup>

"(I)t may be read 'it is true that'"<sup>[14]</sup>

Thus to assert a proposition *p* *PM* writes:

" $\vdash \cdot p$ ." (*PM* 1927:92)

(Observe that, as in the original, the left dot is square and of greater size than the period on the right.)

## An introduction to the notation of "Section A Mathematical Logic" (formulas ¶1–¶5.71)

*PM*'s dots<sup>[15]</sup> are used in a manner similar to parentheses. Later in section ¶14, brackets "[ ]" appear, and in sections ¶20 and following, braces "{ }" appear. Whether these symbols have specific meanings or are just for visual clarification is unclear. More than one dot indicates the "depth" of the parentheses, e.g., " $\cdot$ ", " $\cdot\cdot$ " or " $\cdot\cdot\cdot$ ", " $\cdot\cdot\cdot$ ", etc. Unfortunately for contemporary readers, the single dot (but also " $\cdot$ ", " $\cdot\cdot$ ", " $\cdot\cdot\cdot$ ", etc.) is used to symbolize "logical product" (contemporary logical AND often symbolized by "&" or " $\wedge$ ").

Logical implication is represented by Peano's " $\supset$ " simplified to " $\supset$ ", logical negation is symbolized by an elongated tilde, i.e., " $\sim$ " (contemporary " $\sim$ " or " $\neg$ "), the logical OR by " $\vee$ ". The symbol " $=$ " together with "Df" is used to indicate "is defined as", whereas in sections ¶13 and following, " $=$ " is defined as (mathematically) "identical with", i.e., contemporary mathematical "equality" (cf. discussion in section ¶13). Logical equivalence is represented by " $\equiv$ " (contemporary "if and only if"); "elementary" propositional functions are written in the customary way, e.g., " $f(p)$ ", but later the function sign appears directly before the variable without parenthesis e.g., " $\varphi x$ ", " $\chi x$ ", etc.

Example, *PM* introduces the definition of "logical product" as follows:

¶3.01.  $p \cdot q = \cdot \sim(\sim p \vee \sim q)$  Df.

where " $p \cdot q$ " is the logical product of *p* and *q*.



¶3.02.  $p \supset q \supset r \equiv p \supset q \supset r$  Df.

This definition serves merely to abbreviate proofs.

**Translation of the formulas into contemporary symbols:** Various authors use alternate symbols, so no definitive translation can be given. However, because of criticisms such as that of Kurt Gödel below, the best contemporary treatments will be very precise with respect to the "formation rules" (the syntax) of the formulas.

The first formula might be converted into modern symbolism as follows:<sup>[16]</sup>

$$(p \& q) =_{\text{df}} (\sim(\sim p \vee \sim q))$$

alternately

$$(p \& q) =_{\text{df}} (\neg(\neg p \vee \neg q))$$

alternately

$$(p \wedge q) =_{\text{df}} (\neg(\neg p \vee \neg q))$$

etc.

The second formula might be converted as follows:

$$(p \rightarrow q \rightarrow r) =_{\text{df}} (p \rightarrow q) \& (q \rightarrow r)$$

But note that this is not (logically) equivalent to  $(p \rightarrow (q \rightarrow r))$  nor to  $((p \rightarrow q) \rightarrow r)$ , and these two are not logically equivalent either. The fact that such an ambiguous formula as  $p \supset q \supset r$  might appear as a result of the application of the formalism of *PM* reflects the harsh criticism of Kurt Gödel.

## An introduction to the notation of "Section B Theory of Apparent Variables" (formulas ¶8–¶14.34)

These sections concern what is now known as Predicate logic, and Predicate logic with identity (equality).

- NB: As a result of criticism and advances, the second edition of *PM* (1927) replaces ¶9 with a new ¶8 (Appendix A). This new section eliminates the first edition's distinction between real and apparent variables, and it eliminates "the primitive idea 'assertion of a propositional function'".<sup>[17]</sup> To add to the complexity of the treatment, ¶8 introduces the notion of substituting a "matrix", and the Sheffer stroke:

- **Matrix:** In contemporary usage, *PM*'s *matrix* is (at least for propositional functions), a truth table, i.e., *all* truth-values of a propositional or predicate function.
- **Sheffer stroke:** Is the contemporary logical NAND (NOT-AND), i.e., "incompatibility", meaning:

"Given two propositions  $p$  and  $q$ , then ' $p \mid q$ ' means 'proposition  $p$  is incompatible with proposition  $q$ , i.e., if both propositions  $p$  and  $q$  evaluate as false, then  $p \mid q$  evaluates as true.' After section ¶8 the Sheffer stroke sees no usage.

**Section ¶10: The existential and universal "operators":** *PM* adds " $(x)$ " to represent the contemporary symbolism "for all  $x$ " i.e., " $\forall x$ ", and it uses a backwards serifed E to represent "there exists an  $x$ ", i.e., " $(\exists x)$ ", i.e., the contemporary " $\exists x$ ". The typical notation would be similar to the following:

" $(x) \cdot \varphi x$ " means "for all values of variable  $x$ , function  $\varphi$  evaluates to true"

" $(\exists x) \cdot \varphi x$ " means "for all values of variable  $x$ , function  $\varphi$  evaluates to true"

**Sections ¶10, ¶11, ¶12: Properties of a variable extended to all individuals:** section ¶10 introduces the notion of "a property" of a "variable". *PM* gives the example:  $\varphi$  is a function that indicates "is a Greek", and  $\psi$  indicates "is a man", and  $\chi$  indicates "is a mortal" these functions then apply to a variable  $x$ . *PM* can now write, and evaluate:

$$(x) \cdot \psi x$$

The notation above means "for all  $x$ ,  $x$  is a man". Given a collection of individuals, one can evaluate the above formula for truth or falsity. For example, given the restricted collection of individuals { Socrates, Plato, Russell, Zeus } the above evaluates to "true" if we allow for Zeus to be a man. But it fails for:

$$(x) \cdot \varphi x$$

because Russell is not Greek. And it fails for

$$(x) \cdot \chi x$$

because Zeus is not a mortal.

Equipped with this notation *PM* can create formulas to express the following: "If all Greeks are men and if all men are mortals then all Greeks are mortals". (*PM* 1962:138)

$$(x) \cdot \varphi x \supset \psi x \cdot (x) \cdot \psi x \supset \chi x \cdot \supset (x) \cdot \varphi x \supset \psi x$$

Another example: the formula:

$$\text{¶10.01. } (\exists x) \cdot \varphi x = \cdot \sim(x) \cdot \sim\varphi x \text{ Df.}$$

means "The symbols representing the assertion 'There exists at least one  $x$  that satisfies function  $\varphi$ ' is defined by the symbols representing the assertion 'It's not true that, given all values of  $x$ , there are no values of  $x$  satisfying  $\varphi$ '".

The symbolisms  $\supset_x$  and " $\equiv_x$ " appear at ¶10.02 and ¶10.03. Both are abbreviations for universality (i.e., for all) that bind the variable  $x$  to the logical operator. Contemporary notation would have simply used parentheses outside of the equality (" $=$ ") sign:

$$\text{¶10.02 } \varphi x \supset_x \psi x = \cdot (x) \cdot \varphi x \supset \psi x \text{ Df}$$

Contemporary notation:  $\forall x(\varphi(x) \rightarrow \psi(x))$  (or a variant)

$$\text{¶10.03 } \varphi x \equiv_x \psi x = \cdot (x) \cdot \varphi x \supset \psi x \text{ Df}$$

Contemporary notation:  $\forall x(\varphi(x) \leftrightarrow \psi(x))$  (or a variant)

*PM* attributes the first symbolism to Peano.

Section ¶11 applies this symbolism to two variables. Thus the following notations:  $\supset_x$ ,  $\supset_y$ ,  $\supset_{x,y}$  could all appear in a single formula.

Section ¶12 reintroduces the notion of "matrix" (contemporary truth table), the notion of logical types, and in particular the notions of *first-order* and *second-order* functions and propositions.

New symbolism " $\varphi ! x$ " represents any value of a first-order function. If a circumflex " $\wedge$ " is placed over a variable, then this is an "individual" value of  $y$ , meaning that " $\hat{y}$ " indicates "individuals" (e.g., a row in a truth table); this distinction is necessary because of the matrix/extensional nature of propositional functions.

Now equipped with the matrix notion, *PM* can assert its controversial axiom of reducibility: a function of one or two variables (two being sufficient for *PM*'s use) *where all its values are given* (i.e., in its matrix) is (logically) equivalent (" $\equiv$ ") to some "predicative" function of the same variables. The one-variable definition is given below as an illustration of the notation (*PM* 1962:166-167):

$$\text{¶12.1 } \vdash (\exists f) \cdot \varphi x \equiv_x f!x \text{ Pp;}$$

**Pp** is a "Primitive proposition" ("Propositions assumed without proof" (*PM* 1962:12, i.e., contemporary "axioms"), adding to the 7 defined in section ¶1 (starting with ¶1.1 modus ponens). These are to be distinguished from the "primitive ideas" that include the assertion sign " $\vdash$ ", negation " $\sim$ ", logical OR " $\vee$ ", the notions of "elementary proposition" and "elementary propositional function"; these are as close as *PM* comes to rules of notational formation, i.e., syntax.

This means: "We assert the truth of the following: There exists a function  $f$  with the property that: given all values of  $x$ , their evaluations in function  $\varphi$  (i.e., resulting their matrix) is logically equivalent to some  $f$  evaluated at those same values of  $x$ . (and vice versa, hence logical equivalence)". In other words: given a matrix determined by property  $\varphi$  applied to variable  $x$ , there exists a function  $f$  that, when applied to the  $x$  is logically equivalent to the matrix. Or: every matrix  $\varphi x$  can be represented by a function  $f$  applied to  $x$ , and vice versa.

**¶13: The identity operator " $=$ "** : This is a definition that uses the sign in two different ways, as noted by the quote from *PM*:

$$\S 13.01. x = y \text{ Df. } \equiv (\varphi) [\varphi ! x \supset \varphi ! y] \text{ Df}$$

means:

"This definition states that  $x$  and  $y$  are to be called identical when every predicative function satisfied by  $x$  is also satisfied by  $y$  ... Note that the second sign of equality in the above definition is combined with "Df", and thus is not really the same symbol as the sign of equality which is defined."

The not-equals sign " $\neq$ " makes its appearance as a definition at  $\S 13.02$ .

#### $\S 14$ : Descriptions:

"A *description* is a phrase of the form "the term  $y$  which satisfies  $\varphi y$ ", where  $\varphi y$  is some function satisfied by one and only one argument."<sup>[18]</sup>

From this *PM* employs two new symbols, a forward "E" and an inverted iota " $\imath$ ". Here is an example:

$$\S 14.02. E ! (\imath y) (\varphi y) \equiv (\exists b) [\varphi b \equiv_y y = b] \text{ Df.}$$

This has the meaning:

"The  $y$  satisfying  $\varphi y$  exists," which holds when, and only when  $\varphi y$  is satisfied by one value of  $y$  and by no other value." (*PM* 1967:173-174)

### Introduction to the notation of the theory of classes and relations

The text leaps from section  $\S 14$  directly to the foundational sections  $\S 20$  GENERAL THEORY OF CLASSES and  $\S 21$  GENERAL THEORY OF RELATIONS. "Relations" are what known in contemporary set theory as ordered pairs. Sections  $\S 20$  and  $\S 22$  introduce many of the symbols still in contemporary usage. These include the symbols " $\epsilon$ ", " $\subset$ ", " $\cap$ ", " $\cup$ ", " $-$ ", " $\Lambda$ ", and " $V$ ": " $\epsilon$ " signifies "is an element of" (*PM* 1962:188); " $\subset$ " ( $\S 22.01$ ) signifies "is contained in", "is a subset of"; " $\cap$ " ( $\S 22.02$ ) signifies the intersection (logical product) of classes (sets); " $\cup$ " ( $\S 22.03$ ) signifies the union (logical sum) of classes (sets); " $-$ " ( $\S 22.03$ ) signifies negation of a class (set); " $\Lambda$ " signifies the null class; and " $V$ " signifies the universal class or universe of discourse.

Small Greek letters (other than " $\epsilon$ ", " $\iota$ ", " $\pi$ ", " $\varphi$ ", " $\psi$ ", " $\chi$ ", and " $\theta$ ") represent classes (e.g., " $\alpha$ ", " $\beta$ ", " $\gamma$ ", " $\delta$ ", etc.) (*PM* 1962:188):

$$x \epsilon \alpha$$

"The use of single letter in place of symbols such as  $\hat{z}(\varphi z)$  or  $\hat{z}(\varphi ! z)$  is practically almost indispensable, since otherwise the notation rapidly becomes intolerably cumbrous. Thus ' $x \epsilon \alpha$ ' will mean ' $x$  is a member of the class  $\alpha$ '. (*PM* 1962:188)

$$\alpha \cup -\alpha = V$$

The union of a set and its inverse is the universal (completed) set.<sup>[19]</sup>

$$\alpha \cap -\alpha = \Lambda$$

The intersection of a set and its inverse is the null (empty) set.

When applied to relations in section  $\S 23$  CALCULUS OF RELATIONS, the symbols " $\subset$ ", " $\cap$ ", " $\cup$ ", and " $-$ " acquire a dot: for example: " $\cap$ ", " $\cap$ ".<sup>[20]</sup>

**The notion, and notation, of "a class" (set):** In the first edition *PM* asserts that no new primitive ideas are necessary to define what is meant by "a class", and only two new "primitive propositions" called the axioms of reducibility for classes and relations respectively (*PM* 1962:25).<sup>[21]</sup> But before this notion can be defined, *PM* feels it necessary to create a peculiar notation " $\hat{z}(\varphi z)$ " that it calls a "fictitious object". (*PM* 1962:188)

$$\vdash x \epsilon \hat{z}(\varphi z) \equiv (\varphi x)$$

"i.e., ' $x$  is a member of the class determined by  $(\varphi z)$ ' is [logically] equivalent to ' $x$  satisfies  $(\varphi z)$ ,' or to ' $(\varphi x)$  is true.'". (*PM* 1962:25)

At least *PM* can tell the reader how these fictitious objects behave, because "A class is wholly determinate when its membership is known, that is, there cannot be two different classes having the same membership" (*PM* 1962:26). This is symbolized by the following equality (similar to **13.01** above):

$$\hat{z}(\varphi z) = \hat{z}(\psi z) \equiv (x) \varphi x \equiv \psi x$$

"This last is the distinguishing characteristic of classes, and justifies us in treating  $\hat{z}(\psi z)$  as the class determined by [the function]  $\psi \hat{z}$ ." (*PM* 1962:188)

Perhaps the above can be made clearer by the discussion of classes in *Introduction to the 2nd Edition*, which disposes of the *Axiom of Reducibility* and replaces it with the notion: "All functions of functions are extensional" (*PM* 1962:xxxix), i.e.,

$$\varphi x \equiv_x \psi x \supset (x) \varphi(x) \equiv f(\varphi \hat{z}) \equiv f(\psi \hat{z}) \quad (\text{PM 1962:xxxix})$$

This has the reasonable meaning that "IF for all values of  $x$  the *truth-values* of the functions  $\varphi$  and  $\psi$  of  $x$  are [logically] equivalent, THEN the function  $f$  of a given  $\varphi \hat{z}$  and  $f$  of  $\psi \hat{z}$  are [logically] equivalent." *PM* asserts this is "obvious":

"This is obvious, since  $\varphi$  can only occur in  $f(\varphi \hat{z})$  by the substitution of values of  $\varphi$  for  $p, q, r, \dots$  in a [logical-] function, and, if  $\varphi x \equiv \psi x$ , the substitution of  $\varphi x$  for  $p$  in a [logical-] function gives the same truth-value to the truth-function as the substitution of  $\psi x$ . Consequently there is no longer any reason to distinguish between functions classes, for we have, in virtue of the above,

$$\varphi x \equiv_x \psi x \supset (x) \varphi \hat{z} = \psi \hat{z}."$$

Observe the change to the equality "=" sign on the right. *PM* goes on to state that will continue to hang onto the notation " $\hat{z}(\varphi z)$ ", but this is merely equivalent to  $\varphi \hat{z}$ , and this is a class. (all quotes: *PM* 1962:xxxix).

## Consistency and criticisms

According to Carnap's "Logistic Foundations of Mathematics", Russell wanted a theory that could plausibly be said to derive all of mathematics from purely logical axioms. However, *Principia Mathematica* required, in addition to the basic axioms of type theory, three further axioms that seemed to not be true as mere matters of logic, namely the axiom of infinity, the axiom of choice, and the axiom of reducibility. Since the first two were existential axioms, Russell phrased mathematical statements depending on them as conditionals. But reducibility was required to be sure that the formal statements even properly express statements of real analysis, so that statements depending on it could not be reformulated as conditionals. Frank P. Ramsey tried to argue that Russell's ramification of the theory of types was unnecessary, so that reducibility could be removed, but these arguments seemed inconclusive.

Beyond the status of the axioms as logical truths, the questions remained:

- whether a contradiction could be derived from the *Principia*'s axioms (the question of inconsistency), and
- whether there exists a mathematical statement which could neither be proven nor disproven in the system (the question of completeness).

Propositional logic itself was known to be consistent, but the same had not been established for *Principia*'s axioms of set theory. (See Hilbert's second problem.)

## Gödel 1930, 1931

In 1930, Gödel's completeness theorem showed that propositional logic itself was complete in a much weaker sense—that is, any sentence that is unprovable from a given set of axioms must actually be false in some model of the axioms. However, this is not the stronger sense of completeness desired for *Principia Mathematica*, since a given system of axioms (such as those of *Principia Mathematica*) may have many models, in some of which a given statement is true and in others of which that statement is false, so that the statement is left undecided by the axioms.

Gödel's incompleteness theorems cast unexpected light on these two related questions.

Gödel's first incompleteness theorem showed that *Principia* could not be both consistent and complete. According to the theorem, for every sufficiently powerful logical system (such as *Principia*), there exists a statement  $G$  that essentially reads, "The statement  $G$  cannot be proved." Such a statement is a sort of Catch-22: if  $G$  is provable, then it is false, and the system is therefore inconsistent; and if  $G$  is not provable, then it is true, and the system is therefore incomplete.

Gödel's second incompleteness theorem (1931) shows that no formal system extending basic arithmetic can be used to prove its own consistency. Thus, the statement "there are no contradictions in the *Principia* system" cannot be proven in the *Principia* system unless there *are* contradictions in the system (in which case it can be proven both true and false).

## Wittgenstein 1919, 1939

By the second edition of *PM*, Russell had removed his *axiom of reducibility* to a new axiom (although he does not state it as such). Gödel 1944:126 describes it this way: "This change is connected with the new axiom that functions can occur in propositions only 'through their values', i.e., extensionally . . . [this is] quite unobjectionable even from the constructive standpoint . . . provided that quantifiers are always restricted to definite orders". This change from a quasi-*intensional* stance to a fully-*extensional* stance also restricts predicate logic to the second order, i.e. functions of functions: "We can decide that mathematics is to confine itself to functions of functions which obey the above assumption" (*PM* 2nd Edition p. 401, Appendix C).

This new proposal resulted in a dire outcome. An "extensional stance" and restriction to a second-order predicate logic means that a propositional function extended to all individuals such as "All 'x' are blue" now has to list all of the 'x' that satisfy (are true in) the proposition, listing them in a possibly-infinite conjunction: e.g.  $x_1 \vee x_2 \vee \dots \vee x_n \vee \dots$ . Ironically, this change came about as the result of criticism from Wittgenstein in his 1919 *Tractatus Logico-Philosophicus*. As described by Russell in the Preface to the 2nd edition of *PM*:

"There is another course, recommended by Wittgenstein† (†*Tractatus Logico-Philosophicus*, \*5.54ff) for philosophical reasons. This is to assume that functions of propositions are always truth-functions, and that a function can only occur in a proposition through its values. . . . [Working through the consequences] it appears that everything in Vol. I remains true . . . the theory of inductive cardinals and ordinals survives; but it seems that the theory of infinite Dedekindian and well-ordered series largely collapses, so that irrationals, and real numbers generally, can no longer be adequately dealt with. Also Cantor's proof that  $2^n > n$  breaks down unless  $n$  is finite." (*PM* 2nd edition reprinted 1962:xiv, also cf new Appendix C).

In other words, the fact that an infinite list cannot realistically be specified means that the concept of "number" in the infinite sense (i.e. the continuum) cannot be described by the new theory proposed in *PM Second Edition*.

Wittgenstein in his *Lectures on the Foundations of Mathematics, Cambridge 1939* criticised *Principia* on various grounds, such as:

- It purports to reveal the fundamental basis for arithmetic. However, it is our everyday arithmetical practices such as counting which are fundamental; for if a persistent discrepancy arose between counting and *Principia*, this would be treated as evidence of an error in *Principia* (e.g., that *Principia* did not characterize numbers or addition correctly), not as evidence of an error in everyday counting.
- The calculating methods in *Principia* can only be used in practice with very small numbers. To calculate using large numbers (e.g., billions), the formulae would become too long, and some short-cut method would have to be used, which would no doubt rely on everyday techniques such as counting (or else on non-fundamental and hence questionable methods such as induction). So again *Principia* depends on everyday techniques, not vice versa.

Wittgenstein did, however, concede that *Principia* may nonetheless make some aspects of everyday arithmetic clearer.

## Gödel 1944

In his 1944 *Russell's mathematical logic*, Gödel offers a "critical but sympathetic discussion of the logicistic order of ideas"<sup>[22]</sup>:

"It is to be regretted that this first comprehensive and thorough-going presentation of a mathematical logic and the derivation of mathematics from it [is] so greatly lacking in formal precision in the foundations (contained in \*1-21 of *Principia*) that it represents in this respect a considerable step backwards as compared with Frege. What is missing, above all, is a precise statement of the syntax of the formalism. Syntactical considerations are omitted even in cases where they are necessary for the cogency of the proofs . . . The matter is especially doubtful for the rule of substitution and of replacing defined symbols by their *definiens* . . . it is chiefly the rule of substitution which would have to be proved" (Gödel 1944:124<sup>[23]</sup>)

## Quotations

- "From this proposition it will follow, when arithmetical addition has been defined, that  $1+1=2$ ." —Volume I, 1st edition, page 379<sup>[24]</sup> (page 362 in 2nd edition; page 360 in abridged version). (The proof is actually completed in Volume II, 1st edition, page 86<sup>[25]</sup>, accompanied by the comment, "The above proposition is occasionally useful.")

\*54.43.  $\vdash : \alpha, \beta \in 1 . \supset : \alpha \cap \beta = \Lambda . \equiv . \alpha \cup \beta \in 2$

Dem.

$\vdash . *54.26 . \supset \vdash : \alpha = \iota'x . \beta = \iota'y . \supset : \alpha \cup \beta \in 2 . \equiv . x \neq y .$

[\*51.231]

$\equiv . \iota'x \cap \iota'y = \Lambda .$

[\*13.12]

$\equiv . \alpha \cap \beta = \Lambda \quad (1)$

$\vdash . (1) . *11.11.35 . \supset$

$\vdash : (\exists x, y) . \alpha = \iota'x . \beta = \iota'y . \supset : \alpha \cup \beta \in 2 . \equiv . \alpha \cap \beta = \Lambda \quad (2)$

$\vdash . (2) . *11.54 . *52.1 . \supset \vdash . \text{Prop}$

From this proposition it will follow, when arithmetical addition has been defined, that  $1 + 1 = 2$ .

□54.43: From this proposition it will follow, ... that  $1+1=2$

## Footnotes

- [1] Irvine, Andrew D. (2003-05-01). "Principia Mathematica (Stanford Encyclopedia of Philosophy)" (<http://plato.stanford.edu/entries/principia-mathematica/#SOPM>). Metaphysics Research Lab, CSLI, Stanford University. . Retrieved 2009-08-05.
- [2] "The Modern Library's Top 100 Nonfiction Books of the Century" (<http://www.nytimes.com/library/books/042999best-nonfiction-list.html>). The New York Times Company. 1999-04-30. . Retrieved 2009-08-05.
- [3] This set is taken from Kleene 1952:69 substituting  $\rightarrow$  for  $\supset$ .
- [4] Kleene 1952:71, Enderton 2001:15
- [5] Enderton 2001:16
- [6] This is the word used by Kleene 1952:78
- [7] Quote from Kleene 1952:45. See discussion LOGICISM at pages 43-46.
- [8] In his section 8.5.4 *Groping towards metalogic* Grattan-Guinness 2000:454ff discusses the American logicians' critical reception of the second edition of *PM*. For instance Sheffer "puzzled that 'In order to give an account of logic, we must presuppose and employ logic'" (p. 452). And Bernstein ended his 1926 review with the comment that "This distinction between the propositional logic as a mathematical system and as a language must be made, if serious errors are to be avoided; this distinction the *Principia* does not make" (p.454).
- [9] This idea is due to Wittgenstein's *Tractatus*. See the discussion at *PM* 1962:xiv–xv)
- [10] <http://plato.stanford.edu/entries/pm-notation/>
- [11] Kurt Gödel 1944 "Russell's mathematical logic" appearing at page 120 in Feferman et. al. 1990 *Kurt Gödel Collected Works Volume II*, Oxford University Press, NY, ISBN 978-0-19-514721-6(v.2.pbk.) .
- [12] For comparison, see the translated portion of Peano 1889 in van Heijenoort 1967:81ff. About the only major change I can see is the substitution of  $\supset$  for  $\supset$  as used by Peano.
- [13] This work can be found at van Heijenoort 1967:1ff.
- [14] And see footnote, both at *PM* 1927:92

- [15] The original typography is a square of a heavier weight than the conventional period.
- [16] The first example comes from plato.stanford.edu (loc.cit.).
- [17] page xiii of 1927 appearing in the 1962 paperback edition to ¶56.
- [18] The original typography employs an  $x$  with a circumflex rather than  $\hat{y}$ ; this continues below
- [19] See the ten postulates of Huntington, in particular postulates IIa and IIb at *PM* 1962:205 and discussion at page 206.
- [20] The "C" sign has a dot inside it, and the intersection sign " $\cap$ " has a dot above it; these are not available in the Arial Unicode MS font.
- [21] Wiener 1914 "A simplification of the logic of relations" (van Heijenoort 1967:224ff) disposed of the second of these when he showed how to reduce the theory of relations to that of classes
- [22] Kleene 1952:46.
- [23] Gödel 1944 *Russell's mathematical logic* in *Kurt Gödel: Collected Works Volume II*, Oxford University Press, New York, NY, ISBN 0-19-514721 .

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### Primary:

- Whitehead, Alfred North, and Bertrand Russell. *Principia Mathematica*, 3 vols, Cambridge University Press, 1910, 1912, and 1913. Second edition, 1925 (Vol. 1), 1927 (Vols 2, 3). Abridged as *Principia Mathematica to* \*56, Cambridge University Press, 1962.

### Secondary:

- Stephen Kleene 1952 *Introduction to Meta-Mathematics*, 6th Reprint, North-Holland Publishing Company, Amsterdam NY, ISBN 0 7204 21039.
- Ivor Grattan-Guinness (2000) *The Search for Mathematical Roots 1870-1940*, Princeton University Press, Princeton N.J., ISBN 0-691-05857-1 (alk. paper).
- Ludwig Wittgenstein 2009 *Major Works: Selected Philosophical Writings*, HarperrCollins, NY, NY, ISBN 978-0-06-155024-9. In particular:  
*Tractatus Logico-Philosophicus* (Vienna 1918, original publication in German).
- Jean van Heijenoort editor 1967 *From Frege to Gödel: A Source book in Mathematical Logic, 1879-1931*, 3rd printing, Harvard University Press, Cambridge MA, ISBN 0-674-32449-8 (pbk.)

## External links

- Stanford Encyclopedia of Philosophy:
  - *Principia Mathematica* (<http://plato.stanford.edu/entries/principia-mathematica/>) -- by A. D. Irvine.
  - The Notation in *Principia Mathematica* (<http://plato.stanford.edu/entries/pm-notation/>) -- by Bernard Linsky.
- *Principia Mathematica* online (University of Michigan Historical Math Collection):
  - Volume I (<http://www.hti.umich.edu/cgi/b/bib/bibperm?q1=AAT3201.0001.001>)
  - Volume II (<http://www.hti.umich.edu/cgi/b/bib/bibperm?q1=AAT3201.0002.001>)
  - Volume III (<http://www.hti.umich.edu/cgi/b/bib/bibperm?q1=AAT3201.0003.001>)
- Proposition ¶54.43 (<http://us.metamath.org/mpegif/pm54.43.html>) in a more modern notation (Metamath)

# Max Kadushin

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**Max Kadushin** (December 6, 1895, Minsk – 1980) was a Conservative rabbi best known for his organic philosophy of rabbinics.

## Biography

After graduating from New York University, Kadushin studied for the rabbinate at the Jewish Theological Seminary of America during the 1920s. There he encountered Mordecai Kaplan and soon became a key figure in Kaplan's Reconstructionist Judaism movement. As his studies in haggadah continued during the late 1920s, however, he found himself drifting away from Kaplan's decidedly modernist approach to rabbinics and began to argue for a more aftermodernist approach—one that placed greater weight on the enduring significance of the haggadah.

In 1921, Kadushin became the rabbi of Congregation B'nai Israel of Washington Heights in New York City. In 1923 he married Evelyn Garfiel, a psychologist and professor, who later became well known for her book on Jewish prayer, *The Service of the Heart* (1958). Their son, Charles Kadushin, became a notable sociologist and social network analyst at Columbia University and later, the Graduate Center of the City University of New York.

In 1926, Kadushin moved to Chicago, where he became the rabbi of Humboldt Boulevard Temple. In 1931, Kadushin moved to Madison, Wisconsin, where he served as the rabbi of the University of Wisconsin Hillel. In 1932, he received a Doctor of Hebrew Letters degree from the Jewish Theological Seminary.

From 1942 to 1952 he was director of the Hebrew High School of Greater New York, later known as the Marshaliah Hebrew High School. During the next several years he served two congregations in the New York area, the Bay Shore Jewish Center of Long Island, 1953-1954, and Synagogue Adath Israel of Riverdale, Bronx, New York, 1954-1958. From 1958 to 1960 Kadushin was professor of midrash and homiletics at the Academy for Higher Jewish Learning in New York City.

In 1960 Kadushin was invited to become visiting professor in ethics and rabbinic thought at The Jewish Theological Seminary. He held this position from 1960 to 1980, the year of his death.

Kadushin is now regarded as an important figure in the history of twentieth-century Conservative Judaism. In 1990, the book, *Teaching for Christian Hearts, Souls & Minds*, written by the Rev. Locke E. Bowman, Jr., after conversations with one of Kadushin's students, Rabbi Arnold Resnicoff, was an attempt to apply Kadushin's theories of *value concepts* and *organic Judaism* to Christian teaching.<sup>[1]</sup>

## Works

### "The Theology of Seder Eliahu" (1932)

This work, a commentary on Seder Eliahu, was derived from Kadushin's Ph.D. dissertation. In it, he argues that ancient rabbinic texts possess organic, experiential consistency despite the sometimes non-linear character they possess.

### "Organic Thinking" (1938)

Generally regarded as Kadushin's most important work, this volume establishes the fundamentals of Kadushin's philosophy--value-concepts, indeterminacy of belief, and normal mysticism--in a relatively straightforward manner. Although much of the work consists of textual analysis, the influence of Alfred North Whitehead is more apparent in this volume than in any of Kadushin's other works.

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### **"The Rabbinic Mind" (1952)**

This volume, which focuses almost entirely on Talmudic hermeneutics, builds on both of his previous works.

### **"Worship and Ethics" (1964)**

This volume focuses primarily on rabbinic moral theology and Jewish mysticism. It is notable, among other reasons, for Kadushin's relative denunciation of Kabbalah as a tradition with which traditional rabbinic philosophy cannot easily be reconciled. Kadushin sees more practical value in normal mysticism, the complex but decidedly non-supernatural everyday religious experience of any pious and observant Jew.

### **"A Conceptual Commentary on Midrash Leviticus Rabbah" (1987)**

These two volumes represent Kadushin's efforts to apply his system of hermeneutics to classic rabbinic texts.

## **Quotations**

"What is not defined usually cannot be defined." [2]

"Torah is not only personified, but possesses the quality of a personality." [3]

"[S]piritual experience in most religions is seldom an unmixed blessing. Left to itself, uncontrolled, it may manifest itself in the most absurd of human vagaries and sanctify not only unsocial but anti-social behavior and utterly callous selfishness." [4]

## **References**

[1] Teaching for Christian Hearts, Souls & Minds, Locke E. Bowman, Harper and Row, 1990.

[2] *The Rabbinic Mind*, p. 45.

[3] *Organic Thinking*, p. 17.



[4] *Organic Thinking*, p. 59.

## **External links**

- Max Kadushin's papers at the Jewish Theological Seminary of America ([http://www.jtsa.edu/Audience\\_Pages/Scholars\\_and\\_Research/The\\_Ratner\\_Center/Papers\\_of\\_Conservative\\_Rabbis\\_and\\_Synagogues/Kadushin,\\_Max.xml](http://www.jtsa.edu/Audience_Pages/Scholars_and_Research/The_Ratner_Center/Papers_of_Conservative_Rabbis_and_Synagogues/Kadushin,_Max.xml))

# Milton Steinberg

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Rabbi Dr. Milton Steinberg	
	
Organisation	Park Avenue Synagogue
Personal details	
Born	1903 Rochester, New York
Died	1950
Nationality	 United States of America
Denomination	Reconstructionist Judaism
Children	Jonathan Steinberg, David Steinberg

**Milton Steinberg** (November 25, 1903 - March 20, 1950) was an American rabbi, philosopher, theologian and author.

## Life

Born in Rochester, New York, he was raised with the combination of his grandparents' traditional Jewish piety and his father's modernist socialism. He graduated as valedictorian of his class at DeWitt Clinton High School and then majored in Classics at City College of New York which he graduated from summa cum laude in 1924. Steinberg received his doctorate in philosophy from Columbia University in 1928 and then entered the Jewish Theological Seminary of America where he was ordained. In seminary, he was strongly influenced by Rabbi Mordecai Kaplan (1881–1983), the founder of Reconstructionist Judaism.

After five years in a pulpit in Indiana, he was invited by the Seminary to assume the pulpit of Manhattan's Park Avenue Synagogue, then a small congregation with a Reform orientation. In his sixteen years at the congregation, he grew it from 120 to 750 families. In 1943 he had a near fatal heart attack.

While a disciple of Kaplan who considered himself a Reconstructionist, Steinberg was critical of Kaplan's dismissal of metaphysics.

Steinberg's works included *Basic Judaism*, *The Making of the Modern Jew*, and *As A Driven Leaf*, a historical novel revolving around the talmudic characters Elisha ben Abuyah and Rabbi Akiba. In his final years, he began writing a series of theological essays. This project, which he had hoped would conclude in a book of theology, was cut short by his death at age 46.

An unfinished second novel, *The Prophet's Wife*, about the Tanakh characters Hosea and Gomer, was published in March 2010.

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## Publications

### Non-fiction

- *The Making of the Modern Jew* (1934)
- *A Partisan Guide to the Jewish Problem* (1945)
- *Basic Judaism* (1947)
- *A Believing Jew* (1951)
- *Anatomy of Faith* (1960)

### Novels

- *As a Driven Leaf* (1939)
- *The Prophet's Wife* (2010)

## References

- Noveck, Simon, "Milton Steinberg" in Kessner, Carole S., *The "Other" New York Jewish Intellectuals*, New York University Press, 1994.
- "RABBI STEINBERG DIES AT AGE OF 46", New York Times (1857-Current file); Mar 21, 1950; ProQuest Historical Newspapers The New York Times (1851–2005) pg. 29

## External links

- Steinberg and Zionism <sup>[1]</sup>
  - Guide to the Milton Steinberg Papers at the American Jewish Historical Society <sup>[2]</sup>
-

# Bradley Shavit Artson

**Bradley Shavit (Brad) Artson** (born 1959) is an American rabbi, author, speaker, and the occupant of the Abner and Roslyn Goldstine Dean's Chair of the Ziegler School of Rabbinic Studies at the American Jewish University in Los Angeles, California, where he is Vice-President. He supervises the Louis and Judith Miller Introduction to Judaism Program and provides educational and religious oversight for Camp Ramah of California.



Bradley and Elana Shavit Artson

## Education and career

Born and raised in San Francisco, Artson holds the A.B. Degree from Harvard College, cum laude, in 1981. As an undergraduate, he served as the LBJ Intern for United States Representative Burton and was an intern for United States Senator Alan Cranston. Following graduation, Artson was a Legislative Assistant to the Speaker of the California Assembly for two years and was ordained with honors by the Jewish Theological Seminary in 1988. He wrote his first book, *Love Peace and Pursue Peace: A Jewish Response to War and Nuclear Annihilation* while in rabbinical school. During his last year at rabbinical school, he served as the part time rabbinic intern at Bolton Street Synagogue in Baltimore.

For 10 years, Artson served as the Rabbi of Congregation Eilat in Mission Viejo, which grew under his tenure from about 200 families to over 600. During that period, his Introduction to Judaism course helped over 200 people convert to Judaism, and 10 of his congregants have entered the rabbinate in turn.

From 1998 - 1999, Artson was a member of the Senior Management of the Jewish Federation of Greater Los Angeles and served as the Executive Vice President of the Board of Rabbis of Southern California. In 1999, he began his work at the University of Judaism (now the American Jewish University). In addition to his work as Rabbinical School Dean and University Vice-President, Rabbi Artson received his D.H.L. at the Hebrew Union College -Jewish Institute of Religion in Contemporary Jewish Theology, under the supervision of Rabbi Dr. David Ellenson.

His scholarly fields are Jewish philosophy and theology, particularly a process approach integrating contemporary scientific insights from cosmology, quantum physics, evolutionary theory and neuroscience to a dynamic view of God, Torah, Mitzvot and ethics. He is a charter member of the Society for the Study of Judaism and Science.

## Leadership

A prominent leader of Conservative Judaism, Artson serves on the Leadership Council of Conservative Judaism. He writes a weekly Torah commentary that has over 13,000 internet subscribers. He is the author of 5 books, most recently *The Bedside Torah: Wisdom, Visions & Dreams* and *Gift of Soul, Gift of Wisdom: Spiritual Resources for Leadership and Mentoring* and he has written over 190 articles in several magazines.

In 2008, Artson ordained Rabbi Gershom Sizomu, the leader of the Abayudaya Tribe and participated a rabbinic delegation to Uganda to install him as the first African Rabbi in Subsaharan Africa. While in Africa he joined a Beit Din in converting 250 Africans from Kenya, Nigeria, South Africa, Ghana, and Uganda. A Regional Chief bestowed upon him the African name Walusansa Salongo.

Artson launched the WALKING WITH ... series, an annual series of books distributed free of charge and available on the web as complimentary PDF files [1]. In 2007 he produced *Walking With God*, in 2008, *Walking With Justice*, in 2009, "Walking With Life," and in 2010, "Walking With the Jewish Calendar." For the past few years he has also produced an annual Selichot DVD, "Choose Life," a series of conversations with Rabbi Artson, Rabbi David Wolpe,

and Rabbi Edward Feinstein. It can be viewed at [2]. Under his direction, the Ziegler School sponsors a podcast page link <sup>[3]</sup> that presents the monthly discussions of Rabbi Artson, a Rebbe's Tish of Reb Mimi Feigelson, lessons on the Siddur and prayer by Rabbi Elliot Dorff, and a Halakhah Yomi by Rabbi Aaron Alexander.

Artson has served on the faculty of the Wexner Heritage Foundation and as a speaker for UJC/Federation communities.

## Personal

Artson is married to Elana Shavit Artson, and they are the parents of twins, Shira and Jacob.

## Bibliography

- *The Everyday Torah: Weekly Reflections and Inspirations* (McGraw Hill)
- *Gift of Soul, Gift of Wisdom: Spiritual Resources for Leadership & Mentoring* (Behrman House)
- *The Bedside Torah: Wisdom, Visions, and Dreams* (McGraw Hill)
- *It's A Mitzvah!* (Behrman House)
- *Making A Difference* (Behrman House)
- *Love Peace & Pursue Peace* (United Synagogue)
- *Jewish Answers to Real-Life Questions* (Alef Design Group)
- *I Have Some Questions About God* (Torah Aura Productions)

## External links

- Rabbi Artson's website <sup>[4]</sup>
- Some of Rabbi Artson's speeches <sup>[5]</sup>

# William E. Kaufman

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**William E. Kaufman** is a Conservative Jewish rabbi, theologian and author. His 1991 book, *The Case for God*, was the first on Jewish process theology.<sup>[1]</sup>

## Education

Kaufman graduated from the Jewish Theological Seminary in 1964. He received his Ph.D. in philosophy from Boston University in 1971.<sup>[1]</sup> He received an honorary doctorate from the Jewish Theological Seminary in 1990.

## Rabbinic career

From 1964–1967 he was Assistant Rabbi at Congregation Kehillath Israel in Brookline, Massachusetts. In 1967 he assumed the rabbinical post at Congregation Bnai Israel in Woonsocket, Rhode Island, where he served until 1980. From 1980–82 he was Rabbi at Congregation Agudas Achim in San Antonio, Texas. In 1982 he was installed as Rabbi at Temple Beth El in Fall River, Massachusetts, where he served until his retirement in November 2005. Upon his retirement, he was named Rabbi Emeritus of Temple Beth El.<sup>[2]</sup>

He is a member of the Rabbinical Assembly, the international association of Conservative rabbis.

He married Nathalie Levin in 1965. They have a son, Ari, and a daughter, Beth.<sup>[3]</sup>

## Works

He has published many articles in *Judaism* (quarterly journal), *Conservative Judaism* (quarterly journal), *The Reconstructionist* (quarterly journal), and *The Jewish Spectator* (newspaper.)

One of his projects has been to create a Jewish process theology, viewing Jewish theology through the panentheistic process philosophy of Alfred North Whitehead.

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- [2] "The Bulletin of Temple Beth El, Fall River, Massachusetts" ([http://www.frtemplebethel.org/jan\\_2011.pdf](http://www.frtemplebethel.org/jan_2011.pdf)). Temple Beth El. January 2011. p. 2. . Retrieved 1 April 2011.
- [3] Kaufman, William E. (1976). *Contemporary Jewish Philosophies* ([http://books.google.com/books?id=x2zRcfsfexEC&pg=PR18&lpg=PR18&dq=kaufman+william+e.+boston+university&source=bl&ots=QfHaOuJxpE&sig=hbgtTuMBBYgSPWQFIDHnV13HX90&hl=en&ei=pvyUTbKRJsKcOoWV0ZAH&sa=X&oi=book\\_result&ct=result&resnum=5&ved=0CCIQ6AEwBA#v=onepage&q=kaufman+william+e.+boston+university&f=false](http://books.google.com/books?id=x2zRcfsfexEC&pg=PR18&lpg=PR18&dq=kaufman+william+e.+boston+university&source=bl&ots=QfHaOuJxpE&sig=hbgtTuMBBYgSPWQFIDHnV13HX90&hl=en&ei=pvyUTbKRJsKcOoWV0ZAH&sa=X&oi=book_result&ct=result&resnum=5&ved=0CCIQ6AEwBA#v=onepage&q=kaufman+william+e.+boston+university&f=false)). Wayne State University Press. p. xviii. ISBN 0-8143-2429-0. .

# Harold Kushner

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Harold Samuel Kushner	
<b>Born</b>	Brooklyn, New York, United States
<b>Occupation</b>	Rabbi, Conservative Judaism Author, <i>When Bad Things Happen to Good People</i> , <i>When All You've Ever Wanted Isn't Enough</i>

Rabbi **Harold Samuel Kushner** is a prominent American rabbi aligned with the progressive wing of Conservative Judaism, and a popular author.

## Education

Born in Brooklyn, Kushner was educated at Columbia University and later obtained his rabbinical ordination from the Jewish Theological Seminary (JTS) in 1960. The same institution awarded him a doctoral degree in Bible in 1972. Kushner has also studied at the Hebrew University of Jerusalem, taught at Clark University and the Rabbinical School of the JTS, and received six honorary doctorates.

## Congregational Rabbi

He served as the congregational rabbi of Temple Israel of Natick, in Natick, Massachusetts for 24 years and belongs to the Rabbinical Assembly.

## Author

He is the author of a best selling book on the problem of evil, *When Bad Things Happen to Good People*. Written following the death of his son, Aaron, from the premature aging disease progeria, the book deals with questions about human suffering, God, omnipotence and theodicy.

Kushner has written a number of other popular theological books, such as *How Good Do We Have to Be?* (Dedicated to his grandson, Carl), *To Life!* and many others. In collaboration with the late Chaim Potok, Kushner co-edited *Etz Hayim: A Torah Commentary*, the new official Torah commentary of the Conservative movement, which was jointly published in 2001 by the Rabbinical Assembly and the Jewish Publication Society. His *Living a Life That Matters* became a best seller in the fall of 2001. Kushner's book, *The Lord Is My Shepherd*, was a meditation on the Twenty-Third Psalm released in 2003. Kushner also wrote a response to Simon Wiesenthal's question of forgiveness in the book *The Sunflower: On the Possibilities and Limits of Forgiveness*.

## List of publications

- *Conquering Fear: Living Boldly in an Uncertain World* Published in 2009, is a theological piece that addresses fears of terrorism, natural disasters, rejection, growing old and offer suggestions on how best to cope, ultimately living with purpose and differentiating between God and nature.
  - *Faith & Family: Favorite Sermons of Rabbi Harold S. Kushner* published in October 2007
  - *Practice Random Acts of Kindness: Bring More Peace, Love, And Compassion* published in 2007
  - *Overcoming Life's Disappointments* published in 2006
  - *The Lord Is My Shepherd: Healing Wisdom of the Twenty-third Psalm* published in 2003
  - *When All You've Ever Wanted Isn't Enough: The Search for a Life That Matters* published in 2002
  - *Who Needs God* published in 2002
  - *Living a Life That Matters: Resolving the Conflict Between Conscience and Success* published in 2001
  - *How Good Do We Have to Be? A New Understanding of Guilt and Forgiveness* published in 1997
-



- *When Children ask about God: A Guide for Parents Who Don't Always Have All the Answers* published in 1995
- *To Life: A Celebration of Jewish Being and Thinking* published in 1994
- *When Bad Things Happen to Good People* published in 1981

## Miscellaneous

- Kushner offered a reading from the Bible at the State Funeral of Ronald Reagan in the Washington National Cathedral on June 11, 2004.
- In 2007 Rabbi Kushner was given the Lifetime Achievement Award by the Jewish Book Council.

## External links

- Rabbi Kushner's High Holiday Sermons <sup>[1]</sup>
- Rabbi Harold Kushner talks and gives stories in relation to his latest book *Overcoming Life's Disappointments* (video) <sup>[2]</sup>

# Michael Lerner (rabbi)

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Michael Lerner	
<b>Born</b>	1943 Newark, New Jersey
<b>Nationality</b>	American
<b>Ethnicity</b>	Jewish
<b>Education</b>	Ph.D.
<i><b>Alma mater</b></i>	University of California, Berkeley, Wright Institute
<b>Occupation</b>	rabbi, editor
<b>Employer</b>	Beyt Tikkun synagogue, Tikkun magazine
<b>Spouse</b>	Deborah Kohn-Lerner
<b>Children</b>	Akiva Jeremiah Lerner
Website	
tikkun.org/article.php/rml_bio <sup>[1]</sup>	

**Michael Lerner** (born 1943) is a political activist, the editor of *Tikkun*, a progressive Jewish interfaith magazine based in Berkeley, California, and the rabbi of Beyt Tikkun Synagogue of San Francisco.<sup>[1] [2]</sup>

## Biography

### Family and Education

Michael Lerner was born in 1943 and grew up in the Weequahic section of Newark, New Jersey.<sup>[3]</sup> In his youth, he attended Far Brook Country Day School, a private school which he characterized as having "a rich commitment to interdenominational Christianity".<sup>[3]</sup> While he has written that he appreciated "the immense beauty and wisdom of the Christianity to which [he] was being exposed", he also felt religiously isolated, as the child of passionate Zionists who attended Hebrew school three times a week, while at the same time being heavily exposed to Christian-oriented cultural activities in school.<sup>[3]</sup> At his own request, in the 7th grade he switched to a public school in the Weequahic neighborhood of Newark, where his peers were, in his estimation, 80% Jewish.<sup>[3]</sup> He graduated from Weequahic High School in 1960. Lerner received a B.A. from Columbia University. In 1972 he earned a PhD in philosophy from University of California, Berkeley. In 1977 he received a PhD in Clinical/Social Psychology. Lerner was married to Nan Fink until 1991, and married Debora Kohn in July 1998.

### Student activism

While at Berkeley, Lerner became a leader in the Berkeley student movement and the Free Speech Movement,<sup>[4]</sup> chair of the Free Student Union,<sup>[5]</sup> and chair from 1966-1968 of the Berkeley chapter of the Students for a Democratic Society.<sup>[6]</sup> After teaching philosophy of law at San Francisco State University,<sup>[7] [8]</sup> he took a job as an Assistant Professor of Philosophy at the University of Washington and taught ethics, social and political philosophy, philosophy of literature and culture, and introduction to philosophy. Angry at the SDS group called Weatherman, which had introduced violence into the anti-war movement in response to police violence, Lerner created a new organization as an alternative, called the Seattle Liberation Front.<sup>[9]</sup> After a major demonstration that his organization had called in protest turned violent, he and others were arrested for inciting a riot. The subsequent trial was the second nationally known federal trial against anti-war activists and became known as the Seattle Seven.

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Federal agents testifying at the trial later admitted to having played a major role instigating the violence and the riot,<sup>[10]</sup> charges relating to the riot were eventually dropped. However, during the trial, which culminated in a courtroom riot with punches being thrown (Lerner was the only defendant to remain seated) the presiding judge sent the defendants to jail on "contempt of court" charges.<sup>[11] [12]</sup> Lerner was sentenced and transported to Terminal Island Federal Penitentiary in San Pedro, California, where Lerner served several months before the 9th Circuit Federal Appeals Court ordered Lerner released (despite the claim made by J. Edgar Hoover in a public statement repeated on radio and television that Lerner was "one of the most dangerous criminals in America" though he had never engaged in any act of violence). The main charges were eventually dropped by the Federal Government after the 9th Circuit overturned the conviction for contempt of court. Meanwhile, Lerner's contract was not renewed and the State of Washington Legislature had passed "the Lerner act" requiring that the University of Washington never hire anyone "who might engage in illegal political activity," a law later overturned by the Washington Supreme Court.

### Professorship and research

After completing his Ph.D. Lerner moved to Hartford, Connecticut where he served as professor of philosophy at Trinity College until 1975, when he moved back to Berkeley, joined the faculty at the University of California in the Field Studies program and taught law and economics until 1976 when he accepted a position at Sonoma State University for one year in sociology, teaching courses in social psychology.<sup>[13]</sup> Meanwhile, he completed a second Ph.D. in 1977, this one is social/clinical psychology at the Wright Institute in Berkeley.<sup>[14]</sup>

In 1976 Lerner founded the Institute for Labor and Mental Health to work with the labor movement and do research on the psychodynamics of American society.<sup>[15]</sup> In 1979 he received a grant from the National Institute of Mental Health to train union shop stewards as agents of prevention for mental health disorders, and he simultaneously extended his previous study of the psychodynamics of American society. With a subsequent grant from the NIMH he studied American politics and reported that "a spiritual crisis" was at the heart of the political transformation of American society as well as at the heart of much of the psychic pain that was being treated in individual therapy.<sup>[16]</sup>

His writing reflects a transposition of this analysis to economics too, viz. "This focus on money and power may do wonders in the marketplace, but it creates a tremendous crisis in our society. People who have spent all day learning how to sell themselves and to manipulate others are in no position to form lasting friendships or intimate relationships... Many Americans hunger for a different kind of society—one based on principles of caring, ethical and spiritual sensitivity, and communal solidarity. Their need for meaning is just as intense as their need for economic security." :<sup>[17]</sup>

### *Tikkun* magazine

After serving for five years as dean of the graduate school of psychology at the New College of California (now defunct) in San Francisco,<sup>[18]</sup> Lerner and his then-wife Nan Fink created a general-interest intellectual magazine called *Tikkun: A Bimonthly Jewish Critique of Politics, Culture and Society*. *Tikkun* was started with the intention of challenging the left for its inability to understand the centrality of religious and spiritual concerns in the lives of ordinary Americans. With his associate editor Peter Gabel, Lerner developed a "politics of meaning" to speak to the hunger for meaning that was characteristic of the thousands of people that Lerner and his colleagues were studying at the Institute for Labor and Mental Health. *Tikkun* was formed to educate the public about the findings of the Institute and to develop some of the implications of that work. However, because it also had an interest in being an "alternative to the voices of Jewish conservatism," *Tikkun* was criticized by some Jewish groups.

In 1993, First Lady Hillary Rodham Clinton included the "politics of meaning" in her synthesis of political and social philosophy she was forming.<sup>[19] [20]</sup>

Later in 2002, Lerner organized a group called the Tikkun Community among readers of *Tikkun* magazine and those who share its editorial vision.<sup>[21]</sup>

## Rabbinical ordination

Lerner received rabbinical ordination in 1995 through a beth din (rabbinical court) composed of three rabbis, "each of whom had received orthodox rabbinic ordination".<sup>[1]</sup> According to *j. the Jewish news weekly*, "mainstream rabbinical leaders of the Reform, Conservative and Orthodox movements" have questioned private ordinations such as Lerner's, arguing that non-seminary ordinations risk producing poorly educated or fraudulent Rabbis.<sup>[2]</sup> Similarly, some rabbis have challenged Lerner's decision to not be trained for the rabbinate in a classical Jewish Seminary (although Lerner did spend time as a student at Jewish Theological Seminary). Lerner has been quoted in *Jewish Weekly* as saying that the nonseminary track is one that "every Chabad rabbi takes, & every ultra-Orthodox rabbi". When Lerner attacked seminaries for being "more interested in producing organizational men for Jewish life than spiritual leaders connected to the deepest spiritual and social-justice minds", rabbi Alan Lew said "That is arrogant nonsense... I spent six years in extremely rigorous, round-the-clock study in the classic texts of our tradition. Authentic Jewish spirituality is in the texts, not in some fancy New Age ideas or watered-down kabbalah"<sup>[2]</sup>

Lerner is the spiritual leader of Beyt Tikkun synagogue in Berkeley and a member of the Board of Rabbis of Northern California. He is also a member of Ohalah, the organization of Jewish Renewal Rabbis.

## Network of Spiritual Progressives

In 2005 Lerner became chair of The Network of Spiritual Progressives whose mission was to "challenge the materialism and selfishness in American society and to promote an ethos of love, generosity, and awe and wonder at the grandeur of the universe."<sup>[22]</sup> They have since sponsored national conferences on both the East and West Coast. In 2007 Lerner launched a campaign for a "Global Marshall Plan".<sup>[23]</sup>

## Cancer

In February 2009 Lerner publicly announced he had been diagnosed with lung cancer, and mentioned this in many promotional mailings and published pieces.<sup>[24]</sup><sup>[25]</sup> He was treated with surgery in March 2009 which was apparently successful.

## Lerner's views

### Positive Judaism

Lerner, a rabbi in ALEPH: Alliance for Jewish Renewal, promotes the concept of Jewish Renewal, a small Jewish movement which he describes as "positive Judaism", rejecting what he considers to be ethnocentric interpretations of the Torah. His publications promote religious pluralism and progressive or liberal approaches to political problems. He has, for example, been outspoken against attacks on immigrant communities in the United States,<sup>[26]</sup> and has attempted to build bridges with Christian, Buddhist and Muslim leaders around such issues.<sup>[27]</sup>

Lerner's call for a spiritual transformation of American society was first articulated in *Tikkun* and then in his book *The Politics of Meaning*. Lerner developed these ideas further in his books *Spirit Matters* (2000) and *The Left Hand of God* (2006).

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Lerner strongly objected to Israel's occupation of the West Bank. He supports the adoption of the Geneva Accords as a basis for an independent Palestinian state.<sup>[28]</sup>

In February 2007, Lerner published a column entitled "There Is No New Anti-Semitism," in which he criticized some American Jewish organizations for labeling critics of Israel as antisemites. He was especially critical of the Anti-Defamation League and the American Israel Public Affairs Committee, which he characterized as

"Israel-can-do-no-wrong voices in American politics." Lerner wrote that this mentality, which frequently leads to accusations that Jews who oppose Israel's policies toward the Palestinians are "self-hating Jews," is alienating young Jews who "say that they can no longer identify with their Jewishness."<sup>[29]</sup>

## Controversy

Lerner describes some of his views as "very controversial," particularly his views about building peace between Israel and Palestine.<sup>[1]</sup> In 2003, the *San Diego Jewish Journal* described Lerner as "the most controversial Jew in America," writing that "He is relentlessly critical of Israel. He eulogizes Rachel Corrie. And he's done more for peace than any conservative we know."<sup>[30]</sup> That same year, the executive editor of *The Jewish Exponent* wrote that Lerner "supports every measure against Israel short of its immediate destruction and often makes common cause with those who do plot the eradication of Israel's Jews."<sup>[31]</sup>

In 1997, former *Tikkun* editors accused Lerner of publishing pseudonymous letters to the editor that he himself had written. While many of the letters were laudatory ("Your editorial stand on Iraq said publicly what many of us in the Israeli peace camp are feeling privately but dare not say."), a few were critical ("Have you gone off your rocker?"). Lerner admitted that he had fabricated the letters but said his only mistake was not informing readers that the authors' names were pseudonyms.<sup>[32]</sup>

## Criticism of leftist antisemitism

For many years, Lerner has been an out-spoken critic of anti-Zionism and modern antisemitism that he perceives to have arisen among some leftists. In 1992, he wrote *The Socialism of Fools: Anti-Semitism on the Left*, in which he described the manner in which the left often denies the existence of antisemitism; defended Zionism and distinguished legitimate criticism of the State of Israel from Israel-bashing and antisemitism; and suggested ways in which progressives can fight antisemitism on the Left.

In 2003, Lerner criticized the left-wing anti-war ANSWER Coalition for the antisemitism that he and others believe is reflected in the rhetoric at ANSWER-sponsored demonstrations. He later claimed that the ANSWER coalition — of which Lerner's Tikkun Community was a member — barred him from speaking at their rallies against the 2003 invasion of Iraq because of his criticism.<sup>[33]</sup>

## Good Friday Prayer for the Jews

Regarding the *motu proprio* *Summorum Pontificum*, which allows the re-introduction of the Tridentine Mass and the related Good Friday Prayer for the Jews, he said that the Pope took "a powerful step toward the re-introduction of the process of demeaning Jews. You cannot respect another religion if you teach that those who are part of it must convert to your own religion."<sup>[34]</sup>

## Awards and honors

While at the Seminary, Lerner was elected national president of Atid, the college organization of the United Synagogue of America.<sup>[35]</sup> In 2005 Lerner received the Gandhi, King, Ikeda Community Builders Prize from Morehouse College in Atlanta in recognition of his work in forging a "progressive middle path that is both pro-Israel and pro-Palestine" in his book *Healing Israel/Palestine* and in his writing in *Tikkun* magazine.<sup>[36]</sup>

## Television appearances

Lerner has been a guest on Larry King Live several times. On March 5, 2006, he discussed his book *The Left Hand of God* on C-SPAN. Lerner was part of a panel of religious leaders on Meet the Press with Tim Russert on April 16, 2006. He was interviewed on Jewish reactions to the Christian Zionist movement of Rev. Hagee on the Bill Moyers PBS show on October 7, 2007.

## Goldstone report and vandalism of Lerner's home

Lerner is one of a small group of Jewish leaders who supported Judge Richard Goldstone after Goldstone released his United Nations report that accused Israel and Hamas of war crimes and possible crimes against humanity during the winter 2009 Gaza war. After Tikkun magazine announced that it would award Goldstone with its Tikkun Award, Lerner's home was vandalized several times, with posters caricaturing him as a Nazi.<sup>[37]</sup>

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### Books

- *Surplus Powerlessness: The Psychodynamics of Everyday Life and the Psychology of Individual and Social Transformation* (1986)
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- *Jews and Blacks: Let the Healing Begin* (1995) - by Michael Lerner and Cornel West
- *The Politics of Meaning: Restoring Hope and Possibility in an Age of Cynicism* (1996)
- *Spirit Matters: Global Healing and the Wisdom of the Soul* (2000)
- *Healing Israel/Palestine: A Path to Peace and Reconciliation* (2003)
- *The Geneva Accord: And Other Strategies for Healing the Israeli-Palestinian Conflict* (2004)
- *The Left Hand of God: Taking Back Our Country from the Religious Right* (2006)

### Anthologies

- *Tikkun: To Heal, Repair, and Transform the World* (1992) - edited by Michael Lerner
- *Best Contemporary Jewish Writing* (2001) - edited by Michael Lerner
- *Best Jewish Writing 2002* (2002) - edited by Michael Lerner
- *Tikkun Reader: Twentieth Anniversary* (2006) - edited by Michael Lerner

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## External links

- Tikkun community website (<http://www.tikkun.org/>)
- Tikkun magazine (<http://www.tikkun.org/magazine/>)
- Rabbi Michael Lerner: Bringing God Into It (<http://www.wie.org/j19/lernerintro.asp>)
- Interview with *The Nation* (<http://www.thenation.com/doc/20060424/lerner>)
- Network of Spiritual Progressives website (<http://www.spiritualprogressives.org/>)
- Interview with *Grist Magazine* (<http://www.grist.org/news/maindish/2006/03/22/roberts/index.html>)
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- "Where the Violence Comes From" 9/12/2001 (<http://groups.colgate.edu/aarislam/lerner.htm>)
- Peace, Propaganda and the Promised Land: Media & the Israel-Palestine Conflict (<http://video.google.com/videoplay?docid=-6604775898578139565>), documentary directed by Sut Jhally and Bathsheba Ratzkoff (2003) quotes Michael Lerner
- "Preaching Tikkun: Rabbi Michael Lerner still courts controversy as he celebrates his magazine's silver anniversary" (<http://www.sfbg.com/2011/03/22/preaching-tikkun>), *San Francisco Bay Guardian*, March 22, 2011.

## Lawrence Troster

Rabbi **Lawrence Troster** is Director of the Fellowship program and Rabbinic Scholar-in-Residence for GreenFaith, the interfaith environmental coalition in New Jersey. Rabbi Troster co-chairs the Interfaith Partnership for the Environment of UNEP (United Nations Environment Program).<sup>[1]</sup> He is also pursuing a D. Min. in Ecological Ministries at Drew Theological School.

Rabbi Troster is one of the leading Jewish eco-theologians and religious environmental leaders.<sup>[1]</sup>

Rabbi Troster also taught in the Florence Melton Adult Mini School of the UJA Federation of Northern New Jersey.<sup>[1]</sup> Previously he was the Jewish Chaplain of Bard College in Annandale-on-Hudson and an Associate of Bard's Institute of Advanced Theology. He was also the Rabbinic Fellow of the Coalition On the Environment and Jewish Life (COEJL), the Advisor to Students and Adjunct Lecturer in Professional Skills in the Rabbinical School of the Jewish Theological Seminary of America, Program Officer/Educator at the Jewish Life Network, a Steinhardt Fellow at CLAL, and has served as the rabbi of several congregations in New Jersey and Toronto, Canada.

Rabbi Troster was born in Toronto, Canada in 1953. He received his B.A. from the University of Toronto and his M.A. and rabbinic ordination from the Jewish Theological Seminary of America in New York City.<sup>[1]</sup> In May, 2010, Rabbi Troster was awarded an honorary Doctor of Divinity degree from JTS for his more than 25 years service in the rabbinate.<sup>[2]</sup>

He is also member of the editorial boards of the journals *Conservative Judaism*, and is a member of the Board of Directors of *CrossCurrents*.<sup>[1]</sup> He has published numerous articles and has lectured widely on theology, environmentalism, liturgy, bioethics and Judaism and modern cosmology.

Rabbi Troster has appeared on television and radio and in newspapers. He was recently one of the keynote speakers at the Interfaith Creation Festival in Seattle, WA, and in May 2005 presented a paper at a UNEP conference in Tehran, Iran entitled, "The Mountain and the River Valley: Environmentalism as the Foundation of Dialogue Between Civilizations." (available at [3]) He has also been featured on Air America's environment program "Eco Talk".<sup>[1]</sup>



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"The Book of Black Fire: An Eco-Theology of Revelation," *Conservative Judaism*, (forthcoming)

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# Abraham Joshua Heschel

Abraham Joshua Heschel	
	
Abraham Joshua Heschel (left)	
Personal details	
Born	11 January 1907 Warsaw, Poland
Died	23 December 1972 (aged 65) New York, USA
Nationality	Polish
Denomination	Orthodox, Conservative
Parents	Moshe Mordechai Heschel, Reizel Perlow
Spouse	Sylvia Straus
Children	Susannah Heschel
Profession	Professor
Alma mater	University of Berlin

**Abraham Joshua Heschel** (January 11, 1907 – December 23, 1972) was a Polish-born American rabbi and one of the leading Jewish theologians and Jewish philosophers of the 20th century.

## Biography

Abraham Joshua Heschel was descended from preeminent European rabbis on both sides of the family.<sup>[1]</sup> His great-great-grandfather and namesake was Rebbe Avraham Yehoshua Heshel of Apt. His father, Moshe Mordechai Heschel, died of influenza in 1916. His mother Reizel Perlow was also a descendant of Avraham Yehoshua Heshel and other dynasties. He



Rabbi Abraham Joshua Heschel (2nd from right) in the Selma Civil Rights March with Martin Luther King, Jr. (4th from right). Heschel later wrote, "When I marched in Selma, my feet were praying."

was the youngest of six children. His siblings were Sarah, Dvora Miriam, Esther Sima, Gittel, and Jacob.

After a traditional yeshiva education and studying for Orthodox rabbinical ordination semicha, he pursued his doctorate at the University of Berlin and a liberal rabbinic ordination at the Hochschule für die Wissenschaft des Judentums. There he studied under some of the finest Jewish educators of the time: Chanoch Albeck, Ismar Elbogen, Julius Guttmann, and Leo Baeck. Heschel later taught Talmud there. He joined a Yiddish poetry group, Jung Vilna, and in 1933, published a volume of Yiddish poems, *Der Shem Hamefeyrosh: Mentsch*, dedicated to his father.<sup>[2]</sup>

In late October 1938, when he was living in a rented room in the home of a Jewish family in Frankfurt, he was arrested by the Gestapo and deported to Poland. He spent ten months lecturing on Jewish philosophy and Torah at Warsaw's Institute for Jewish Studies.<sup>[2]</sup> Six weeks before the German invasion of Poland, Heschel left Warsaw for London with the help of Julian Morgenstern, president of Hebrew Union College, who had been working to obtain visas for Jewish scholars in Europe.<sup>[2]</sup>

Heschel's sister Esther was killed in a German bombing. His mother was murdered by the Nazis, and two other sisters, Gittel and Devorah, died in Nazi concentration camps. He never returned to Germany, Austria or Poland. He once wrote, "If I should go to Poland or Germany, every stone, every tree would remind me of contempt, hatred, murder, of children killed, of mothers burned alive, of human beings asphyxiated."<sup>[2]</sup>

Heschel arrived in New York City in March 1940.<sup>[2]</sup> He served on the faculty of Hebrew Union College (HUC), the main seminary of Reform Judaism, in Cincinnati for five years. In 1946, he took a position at the Jewish Theological Seminary of America (JTS), the main seminary of Conservative Judaism, where he served as professor of Jewish ethics and Mysticism until his death in 1972.

Heschel married Sylvia Straus, a concert pianist, on December 10, 1946, in Los Angeles. Their daughter, Susannah Heschel, is a Jewish scholar in her own right.<sup>[3]</sup>

## Ideology

Heschel explicated many facets of Jewish thought including studies on medieval Jewish philosophy, Kabbalah, and Hasidism. According to some scholars, he was more interested in spirituality than in critical text study, which was a specialty of many scholars at JTS. He was not given a graduate assistant for many years and was relegated to teach mainly in the education school or Rabbinical school, not in the academic graduate program. Heschel was particularly spurned by his colleague Mordechai Kaplan, founder of Reconstructionist Judaism, and many students who attended JTS in the 50s sympathized with Kaplan over Heschel.<sup>[4]</sup>

Heschel saw the teachings of the Hebrew prophets as a clarion call for social action in the United States and worked for black civil rights and against the Vietnam War.<sup>[1]</sup> Heschel was an activist for civil rights in the United States.

He also specifically criticized what he called "pan-halakhism", or an exclusive focus upon religiously-compatible behavior to the neglect of the non-legalistic dimension of rabbinic tradition.

## Influence outside of Judaism

Heschel is among the few widely read Jewish theologians. His most influential works include *Man is Not Alone*, *God in Search of Man*, *The Sabbath*, and *The Prophets*. At the Vatican Council II, as representative of American Jews, Heschel persuaded the Roman Catholic Church to eliminate or modify passages in its liturgy that demeaned the Jews, or expected their conversion to Christianity. His theological works argued that religious experience is a fundamentally human impulse, not just a Jewish one, and that no religious community could claim a monopoly on religious truth.<sup>[5]</sup>

## Published work

### *The Prophets*

This work started out as his Ph.D. thesis in German, which he later expanded and translated into English. Originally published in a two-volume edition, this work studies the books of the Hebrew prophets. It covers their lives and the historical context that their missions were set in, summarizes their work, and discusses their psychological state. In it Heschel forwards what would become a central idea in his theology: that the prophetic (and, ultimately, Jewish) view of God is best understood not as anthropomorphic (that God takes human form) but rather as anthropopathic — that God has human feelings.

### *The Sabbath*

*The Sabbath: Its Meaning For Modern Man* is a work on the nature and celebration of Shabbat, the Jewish Sabbath. This work is rooted in the thesis that Judaism is a religion of time, not space, and that the Sabbath symbolizes the sanctification of time.

### *Man is Not Alone*

*Man Is Not Alone: A Philosophy of Religion* offers Heschel's views on how people can comprehend God. Judaism views God as being radically different from humans, so Heschel explores the ways that Judaism teaches that a person may have an encounter with the ineffable. A recurring theme in this work is the radical amazement that people feel when experiencing the presence of the Divine. Heschel then goes on to explore the problems of doubts and faith; what Judaism means by teaching that God is one; the essence of humanity and the problem of human needs; the definition of religion in general and of Judaism in particular; and human yearning for spirituality. He offers his views as to Judaism being a pattern for life.

### *God in Search of Man*

*God in Search of Man: A Philosophy of Judaism* is a companion volume to *Man is Not Alone*. In this book Heschel discusses the nature of religious thought, how thought becomes faith, and how faith creates responses in the believer. He discusses ways that people can seek God's presence, and the radical amazement that we receive in return. He offers a criticism of nature worship; a study of humanity's metaphysical loneliness, and his view that we can consider God to be in search of humanity. The first section concludes with a study of Jews as a chosen people. Section two deals with the idea of revelation, and what it means for one to be a prophet. This section gives us his idea of revelation as an event, as opposed to a process. This relates to Israel's commitment to God. Section three discusses his views of how a Jew should understand the nature of Judaism as a religion. He discusses and rejects the idea that mere faith (without law) alone is enough, but then cautions against rabbis he sees as adding too many restrictions to Jewish law. He discusses the need to correlate ritual observance with spirituality and love, the importance of Kavanah (intention) when performing mitzvot. He engages in a discussion of religious behaviorism — when people strive for external compliance with the law, yet disregard the importance of inner devotion.

### ***Prophetic Inspiration After the Prophets***

Heschel wrote a series of articles, originally in Hebrew, on the existence of prophecy in Judaism after the destruction of the Holy Temple in Jerusalem in 70 CE. These essays were translated into English and published as *Prophetic Inspiration After the Prophets: Maimonides and Others* by the American Judaica publisher Ktav.

The publisher of this book states, "The standard Jewish view is that prophecy ended with the ancient prophets, somewhere early in the Second Temple era. Heschel demonstrated that this view is not altogether accurate. Belief in the possibility of continued prophetic inspiration, and in its actual occurrence appear throughout much of the medieval period, and even in modern times. Heschel's work on prophetic inspiration in the Middle Ages originally appeared in two long Hebrew articles. In them he concentrated on the idea that prophetic inspiration was possible even in post-Talmudic times, and, indeed, had taken place at various times and in various schools, from the Geonim to Maimonides and beyond."

### ***Torah min HaShamayim***

Many consider Heschel's *Torah min HaShamayim BeAspaklariya shel HaDorot*, (*Torah from Heaven in the light of the generations*) to be his masterwork. The three volumes of this work are a study of classical rabbinic theology and aggadah, as opposed to halakha (Jewish law.) It explores the views of the rabbis in the Mishnah, Talmud and Midrash about the nature of Torah, the revelation of God to mankind, prophecy, and the ways that Jews have used scriptural exegesis to expand and understand these core Jewish texts. In this work Heschel views the second century sages Rabbis Akiva ben Yosef and Ishmael ben Elisha as paradigms for the two dominant world-views in Jewish theology

Two Hebrew volumes were published during his lifetime by Soncino Press, and the third Hebrew volume was published posthumously by JTS Press in the 1990s. An English translation of all three volumes, with notes, essays and appendices, was translated and edited by Rabbi Gordon Tucker, entitled *Heavenly Torah: As Refracted Through the Generations*. In its own right it can be the subject of intense study and analysis, and provides insight into the relationship between God and Man beyond the world of Judaism and for all Monotheism.

### **Quotations**

- "Racism is man's gravest threat to man - the maximum hatred for a minimum reason."
- "All it takes is one person... and another... and another... and another... to start a movement"
- "Wonder rather than doubt is the root of all knowledge."
- "A religious man is a person who holds God and man in one thought at one time, at all times, who suffers harm done to others, whose greatest passion is compassion, whose greatest strength is love and defiance of despair."
- " God is either of no importance, or of supreme importance."
- "Just to be is a blessing. Just to live is holy."
- "Self-respect is the fruit of discipline, the sense of dignity grows with the ability to say no to oneself."
- "Life without commitment is not worth living."
- "Above all, the prophets remind us of the moral state of a people: Few are guilty, but all are responsible."<sup>[6]</sup>
- "Remember that there is a meaning beyond absurdity. Be sure that every little deed counts, that every word has power. Never forget that you can still do your share to redeem the world in spite of all absurdities and frustrations and disappointments."
- "When I was young, I admired clever people. Now that I am old, I admire kind people."
- "Awareness of symbolic meaning is awareness of a specific idea; *kavanah* is awareness of an ineffable situation."
- "A Jew is asked to take a leap of action rather than a leap of thought."
- "Speech has power. Words do not fade. What starts out as a sound, ends in a deed."
- "The Almighty has not created the universe that we may have opportunities to satisfy our greed, envy and ambition."

- "The higher goal of spiritual living is not to amass a wealth of information, but to face sacred moments."
- "The course of life is unpredictable... no one can write his autobiography in advance."
- "When I marched in Selma, my legs were praying."

## Commemoration

Four schools have been named for Heschel, in the Upper West Side of New York City, Northridge, California, Agoura Hills, California, and Toronto. In 2009, a highway in Missouri was named "Dr. Abraham Joshua Heschel Highway" after a Springfield, Missouri area Neo-Nazi group cleaned the stretch of highway as part of an "Adopt-A-Highway" plan. Heschel's daughter, Susannah, has objected to the adoption of her father's name in this context.<sup>[7]</sup>



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## External links

- Heschel's role in Vatican II and his advocacy of interreligious respect ([http://www.ajc.org/atf/cf/{42d75369-d582-4380-8395-d25925b85eaf}/WIDE\\_HORIZONS.PDF](http://www.ajc.org/atf/cf/{42d75369-d582-4380-8395-d25925b85eaf}/WIDE_HORIZONS.PDF))
- Alan Brill Review of Heavenly Torah ([http://www.edah.org/backend/JournalArticle/Aggadic\\_Man\\_Brill-final.pdf](http://www.edah.org/backend/JournalArticle/Aggadic_Man_Brill-final.pdf))
- Arnold Jacob Wolf Review of Heavenly Torah ([http://findarticles.com/p/articles/mi\\_m0411/is\\_3-4\\_53/ai\\_n14735950](http://findarticles.com/p/articles/mi_m0411/is_3-4_53/ai_n14735950))
- David Blumenthal review of Heavenly Torah (<http://www.js.emory.edu/BLUMENTHAL/HeschelHTreview.htm>)
- Who was Heschel? (<http://heschel.org.il/eng/about/heschel>) The Heschel Center for Environmental Learning and Leadership

## Charles Birch

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**Louis Charles Birch** FAA (8 February 1918 – 19 December 2009) was an Australian geneticist specialising in population ecology and was also well known as a theologian, writing widely on the topic of science and religion, winning the Templeton Prize in 1990.<sup>[1]</sup> The prize recognised his work ascribing intrinsic value to all life.

Birch's academic appointments at the University of Sydney have included Professor of Zoology from 1960-63, and Professor of Biology from 1963-83. He has been styled Emeritus Professor since 1983.

## Publications

- *The Distribution and Abundance of Animals*, with H. G. Andrewartha. University of Chicago Press, 1954
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## External links

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- Charles Birch, Science and Soul - Charles Birch interviewed by Stephen Crittenden on The Religion Report, ABC Radio National, 19 December 2007 (<http://www.abc.net.au/rn/religionreport/stories/2007/2122324.htm>)
- Obituary - Sydney Morning Herald 23 December 2009 (<http://www.smh.com.au/national/obituaries/a-man-of-science-and-religion-20091222-lbpx.html>)

# Philip Clayton (theologian)

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**Philip Clayton** (born 1955) is a contemporary American theologian and philosopher who currently holds the Ingraham Chair of Theology at Claremont School of Theology.<sup>[1]</sup> He received dual PhDs from Yale in philosophy and theology, working with Louis Dupre. He also studied as a DAAD fellow under Wolfhart Pannenberg, eventually working as a translator of Pannenberg's theology.

Philip Clayton has held professorships at Williams College, California State University Sonoma, Harvard University, and Cambridge University. His research focuses on the relationship between religion and science, process theology, philosophy of religion, and contemporary issues in ecology, religion, and ethics. He has authored six books, including *Explanation from Physics to Theology*, *God and Contemporary Science*, *The Problem of God in Modern Thought*, *Mind and Emergence: From Quantum to Consciousness*, *In Quest of Freedom: The Emergence of Spirit in the Natural World*, and *Adventures in the Spirit: God, World, and Divine Action*. He has also edited nine volumes, including *In Whom We Live and Move and Have our Being: Panentheistic Reflections on God's Presence in a Scientific World* (with Arthur Peacocke), *Evolution and Ethics* (with Jeff Schloss), *Practicing Science*, *Living Faith* (with Jim Schaal), *The Re-Emergence of Emergence: The Emergentist Hypothesis from Science to Religion* (with Paul Davies), *All That Is: A Naturalistic Faith for the Twenty-First Century*, and *The Oxford Handbook of Religion and Science* (with Zachary Simpson). Clayton has been awarded the Templeton Prize and has received multiple research grants and international lectureships.

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## External links

- Philip Clayton's Website and Blog (<http://clayton.ctr4process.org/>)
  - The Claremont School of Theology ([http://www.cst.edu/about\\_claremont/index.php](http://www.cst.edu/about_claremont/index.php))
  - The School of Religion at Claremont Graduate University (<http://www.cgu.edu/pages/674.asp>)
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# Bruce G. Epperly

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Bruce Gordon Epperly (born 1952 in California) is a theologian, minister, and author. He is one of the leading process theologians in the United States, having studied with John B. Cobb at Claremont Graduate University. Dr. Epperly currently serves as Professor of Practical Theology and Director of Continuing Education at Lancaster Theological Seminary. He is an ordained minister with standing in the United Church of Christ and Christian Church (Disciples of Christ).<sup>[1]</sup>

Prior to his current appointment, Dr. Epperly served as Director of the Protestant Ministry and Adjunct Professor in Theology, Spirituality, and Medicine at Georgetown University.<sup>[2]</sup>

His professional interests are broad and include process theology, constructive post-modernism, spirituality, healing, and ministerial transformation. He is noted for innovative work in joining theological reflection with spiritual formation, ministerial leadership, and healing ministry.,<sup>[1] [2] [3]</sup>

He is the author, or co-author, of sixteen books, including *Tending to the Holy: The Practice of the Presence of God in Ministry*, the Academy of Parish Clergy's 2009 Book of the Year, and *Holy Adventure: 41 Days of Audacious Living*, his response to Rick Warren's *Purpose Driven Life*.<sup>[4]</sup>

## Published works

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  - *At the Edges of Life: A Holistic Vision of the Human Adventure*. St. Louis: Chalice Press, 1992. ISBN 978-0827200203.
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## Footnotes

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- [3] Kern, Joan. "I Write to Change People's Lives."
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- Woodward, Jeff. "Holy Adventure Explores New Spiritual Ground" (<http://www.ucc.org/ucnews/decjan09/holy-adventure-explores-new.html>). *United Church News*. United Church of Christ. Retrieved 2009-04-01.

## External links

- Bruce Epperly's website (<http://www.bruceepperly.com/>)
  - Center for Process Studies (<http://www.ctr4process.org/>)
  - Disciples United Community Church (<http://www.ducc.us/>)
  - Lancaster Theological Seminary (<http://www.lancasterseminary.edu/>)
  - Process and Faith (<http://www.processandfaith.org/>)
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# Paul Fiddes

<b>The Reverend Professor Paul Stuart Fiddes</b> <b>MA, DPhil, DD (Oxon), Hon DD (Bucharest)</b>	
<b>Born</b>	April 30, 1947
<b>Nationality</b>	British
<b>Education</b>	Drayton Manor Grammar School
<b>Alma mater</b>	St Peter's College, Oxford Regent's Park College, Oxford Eberhard Karls University of Tübingen
<b>Religion</b>	Baptist
<b>Awards</b>	Honorary Doctor of Divinity University of Bucharest 2004 Honorary Fellow St Peter's College, Oxford 2004

**Paul Stuart Fiddes** (born 30 April 1947) is a British Baptist theologian. He is Professor of Systematic Theology in the University of Oxford and was formerly Principal of Regent's Park College and Chairman of the Theology Faculty. He has been described as "the leading British Baptist theologian of his generation",<sup>[1]</sup> "one of the leading contemporary Baptist theologians",<sup>[2]</sup> 'one of the leading scholars of theology and literature writing today',<sup>[3]</sup> "one of the world's leading theologians",<sup>[4]</sup> <sup>[5]</sup> and "one of Christianity's most distinguished scholars".<sup>[6]</sup> His book *The Creative Suffering of God* is 'considered to be one of the major contributions to theology in the last decades of the 20th century'.<sup>[4]</sup> <sup>[5]</sup> <sup>[7]</sup> <sup>[8]</sup>

Fiddes has written nine books, around eighty articles,<sup>[9]</sup> <sup>[10]</sup> and more than twenty-five book chapters (in addition to five articles in reference books), he has edited six books, and he has jointly authored four books and jointly edited two. His work is published by some of the world's leading publishers, including Oxford University Press, Cambridge University Press, University of Wales Press, Mercer University Press, Sheffield Academic Press, Blackwell, Ashgate, Springer, Liturgical Press, Paternoster, Eerdmans, SPCK, SCM, DLT, and Marshall Pickering.

One of Fiddes's most important works, *Past Event and Present Salvation: the Christian Idea of Atonement* (London: Darton, Longman, & Todd, 1989), was recently studied in Eamonn Mulcahy, *The Cause of Our Salvation: Soteriological Causality according to some Modern British Theologians, 1988-98* (Tesi Gregoriana Serie Teologia 140, Roma: Editrice Pontificia Università Gregoriana, 2007), alongside Colin Gunton, *The Actuality of Atonement: a Study of Metaphor, Rationality and the Christian Tradition* (Edinburgh: T. & T. Clark, 1988), Vernon White, *Atonement and Incarnation: an essay in Universalism and Particularity* (Cambridge University Press, 1991), and John McIntyre, *The Shape of Soteriology: Studies in the Doctrine of the Death of Christ* (Edinburgh: T. & T. Clark, 1992).

Fiddes was educated at Drayton Manor Grammar School.<sup>[11]</sup> In 1965 he went up to St Peter's College, Oxford to read Philosophy, Politics, and Economics. He quickly changed his course and ended up with a Triple First in English Language and Literature and Theology. The relationship between these disciplines has formed a major part of his subsequent scholarship. He then embarked on a doctoral thesis entitled *The hiddenness of wisdom in the Old Testament and later Judaism*, which he completed in 1976, before spending a year at the Eberhard Karls University of Tübingen undertaking post-doctoral studies with Jürgen Moltmann and Eberhard Jüngel.

Meanwhile, Fiddes had studied at Regent's Park College (the Baptist Permanent Private Hall at Oxford) for ordination as a minister in the Baptist Union of Great Britain. In 1977 he returned to Regent's Park as Fellow and Tutor in Christian Doctrine and from 1979-85 he was additionally Lecturer in Theology at St Peter's. He has been a

member of the Oxford Theology Faculty Board since 1989, serving as Chairman 1996-98. He was appointed Principal of Regent's Park in 1989 and Professor of Systematic Theology in the University of Oxford in 2002. In 2007 he resigned the Principalship of Regent's Park and was appointed Principal Emeritus, Professorial Research Fellow, and Director of Research.

In 2004 Fiddes was elected an Honorary Fellow of St Peter's, on which occasion he was described as being 'recognised internationally as one of the leading scholars in the fields of theology and literature'.<sup>[12]</sup> Later in that year, he was awarded the degree of Doctor of Divinity, the highest that the University confers. In 2002 he was chosen to preach the University *Sermon on the Grace of Humility*, and in 2005 he was appointed to deliver the Oxford Bampton Lectures, choosing as his topic *Seeing the world and knowing God: ancient wisdom and modern doctrine*. In 2004 he became an Honorary Doctor of Divinity of the University of Bucharest.<sup>[11]</sup> He is also a Trustee Fellow of Georgetown College.<sup>[13]</sup>

Fiddes is a member of the editorial board of *Ecclesiology: The Journal for Ministry, Mission and Unity*, a consultant editor for *Studies in Baptist History and Thought*, published by Paternoster Press, and a series editor of *New Critical Thinking in Religion, Theology and Biblical Studies* (Ashgate). He is General Editor of the Regent's Study Guides series, published jointly by the college and the American publisher Smyth & Helwys.<sup>[14]</sup>

Fiddes has served as a member of ecumenical study commissions for the British Council of Churches and its successor Churches Together in Britain and Ireland,<sup>[15]</sup> Chairman of the Doctrine and Worship Committee of the Baptist Union of Great Britain, Convenor of the Division for Theology and Education of the European Baptist Federation, Vice Chair of the Baptist Doctrine and Inter-Church Cooperation Study Commission of the Baptist World Alliance. A committed ecumenist, Fiddes was Co-Chair of the Anglican Communion-Baptist World Alliance International Conversations from 2000 until 2005<sup>[16]</sup> and is, together with the Most Reverend Dr Arthur J. Serratelli, Co-Moderator of the second series of Roman Catholic-Baptist World Alliance International Conversations (Second Series 2006-10).<sup>[17]</sup> <sup>[18]</sup> He has been quoted in *The Tablet* saying, "There was a general agreement that Baptists need to think about Mary and honour her more"; "Baptists give supremacy to Scripture. But we've found the same thing affirmed by the Catholics around the table. There are huge amounts of Scripture in Catholic liturgy, maybe more than in Baptist services. In the UK we feel close to Catholics - partly because we're both dissenters."<sup>[19]</sup> Finally, Fiddes is also an Ecumenical Representative to the General Synod of the Church of England.<sup>[9]</sup>

Current Regent's Master of Theology student Andy Goodliff, BA MA London, reports that Fiddes has at least four scholarly projects on which he is working: first, the preparation of his Bampton Lectures for publication; secondly, a commentary on Paul's letter to the Romans (for Blackwell Bible Commentaries); thirdly, a book on Shakespeare and theology; fourthly, a book on systematic theology with literary aspects.<sup>[20]</sup> In 2009 [not, as erroneously stated elsewhere on the internet, 2008] he delivered the Holley-Hull Lectures at Samford University on the subject *Telling the Christian Story in Our World Today* (for a full report see Sean Flynt, 'Self and God: Elusive Subjects in Modern Literature: Fiddes', *Samford University Seasons* (Winter 2009), p. 20 <sup>[21]</sup>). In 2009 he delivered the Nordenhaug Lectures at the International Baptist Theological Seminary of the European Baptist Federation in Prague on the subject "Post Modernity and Wisdom". These lectures will be prepared for future publication.<sup>[21]</sup> (Previous Nordenhaug Lecturers include Miroslav Volf, Henry B. Wright Professor of Theology at Yale Divinity School, I. Howard Marshall, Professor of New Testament Exegesis in the University of Aberdeen, Elisabeth Schüssler Fiorenza, Krister Stendahl Professor of Divinity at Harvard Divinity School, Jürgen Moltmann, Professor of Systematic Theology in the University of Tübingen.)<sup>[22]</sup> In 2010 (7-9 July) Fiddes was Main Speaker at the conference of the Australian and New Zealand Association of Theological Schools/Australian and New Zealand Society for Theological Studies, on 'The Future of God', at Trinity College (University of Melbourne). At the same time he also spoke, as a keynote speaker, at the Melbourne College of Divinity Centenary Conference (5-7 July).<sup>[9]</sup> <sup>[23]</sup> Fiddes was a keynote speaker at 'The Power of the Word: Poetry, Theology and Life', a conference held jointly between Heythrop College and the Institute of English Studies.<sup>[24]</sup> Fiddes was also a keynote speaker at the 2010 Biennial Conference of the International Society for Religion, Literature and Culture, St Catherine's College, Oxford

(23–26 September 2010) on the topic 'Attending to the Other: Critical Theory and Spiritual Practice'.<sup>[25]</sup>

## Publications

### As sole author

#### Books

*Charismatic renewal: a Baptist view: a report received by the Baptist Union Council with commentary* (London: Baptist Publications, 1980)

*A leading question: the structure and authority of leadership in the local church* (London: Baptist Publications, 1986)

*The creative suffering of God* (Oxford: Clarendon Press, 1988)

- Warren McWilliams, review in *Journal of the American Academy of Religion* 58.4 (1990), 705-7
- Jeff B. Pool, review in *The Journal of Religion* 70.3 (1990), 471-472
- Roger E. Olson, review in *Scottish Journal of Theology* 43 (1990), 114-115

*Past event and present salvation: the Christian idea of atonement* (London: Darton, Longman, & Todd, 1989)

*The Trinity in worship and preaching* (London: London Baptist Preachers' Association, 1991)

*Freedom and limit: a dialogue between literature and Christian doctrine* (Basingstoke: Macmillan, 1991; Macon, Georgia: Mercer University Press, 1991)

- Review by Julian Gotobed, Boston University (2002)<sup>[27]</sup>
- Review by Cleo McNelly Kearns, Department of Humanities, New Jersey Institute of Technology, *Theology Today* vol 49 no. 3 (October 1992), pp. 412-14<sup>[28]</sup>

*Participating in God : a pastoral doctrine of the Trinity* (London: Darton, Longman, & Todd, 2000)

*The promised end : eschatology in theology and literature* (Oxford: Blackwell, 2000)

*Tracks and traces: Baptist identity in church and theology* (Carlisle: Paternoster, 2003)

#### Chapters

'The theology of the charismatic movement', in David Martin and Peter Mullen, eds., *Strange gifts? a guide to charismatic renewal* (Oxford: Blackwell, 1984), pp. 19–40

'Covenant - Old and New', in idem., R. Hayden, R. Kidd, K. Clements, and B. Haymes, *Bound to love: the covenant basis of Baptist life and mission* (London: Baptist Union, 1985), pp. 9–23

'The understanding of salvation in the Baptist tradition', in Walter J. Hollenweger, ed., *For us and for our salvation: seven perspectives on Christian soteriology* (Utrecht: Interuniversitair Instituut voor Missiologie en Oecumenica, 1994), pp. 15–37

'C.S. Lewis the myth-maker', in Andrew Walker and James Patrick, *A Christian for all Christians: essays in honour of C.S. Lewis* (London: Hodder & Stoughton, 1990), pp. 132–55 [reprinted as *Rumours of Heaven: essays in celebration of C.S. Lewis* (Guildford: Eagle, 1998)]

'The status of women in the thought of Karl Barth', in Janet Martin Soskice, ed., *After Eve* [alternative title *After Eve: women, theology and the Christian tradition*] (London: Marshall Pickering, 1990), pp. 138–55

'"Where Shall Wisdom be Found?" Job 28 as a Riddle for Ancient and Modern Readers', in John Barton and David Reimer, eds., *After the Exile, Essays in Honour of Rex Mason* (Macon, Georgia: Mercer University Press, 1996)

'Facing the end: the apocalyptic experience in some modern novels', in John Colwell, ed., *Called to one hope: perspectives on the life to come* (Carlisle: Paternoster, 2000), pp. 191–209

'Story and possibility: reflections on the last scenes of the fourth gospel and Shakespeare's *The Tempest*', in Gerhard Sauter and John Barton, eds, *Revelation and story: narrative theology and the centrality of story* (Aldershot: Ashgate, 2000), pp. 29–52

'Introduction: the making of a Christian mind', in idem, *Faith in the centre: Christianity and culture* (Oxford: Regent's Park College; Macon, Georgia: Smyth & Helwys, 2001), pp. 1–26

'The story and the stories: revelation and the challenge of postmodern culture', in idem, *Faith in the centre: Christianity and culture* (Oxford: Regent's Park College; Macon, Georgia: Smyth & Helwys, 2001), pp. 75–96

'Creation out of Love', in John Polkinghorne, ed., *The work of love: creation as kenosis* (Grand Rapids, Michigan: Cambridge: W.B. Eerdmans; London: SPCK, 2001), pp. 167–91

'Millenium and utopia: images of a fuller presence', in Christopher Rowland and John Barton, eds, *Apocalyptic in history and tradition* (Journal for the study of the Pseudepigrapha, supplement series, 43, London: Sheffield Academic Press, 2002), pp. 7–25

'Baptism and the process of Christian initiation', in Stanley E. Porter and Anthony R. Cross, eds., *Dimensions of baptism: biblical and theological studies* (London: Sheffield Academic Press, 2002), pp. 280–303

'The quest for a place which is not-a-place: the hiddenness of God and the presence of God', in Oliver Davies and Denys Turner, eds, *Silence and the Word: negative theology and incarnation* (Cambridge University Press, 2002), pp. 35–60

'The Canon as Space and Place', in John Barton und Michael Wolter, eds., *Die Einheit der Schrift und die Vielfalt des Kanons=The Unity of Scripture and the Diversity of the Canon* (Beihefte zur Zeitschrift für die neutestamentliche Wissenschaft und die Kunde der älteren Kirche, Bd. 118; Berlin: W. de Gruyter, 2003), pp. 127–49

'Baptism and membership of the Body of Christ: a theological and ecumenical conundrum', in Lena Lybæk, Erich Geldbach, Konrad Raiser, and Stefanie Schardien, eds, *Gemeinschaft der Kirchen und gesellschaftliche Verantwortung: die Würde des Anderen und das Recht anders zu denken: Festschrift für Professor Dr. Erich Geldbach* (Ökumenische Studien 30, Münster: LIT Verlag, 2004), pp. 83–93

'On God the Incomparable: thinking about God with John Macquarrie', in Robert Morgan, ed., *In search of humanity and deity: a celebration of John Macquarrie's theology* (London: SCM, 2006), pp. 179–99

'When text becomes voice: *You've got mail*', in idem., ed., *Flickering images: theology and film in dialogue* (Oxford: Regent's Park College; Macon, Georgia: Smyth & Helwys, 2006), pp. 97–112

'Baptism of believers', in, Thomas F. Best, ed., *Baptism today: understanding, practice, ecumenical implications* (Collegeville, Minnesota: Liturgical Press, 2008), pp. 73–80

'*Ex opere operato*: rethinking a historic Baptist rejection', in Anthony R. Cross and Philip E. Thompson, eds, *Baptist sacramentalism 2*, with a foreword by Francis Schüssler Fiorenza (Milton Keynes: Paternoster, 2008), pp. 219–238

'Spirituality as attentiveness: Stillness and journey', in, Paul S. Fiddes, ed., *Under the rule of Christ: dimensions of Baptist spirituality* (Regent's study guides 14, Macon, Georgia: Smyth & Helwys, 2008), pp. 25–58

'Christianity, culture and education: a Baptist perspective', in Roger Ward and David P. Gushee, eds, *The scholarly vocation and the Baptist academy: essays on the future of Baptist higher education* (Macon, Georgia: Mercer University Press, 2008), ch. 1

'Something will come of nothing: on *A theology of the dark side* [Nigel Goring Wright, *A theology of the dark side: putting the power of evil in its place* (Carlisle: Paternoster Press, 2002)]', in Pieter J. Lalleman, ed., *Challenging to change: dialogues with a radical Baptist theologian: essays presented to Dr Nigel G. Wright on his sixtieth birthday* (London: Spurgeon's College, 2009)

'Daniel Turner and a Theology of the Church Universal', in John H. Y. Briggs, ed., *Pulpit and People: Studies in Eighteenth Century Baptist Life and Thought* (Studies in Baptist History and Thought 28, Carlisle: Paternoster, 2009), pp. 112–27

'The Body as Site of Continuity and Change', in Pamela Sue Anderson, ed., *New Topics in Feminist Philosophy of Religion: Contestations and Transcendence Incarnate* (New York: Springer, 2009), pp. 261–77

'Church and Sect: Cross-currents in Early Baptist Life', in A. R. Cross and N. J. Wood, eds., *Exploring Baptist Origins* (Oxford: Regent's Park College, 2010)

'On Theology', in Robert MacSwain and Michael Ward, eds., *The Cambridge Companion to C. S. Lewis* (Cambridge Companions to Religion, Cambridge University Press, 2010), ch. 7

'Dual Citizenship in Athens and Jerusalem: The Place of the Christian Scholar in the Life of the Church' in Anthony R. Cross and Ruth M.B. Gouldbourne, eds., *Questions of Identity: Essays in honour of Brian Haymes* (Centre for Baptist History and Heritage Studies, vol. 6; Oxford: Regent's Park College, 2011)

### Encyclopaedia, handbook, and companion articles

'Process Theology', in A.E. McGrath, ed., *The Blackwell encyclopedia of modern Christian thought* (Oxford: Blackwell, 1993), pp. 472–6

'Suffering, Divine', in A.E. McGrath, ed., *The Blackwell encyclopedia of modern Christian thought* (Oxford: Blackwell, 1993), pp. 633–6

'Salvation', in John Webster, Kathryn Tanner, and Iain Torrance, eds., *The Oxford handbook to systematic theology* (Oxford: Oxford University Press, 2007), pp. 176–96

'The passion story in literature', in Andrew Hass, David Jasper, Elisabeth Jay, eds., *The Oxford handbook of English literature and theology*, (Oxford University Press, 2007) pp. 742–759

'G.M. Hopkins', in Rebecca Lemon, Emma Mason, Jonathan Roberts, and Christopher Rowland, eds., *The Blackwell companion to the Bible in English literature* (Blackwell companions to religion, Chichester: Wiley-Blackwell, 2009), pp. 563–76

### Journal articles

*This list is incomplete.*

*Fiddes has published around a further seventy articles which are not yet included in this list.*<sup>[9] [10]</sup>

'God and History', *Baptist Quarterly* 30 (1983), 85-88

'''Woman's head is man": a doctrinal reflection upon a Pauline text', *Baptist Quarterly* 31.8 (1986), 370-383

'Baptism and the process of Christian initiation', *The Ecumenical Review* 54 (2002), 49-65

'Baptist ecclesiology: a response to David Carter's article review of *Tracks and Traces*', *Ecclesiology* 1 (2005), 87-100

'Participating in the Trinity', *Perspectives in Religious Studies* 33.3 (2006), 375-91

'The place of Christian theology in the modern university', *Baptist Quarterly* 42.2.1 (2007), 71-88

'Learning from others: Baptists and receptive ecumenism', *Louvain Studies* 33.1-2 (2008), 54-73

'Concept, Image and Story in Systematic Theology', *International Journal of Systematic Theology* 11.1 (2009), 3-23

'Ambiguities of the Future: Theological Hints in the Novels of Patrick White', *Pacifica* 23 (2010), 281-98<sup>[29]</sup>

'Christian Doctrine and Free Church Ecclesiology: Recent Developments among Baptists in the Southern United States', *Ecclesiology*, 7.2 (2011), 195-219



### Book review

Review of Hans Urs von Balthasar, *The Glory of the Lord*, vol. vii, *Theology: the new covenant*, trans. Brian McNeil, ed. John Riches (Edinburgh: T.&T. Clark, 1989), *The Expository Times* 102.11 (1991), 349-350

### As joint author

#### Books

*A call to mind: Baptist essays towards a theology of commitment*, with Keith Clements, Roger Hayden, Brian Haymes, and Richard Kidd (London: Baptist Union, 1987)

*Something to declare: a study of the declaration of principle of the Baptist Union of Great Britain*, with Brian Haymes, Richard Kidd (ed.), and Michael Quicke (Oxford: Whitley, 1996)

*On the way of trust*, with Brian Haymes, Richard Kidd, and Michael Quicke (Oxford: Whitley, 1997)

*Doing theology in a Baptist way*, with Richard Kidd, Brian Haymes, and Michael Quicke (Oxford: Whitley, 2000)

#### Chapter

'Baptists and spirituality: a rule of life', with Stephen Finamore, in Paul S. Fiddes, ed., *Under the rule of Christ: dimensions of Baptist spirituality* (Regent's study guides 14, Macon, Georgia: Smyth & Helwys, 2008), pp. 1-24

### As sole editor

*Reflections on the water: understanding God and the world through the baptism of believers* (Oxford: Regent's Park College, 1996)

*Doing theology in a Baptist way* (Oxford: Whitley, 2000)

*The novel, spirituality and modern culture: eight novelists write about their craft and their context* (Cardiff: University of Wales Press, 2000)

*Faith in the centre: Christianity and culture* (Oxford: Regent's Park College; Macon, Georgia: Smyth & Helwys, 2001)

*Flickering images: theology and film in dialogue* (Oxford: Regent's Park College; Macon, Georgia: Smyth & Helwys, 2006)

*Under the rule of Christ: dimensions of Baptist spirituality* (Regent's study guides 14, Macon, Georgia: Smyth & Helwys, 2008)

### As joint editor

*Gemeinschaft am Evangelium: Festschrift für Wiard Popkes zum 60. Geburtstag*, with Edwin Brandt and Joachim Molthagen (Leipzig: Evangelische Verlagsanstalt, 1996)

*Pilgrim pathways: essays in Baptist history in honour of B.R. White*, with William H. Brackney and John H.Y. Briggs (Macon, Georgia: Mercer University Press, 1999)

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# Stephen T. Franklin

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**Stephen T. Franklin** is a Christian theologian and philosopher, and president emeritus of Tokyo Christian University. Franklin is one of the few evangelicals who is also a scholar of process theology; known for his research in the interaction of evangelical theology and process thought. Franklin is married to the former Martha Jean Evans, former associate professor of nursing at Shizuoka University in Shizuoka Prefecture, Japan.

## Education

Franklin attended North Park College (now North Park University) and graduated with a BA in Philosophy in 1965. He then moved on to the University of Chicago to earn graduate degrees in Philosophy and Theology and was awarded a PhD in 1976 (by a dissertation committee comprising theologians Langdon Brown Gilkey and David Tracy, and philosopher Paul Ricoeur) for his work on Language and Religious Symbolism based on Alfred North Whitehead's "philosophy of organism."

## Career

Franklin joined the faculty of Tokyo Christian University as Professor of Philosophy and Theology in 1991. He was later elected, by the faculty and board of Tokyo Christian Institute, as Dean of the Faculty for a two year period, and President of Tokyo Christian University in 1998. Franklin was re-elected President for a second term in 2002. He stepped down from this post in March 2006. Since stepping down as president, Franklin has been contributing to the advancement of higher education in Japan and the United States as Professor of Theology and Philosophy at Tokyo Christian University and Olivet Nazarene University.

Franklin's most significant accomplishment during his tenure as president was the creation of the ACTS-ES<sup>[1]</sup> (Asian Christian Theological Studies for English Speakers) program -- a four year course leading to a BA degree which combines the liberal arts, theology, cross-cultural studies, East Asian studies, and practical Christian living. The course has been very successful, and has attracted students from the United States, Europe, and Africa, though it was originally designed for students from Asia.

Before joining the faculty of Tokyo Christian University, Franklin held professorships in Theology and Philosophy at Wheaton College Graduate School, Tsukuba University, and William Rainey Harper College. He has also been a visiting faculty member at St. James Bible College (Magadan, Russia), Seikei Theological Seminary (Tokyo), University of Maryland, and North Park University.

In addition to his publications in Theology and Process Thought, Franklin has also been the recipient of numerous invitations to speak at universities and academic institutions around the world.

## Publications

### Books

- *Faith, Learning, and Life: The Identity of the Christian University in Japan*. Japanese Trans. by Shin Toyokawa. (Tokyo: Inochi no Kotobasha, 2006).
- *Speaking from the Depths: Alfred North Whitehead's Hermeneutical Metaphysics of Propositions, Experience, Symbolism, Language, and Religion*. Grand Rapids, MI: William B. Eerdmans Publishing Co., 1990. ISBN 0-8028-0370-9 (based on his Ph.D. dissertation)

### Articles

- "God and Creativity: A Revisionist Proposal within a Whiteheadian Context." *Process Studies* 29.2 (2001): 237-307.
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- "The Christian's Guide to Islam: Part Two." Japanese Trans. by Akio Ito. *Christ and the World* 6 (March, 1996): 21-56.
- "The Theological Foundations of the Christian Liberal Arts in Relation to the Distinctives of the Christian Liberal Arts College/University." *Christian Scholar's Review* XXIV:3 (March 1995): 253 - 77.
- "The Logic of Evangelical Theology." Japanese trans. by Motomasa Murayama. Chap-ter 11 of *Shukyo Tegen Shugi no Tankyu* (Studies in Religious Pluralism). Ed. by Hisa-masa Mase and Hisakazu Inagaki. (Tokyo: Taimeido Publishers. 1995): 208-26.
- "The Christian's Guide to Islam: Part One." Japanese trans. by Akio Ito. *Christ and the World* 5 (March 1995): 16-46.
- "The Unique Christ as the Hope and Judgment of the World." *Evangelical Review of Theology* 17 (January, 1993): 29-53.
- "Evangelism Among Japanese Evangelicals." *Japan Christian Review* 58 (1992): 53-59.
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## External links

- Tokyo Christian University <sup>[1]</sup>
- Bibliography <sup>[3]</sup> at the Center for Process Studies

# Terence E. Fretheim

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**Terence E. Fretheim** is an Old Testament scholar and the Elva B. Lovell professor of Old Testament at Luther Seminary. His writings have played a major part in the development of process theology and open theism.

## Biographical Information

Terence Fretheim was first connected with the Luther Seminary faculty as a teaching fellow in Greek in 1958-60 while he was still a seminary student. He returned as assistant professor in 1968 and became professor of Old Testament in 1978. He was dean of academic affairs (1978-88) and also served as acting chair of the Old Testament department (1977-78) and chair of the curriculum committee (1976-77).

He was an instructor in Old Testament at Augsburg College and Seminary, Minneapolis, in 1961-63, and assistant professor of religion at Augsburg College in 1967-68. Ordained in 1968, Fretheim was pastor of Dennison (Minn.) Lutheran Church in 1968-71. He has been visiting professor at McCormick Theological Seminary in Chicago, and both visiting professor and lecturer at the University of Chicago Divinity School.

Fretheim received the Fulbright Scholarship for study in England, the Lutheran Brotherhood Seminary Graduate Scholarship, the Martin Luther Scholarship, the Fredrik A. Schiotz Fellowship Award, and the ATS Scholarship for Theological Research.

A graduate of Luther College (Iowa) (B.A., 1956), Fretheim earned the M.Div. degree from Luther Seminary in 1960 and the Th.D. degree from Princeton Seminary in 1967. He has also studied at the University of Durham, England, the University of Minnesota, the University of Heidelberg in Germany, Oxford University in England, and the University of Chicago. As a Luther College alumnus, he was elected to Phi Beta Kappa in 1995.

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He is a member of the Catholic Biblical Association and the Society of Biblical Literature and is Editor of SBL Old Testament Monographs. He has served on the Buddhist and Muslim Task Forces of the American Lutheran Church, was co-chair of the Theological Consultation for the Evangelical Lutheran Church in America, has been president of the Minnesota Consortium of Theological Schools, and Old Testament Book Editor for the Journal of Biblical Literature.

## Works Published

Fretheim has published numerous books. More recent titles include: *The Pentateuch* (Abingdon, 1996); *Proclamation 6* (Fortress, 1997); *The Bible as Word of God in a Postmodern Era* (Fortress, 1998; with K. Froehlich); *First and Second Kings* (Westminster, 1999); *About the Bible: Short Answers to Big Questions* (Augsburg, 1999); *In God's Image: A Study of Genesis* (Augsburg, 1999); *A Theological Introduction to the Old Testament* (Abingdon, 1999), with B. Birch, W. Brueggemann, and D. Petersen; and *Jeremiah: A Commentary* (Smyth & Helwys, 2002). *God and World in the Old Testament: A Relational Theology of Creation* (Abingdon, 2005); *Hope in God in Times of Suffering* (with Faith Fretheim) (Augsburg/Fortress, 2006); *Abraham: Journeys of Family and Faith* (University of South Carolina Press, 2007).

His 1984 book, *The Suffering of God: An Old Testament Perspective* is an exegetical approach to many of the themes and issues associated with process theology and open theism.

## Catherine Keller (theologian)

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**Catherine Keller** (born 1953) is a Process Theologian and is currently a professor of Constructive Theology at New Jersey's Drew University. Like most major voices in Process theology, she studied directly with John B. Cobb at Claremont.

Her professional interests are broad, and encompass social and ecological justice, poststructuralist theory, as well as feminist and metaphorical readings of scripture. Along with Roland Faber at Claremont, she is one of the leading academics working in the field of Theopoetics.

She is author of perhaps one of the most influential Whiteheadian Feminist texts, *From a Broken Web: Separation, Sexism, and Self*.

## Works

- *From a Broken Web: Separation, Sexism and Self*. Boston: Beacon Press, 1986. Der Ich-Wahn: Abkehr von einem.
  - *Apocalypse Now and Then: A Feminist Guide to the End of the World*. Boston: Beacon Press, 1996.
  - *Face of the Deep: A Theology of Becoming*. London: Routledge, 2003.
  - *Postcolonial Theologies: Divinity and Empire*. (Ed.) St. Louis: Chalice, 2004.
  - *God and Power: Counter-Apocalyptic Journeys*. Minneapolis: Fortress, 2005.
  - *On the Mystery: Discerning God in Process*. Minneapolis: Fortress, 2008.
-

## External links

- Keller's Homepage <sup>[1]</sup>
- THEOPOETICS(dot)NET <sup>[4]</sup>
- Works by or about Catherine Keller (theologian) <sup>[2]</sup> in libraries (WorldCat catalog)

# C. Robert Mesle

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**C. Robert Mesle** (born 1950) is a Process Theologian and is currently a professor of Philosophy and Religion at Graceland University in Iowa. After earning a B.A. in Religion at Graceland University (1972), an M.A. in Christian Theology at University of Chicago Divinity School (1975), Bob received a Ph.D. in Philosophy and Religion from Northwestern University (1980).

Mesle is the author of *Process Theology: A Basic Introduction*, an introduction to process theology.

## Works

- From a Broken Web: Separation, Sexism and Self*. Boston: Beacon Press, 1986. Der Ich-Wahn: Abkehr von einem.
- Process-Relational Philosophy: An Introduction to Alfred North Whitehead*. Templeton Foundation Press, 2008.
- Theology 9: Process Theology and Religious Pluralism*, Co-editor, with Joni Wilson, Graceland Press, 2002, and published in Korean, 2003.
- Theology V: The Jesus Seminar* (editor) "Preface" & "Jesus the Challenge," Graceland/Park Press, Independence, MO 1998.
- Process Theology: A Basic Introduction*, with a concluding chapter by John B. Cobb, Jr., Chalice Press, 1993.
- John Hick's Theodicy*, with a response by John Hick, Macmillan in the U.K. and St. Martin's in the U.S., 1991.
- The Bible as Story and Struggle*, Herald House, 1989.
- Fire In My Bones: A Study in Faith and Belief*, Herald House, 1984

## External links

- Mesle's Homepage <sup>[1]</sup>
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  - Works by or about C. Robert Mesle <sup>[2]</sup> in libraries (WorldCat catalog)
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# Thomas Jay Oord

**Thomas Jay Oord** (born 1965) is a theologian, philosopher, and scholar of multi-disciplinary studies. He is the author or editor of more than a dozen books and professor at Northwest Nazarene University, Nampa, Idaho. Oord is known for his contributions to research on love, open and relational thought (including relational theism), science and religion, Wesleyan/Holiness/Church of the Nazarene thought, Evangelical theology, and postmodernism.<sup>[1]</sup>

## Background/education

Oord grew up on a farm in the small community of Othello, Washington. He attended Northwest Nazarene College (now Northwest Nazarene University) and graduated in 1988. After four years in pastoral ministry in Walla Walla, Washington, he attended Nazarene Theological Seminary in Kansas City, Missouri. Upon graduating with a MDiv, he attended Claremont Graduate University in Southern California. He earned a MA in Religion and a PhD in Philosophy of Religion and Theology at Claremont. While pursuing graduate studies, he was a part-time associate pastor at Bloomington Church of the Nazarene (now Bridge Church of the Nazarene) in Bloomington, Ca. Oord graduated from Claremont after finishing his dissertation *Matching Theology and Piety: An Evangelical Process Theology* (1999).

## Career

Oord is an ordained minister in the Church of the Nazarene.

He has taught at Africa Nazarene University, Azusa Pacific University, Eastern Nazarene College, Harvard Divinity School, and Wesley Theological Seminary. He currently teaches in the School of Theology and Christian Ministries at Northwest Nazarene University. He was a youth pastor at Bridge Church of the Nazarene at Bloomington Ca.

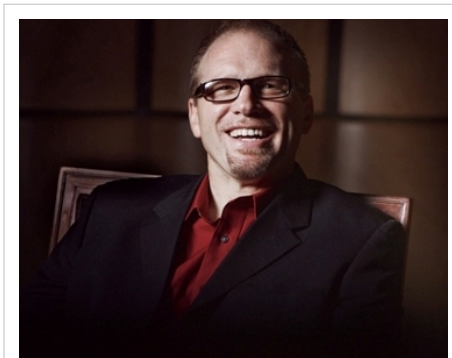
Oord's love studies begin with his own definition: "To love is to act intentionally, in sympathetic/empathetic response to God and others, to promote overall well-being." He proposes this definition with the desire that it might be useful for research in science, religion, and philosophy. (Oord, *The Nature of Love*, 17)

Oord has also posited definitions of the classic love archetypes commonly referred to by philosophers and theologians:

- agape: love that promotes overall well-being when confronted by that which generates ill-feeling (i.e., returning good for ill)
- eros: love that promotes overall well-being by affirming the valuable or beautiful
- philia: love that promotes overall well-being when cooperating with others, and that moreover gives humans authentic friendship<sup>[2]</sup>

As a relational theologian, Oord argues that the fundamental nature of all things existing is relational. What it means to exist is decided by the decisions made in response to the influence of others, including God.

Oord says that God is also relational, and God and creatures mutually influence one another. While creatures influence God, God's essence remains constant. But God's influence precedes each moment of creaturely existence. This preceding divine influence is the inspiring and empowering of prevenient grace (See John Wesley).



Add caption here

Oord has been identified (rightly or wrongly) with a number of contemporary theological movements, including Holiness theology, Wesleyan theology, Open theology, Arminian theology, Process theology, Liberation theology, Evangelical, Postmodern, and Feminist theology. The driving force behind his theological interests, however, seems to be his intent to make sense of God as love and the great love commandments given by Jesus.

Oord's contributions to science and religion research are varied. Oord argues that love and altruism are important spiritual and scientific categories for contemporary research. He adopts a form of theistic evolution, which requires a necessary place for both divine and creaturely action. Oord argues that the traditional doctrine of creation out of absolutely nothing argument does not make scientific, philosophic or biblical sense in light of the problem of evil and divine love relations.<sup>[3]</sup>

Thomas Jay Oord is a theological consultant for the Institute for Research on Unlimited Love, has been academic correspondent and contributing editor to *Science & Theology News*, and is an officer in a variety of scholarly societies. Oord was the president of the Wesleyan Theological Society from 2008-2009<sup>[4]</sup> and was past president of the Wesleyan Philosophical Society. He leads the AAR Open and Relational Theologies group and is a leader of the Society of Evangelical Scholars.

Oord is an active participant to the listserv WTD - the Wesleyans in Theological Dialogue.

## Selected bibliography

- *Defining Love: A Philosophical, Scientific, and Theological Engagement* (2010) ISBN 1-58743-257-9
- *The Nature of Love: A Theology* (2010) ISBN 9780827208285
- *The Best News You Will Ever Hear* (with Robert Luhn) (2011) ISBN 978-0982930052
- *The Many Facets of Love: Philosophical Perspectives* (2007) ISBN 978-1847181237
- *Relational Holiness: Responding to the Call of Love* (with Michael Lodahl) (2005) ISBN 978-0834121829
- *Science of Love: The Wisdom of Well-Being* (2004) ISBN 978-1932031706
- *Matching Theology and Piety* (1999)

As editor and contributor:

- *God in an Open Universe: Science, Metaphysics, and Open Theism* (2011)
- *The Bible Tells Me So* (with Richard Thompson) (2011)
- *The Polkinghorne Reader* (2010)
- *Creation Made Free: Open Theology Engaging Science* (2009)
- *Love Among Us* (with Darrin Grinder) (2009)
- *Divine Grace and Emerging Creation: Wesleyan Forays in Science and Theology of Creation* (2009)
- *Postmodern and Wesleyan? Exploring the Boundaries and Possibilities* (with Jay Akkerman and Brent Peterson) (2009) ISBN 978-0834124585
- *The Altruism Reader: Selections from Writings on Love, Religion, and Science* (2007) ISBN 978-1599471273
- *Philosophy of Religion: Essay Introductions* (2003) ISBN 978-0834119956
- *Thy Name and Thy Nature is Love* (with Bryan P. Stone) (2001) ISBN 978-0687052202
- *Generation Xers Talk about the Church of the Nazarene* (1999) ISBN 978-0834118157



## References

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- [2] "Introduction - Perspectives on Love and Agapé: Contemporary Views on Love" ([http://www.ashgate.com/pdf/SamplePages/Visions\\_of\\_Agape\\_Intro.pdf](http://www.ashgate.com/pdf/SamplePages/Visions_of_Agape_Intro.pdf)) by Ashgate Publishing, p.9
- [3] Two Theories of Creation: Creation out of Nothing - Creation out of Chaosmos. Accessed July 1, 2009 (<http://www.crivoice.org/exnihilo.html>)
- [4] Wesleyan Theological Society news web site. Accessed April 1, 2009 (<http://wesley.nnu.edu/wts/news.htm>)

## External links

- Dr Oord's page on NNU's website (<http://www.nnu.edu/oord/>)
- Dr Oord's personal website (<http://thomasjayoord.com>)

# Blake Ostler

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**Blake Thomas Ostler** (born 1955)<sup>[1]</sup> is an American theologian and writer on the topic of Mormon theology, philosophy and thought.

## Background

Ostler was born in 1957 in Murray, Utah. Ostler received his B.A. in philosophy and B.S. in psychobiology in 1981 from Brigham Young University (BYU). He received his J.D. as a William Leary Scholar from the University of Utah in 1985. In each of his these degrees, Ostler graduated with honors.<sup>[2]</sup> He is a practicing attorney specializing in commercial litigation; franchise law and litigation, construction law and litigation, property and development law and litigation educational law, employment law and intellectual property.

Ostler has published widely on Mormon philosophy in journals such as Religious Studies, International Journal for the Philosophy of Religion, Dialogue: A Journal of Mormon Thought, BYU Studies and the FARMS Review of Books.

Ostler accepts the Book of Mormon as an actual historical account, but as edited and expanded in light of Joseph Smith's vocabulary and capacity for expression within his world view. He argues that it is a modern expansion of an ancient document.<sup>[3]</sup>

Although Ostler adopts the Expansion Theory, he still affirms the Book of Mormon was translated through the gift of God.<sup>[4]</sup>

Ostler currently practices in Salt Lake City.<sup>[5]</sup>

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## Publications

- *Exploring Mormon Thought: The Attributes of God* (October 1, 2001) ISBN 1-58958-003-6
- *Exploring Mormon Thought: The Problems With Theism And the Love of God* (March 2006) ISBN 1-58958-095-8
- *Exploring Mormon Thought: Of God and Gods* (April 2008) ISBN 1-58958-107-5
- *Exploring Mormon Thought: Fire on the Horizon* (2010)

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- [1] BYU online library catalog (<http://catalog.lib.byu.edu>) entry for *Of God and Gods* (2008)
- [2] "Biography" (<http://www.blakeostler.com/biography.html>). *Blake Ostler's Mormon Publications Site*. . Retrieved 2009-03-23.
- [3] review of *New Approaches to the Book of Mormon: Explorations in Critical Methodology* (<http://mi.byu.edu/publications/review/?vol=6&num=1&id=135>), by John A. Tvedtnes in *FARMS Review*
- [4] <http://timesandseasons.org/index.php/2005/04/Updating-the-expansion-theory/> Accessed on April 8, 2009.
- [5] Maxwell Institute author bio page (<http://maxwellinstitute.byu.edu/authors/?authorID=244>)

## External links

- Blake Ostler's Mormon Publications Site (<http://www.blakeostler.com>)
- Blake Ostler ([http://www.mormonwiki.org/Blake\\_Ostler#Online\\_writings](http://www.mormonwiki.org/Blake_Ostler#Online_writings)) (MormonWiki.org; evangelical wiki on Mormonism)

# Norman Pittenger

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**William Norman Pittenger** (July 23, 1905 – June 19, 1997) was an Anglican theologian. He played an important role as promoter of process theology and he became one of the first acknowledged Christian defenders for the open acceptance of homosexual relations among Christians. He lived most of his life in the United States and from 1966 he lived in Cambridge, England as an Honorary Senior Member of King's College.

## Biography

Pittenger was born in Bogota, New Jersey and was raised in Princeton, New Jersey. He attended Princeton University for a short time, but left without graduating because he wanted to try a career as a newspaper reporter in New York City. Not able to find satisfaction he went to The General Theological Seminary in Manhattan. He started as a student and soon he became tutor, instructor, and finally professor of Christian Apologetics. Pittenger was one of the first process theologians without connections with the University of Chicago Divinity School and produced the first genuine process theological christology (*The Word Incarnate* - 1959). At general Seminary, he was priest and chaplain of the Guild of Scholars of The Episcopal Church. After his retirement in 1966 he moved to Cambridge as an Honorary Senior Member of King's College. Next to his writing on explicitly Christian themes, he wrote on sexuality in general (*Making Sexuality Human* - 1970) and a Christian defense of homosexuality in particular (*Time for Consent* - 1970), a book that was so controversial when published that the Church Times refused to review it. He also admitted his own homosexual bias. Norman Pittenger wrote throughout his life ninety books and many articles.

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## Selected works

Norman Pittenger authored ninety books and many articles.

- 1959 *The Word Incarnate: A Study of the Doctrine of the Person of Christ*, Harper & Brothers.
- 1967 *God in Process*, London:SCM Press Ltd. (Call No. BT83.6 P5)
- 1968 *Process-Thought and Christian Faith*, New York: Macmillan Company. (Call No. BR100 P615 1968)<sup>[1]</sup>
- 1969 *Alfred North Whitehead*, John Knox Press.<sup>[2]</sup>
- 1969 *God's Way with Men: A Study of the Relationship Between God and Man in Providence, "Miracle," and Prayer*, London: Hodder & Stoughton, Valley Forge, Pa:Judson Press.
- 1970 "The Last Things" in a Process Perspective, London: Epworth Press.<sup>[3]</sup>
- 1970 *Making Sexuality Human*, United Church Press.
- 1970 *Time for Consent: A Christian's Approach to Homosexuality*, London: SCM Press.
- 1970 *Christology Reconsidered*, London: SCM Press.
- 1974 *The Holy Spirit*, United Church Press.
- 1974 *Love and Control in Sexuality*, United Church Press.
- 1980 *After death/Life in God*, London:SCM Press Ltd.<sup>[4]</sup>
- 1989 *Becoming and Belonging*, Wilton, CT:Morehouse Publications. (Call No. BT77 .P49 1989)<sup>[5]</sup>

## External links

- Selected primary bibliography at the website of the Center for Process Studies <sup>[6]</sup>
- Works of Pittenger at Religion online <sup>[7]</sup>

## References

- [1] Religion Online: *Process-Thought and Christian Faith* by Norman Pittenger (<http://www.religion-online.org/showbook.asp?title=2306>)
- [2] Religion Online: *Alfred North Whitehead* by Norman Pittenger (<http://www.religion-online.org/showbook.asp?title=2212>)
- [3] Religion online: *The 'Last Things' in a Process Perspective* by Norman Pittenger (<http://www.religion-online.org/showbook.asp?title=2214>)
- [4] Religion online: *After Death: Life in God* by Norman Pittenger (<http://www.religion-online.org/showbook.asp?title=2290>)
- [5] Religion online: *Becoming and Belonging* by Norman Pittenger (<http://www.religion-online.org/showbook.asp?title=2291>)
- John B. Cobb, Jr. and David R. Griffin, *Process Theology, an Introductory Exposition*, Philadelphia: Westminster Press, 1976, p. 180-181.

# Daniel Day Williams

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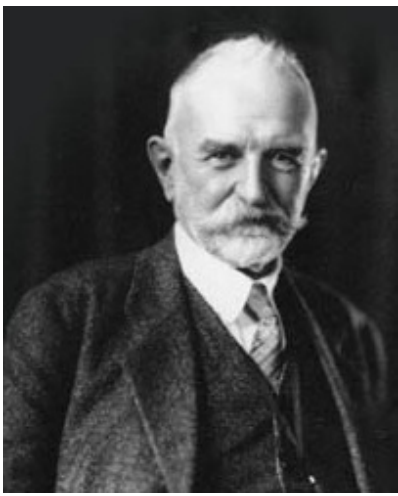
**Daniel Day Williams** (1910–December, 1973) was a process theologian, professor, and author. He served on the joint faculty of the University of Chicago and the Chicago Theological Seminary, and later at Union Theological Seminary in New York City. Williams was a member of the United Church of Christ.

## Works

- *God's Grace and Man's Hope*, Harper & Row, 1949 (Rauschenbush Lectureship), reprint 1965, online edition <sup>[1]</sup>
  - *What Present-Day Theologians Are Thinking*, Harper & Brothers, 1952, revised ed. 1959, 3rd ed. 1967, Greenwood Publications revised ed. 1978: ISBN 0-313-20587-6
  - *Basic Christian Affirmations*, National Council of Churches, 1953
  - *Christian Teaching and Christian Beliefs*, United Church Board for Homeland Ministries, 1955
  - *The Advancement of Theological Education*, with H. Richard Niebuhr and James Gustafson, Harper & Brothers, 1955, published online as *The Purpose of the Church and its Ministry* <sup>[2]</sup>
  - *The Ministry in Historical Perspectives*, edited with H. Richard Niebuhr, Harper & Brothers, 1956, online edition <sup>[3]</sup>
  - *The Family Learns About Jesus*, Pilgrim Press, 1960
  - *The Minister and the Care of Souls*, Harper, 1961, online edition <sup>[4]</sup>
  - *The New Life in Christ: The meaning and experience of continuing redemption*, 1965
  - *Spirit and the Forms of Love*, Harper & Row, 1968, University Press of America 1981 reprint, ISBN 0-8191-1692-0 online edition <sup>[5]</sup>
  - *The Andover Liberals;: A Study in American Theology*, Octagon Press, 1970
  - *Essays in Process Theology*, edited with Perry D. LeFevre, Exploration Press 1985, ISBN 0-913552-25-9
-

# George Herbert Mead

**George H. Mead**



<b>Born</b>	February 27, 1863 South Hadley, Massachusetts
<b>Died</b>	April 26, 1931 (aged 68)

**George Herbert Mead** (1863–1931) was an American philosopher, sociologist and psychologist, primarily affiliated with the University of Chicago, where he was one of several distinguished pragmatists. He is regarded as one of the founders of social psychology and the American sociological tradition in general.

## Biography

Mead was born February 27, 1863 in South Hadley, Massachusetts. He was raised in a Protestant, middle class family comprising his father, Hiram Mead, his mother, Elizabeth (Billings) Mead, and his sister Alice. His father was a former Congregationalist pastor from a lineage of farmers and clergymen and who later held a special chair at Oberlin College's theological seminary. Elizabeth Storrs Billings Mead taught for two years at Oberlin College and subsequently, from 1890 to 1900, served as president of Mount Holyoke College in South Hadley, Massachusetts.<sup>[1]</sup> In 1879, George Mead enrolled at Oberlin College, graduating in 1883 with an BA degree. After graduation, Mead taught grade school for about four months. For the following three years, he worked as a surveyor for the Wisconsin Central Rail Road Company.

In autumn 1887, Mead enrolled at Harvard University where his main interests were philosophy and psychology. At Harvard, Mead studied with Josiah Royce, a major influence upon his thought, and William James, whose children he tutored. In 1888, Mead left Harvard after receiving only a B.A. and moved to Leipzig, Germany to study with psychologist Wilhelm Wundt, from whom he learned the concept of "the gesture," a concept central to his later work.

In 1891 he married Helen Kingsbury Castle (1860–1929) , the sister of Henry Northrup Castle (1862–1895), a friend he met at Oberlin.<sup>[2]</sup> Despite never finishing his dissertation, Mead was able to obtain a post at the University of Michigan in 1891. At the University of Michigan, Mead met Charles H. Cooley and John Dewey, both of whom would influence him greatly.<sup>[3]</sup> In 1894 Mead moved, along with Dewey, to the University of Chicago, where he taught until his death. Dewey's influence led Mead into educational theory, but his thinking soon diverged from that of Dewey, and developed into his famous psychological theories of mind, self and society.<sup>[4]</sup> :352–353

No detached philosopher, he was active in Chicago's social and political affairs; among his many activities include his work for the City Club of Chicago. He believed that science could be used to deal with social problems and played a key role in conducting research at the settlement house in Chicago.<sup>[4]</sup> :353<sup>[5]</sup> Mead died of heart failure on April 26, 1931.

## Writings

In a career spanning more than 40 years, Mead wrote almost constantly and published numerous articles and book reviews in both philosophy and psychology. However, he did not publish any books. Following his death, several of his students put together and edited four volumes from records of Mead's social psychology course at the University of Chicago, his lecture notes, and his numerous unpublished papers. The four volumes are: *The Philosophy of the Present* (1932), edited by Arthur E. Murphy; *Mind, Self, and Society* (1934), edited by Charles W. Morris; *Movements of Thought in the Nineteenth Century* (1936), edited by Merritt H. Moore; and *The Philosophy of the Act* (1938), Mead's 1930 Carus Lectures, edited by Charles W. Morris.

Most notable among Mead's published papers are "Suggestions Towards a Theory of the Philosophical Disciplines" (1900);<sup>[6]</sup> "Social Consciousness and the Consciousness of Meaning" (1910);<sup>[7]</sup> "What Social Objects Must Psychology Presuppose" (1910);<sup>[8]</sup> "The Mechanism of Social Consciousness" (1912);<sup>[9]</sup> "The Social Self" (1913);<sup>[10]</sup> "Scientific Method and the Individual Thinker" (1917);<sup>[11]</sup> "A Behavioristic Account of the Significant Symbol" (1922);<sup>[12]</sup> "The Genesis of Self and Social Control" [13] (1925); "The Objective Reality of Perspectives" [14] (1926); "The Nature of the Past" [15] (1929); and "The Philosophies of Royce, James, and Dewey in Their American Setting" [16] (1929). Twenty-five of Mead's most notable published articles have been collected in Andrew J. Reck, ed (1964). *Selected Writings: George Herbert Mead*. Bobbs-Merrill, The Liberal Arts Press.<sup>[13]</sup>

In his lifetime, Mead published about 100 scholarly articles, reviews, and incidental pieces. The Mead Project<sup>[14]</sup> at Brock University in Ontario intends to publish all of Mead's 80-odd remaining unpublished manuscripts.

## Pragmatism and symbolic interaction

Philosophers whose inspiration is more ontological, e.g. Heidegger, emphasize the uncovering of Being from the perspective of the experiencing human being, and how the world is revealed to this experiencing entity within a realm of things. Pragmatic philosophers like Mead focus on the development of the self and the objectivity of the world within the social realm: that "the individual mind can exist only in relation to other minds with shared meanings" (Mead 1982: 5).

The two most important roots of Mead's work, and of symbolic interactionism in general are the philosophy of pragmatism and social (as opposed to psychological) behaviorism (i.e.: Mead was concerned with the stimuli of gestures and social objects with rich meanings rather than bare physical objects which psychological behaviourists considered stimuli). Pragmatism is a wide ranging philosophical position from which several aspects of Mead's influences can be identified.

There are four main tenets of pragmatism: see Internet Encyclopedia of Philosophy <sup>[19]</sup> First, to pragmatists true reality does not exist "out there" in the real world, it "is actively created as we act in and toward the world. Second, people remember and base their knowledge of the world on what has been useful to them and are likely to alter what no longer "works." Third, people define the social and physical "objects" they encounter in the world according to their use for them. Lastly, if we want to understand actors, we must base that understanding on what people actually do. Three of these ideas are critical to symbolic interactionism:

1. the focus on the interaction between the actor and the world
2. a view of both the actor and the world as dynamic processes and not static structures and
3. the actor's ability to interpret the social world.

Thus, to Mead and symbolic interactionists, consciousness is not separated from action and interaction, but is an integral part of both.

Mead's theories in part, based on pragmatism and behaviorism, were transmitted to many graduate students at the University of Chicago who then went on to establish symbolic interactionism.<sup>[4]</sup> :347–350

## Social philosophy (behaviorism)

Mead was a very important figure in 20th century social philosophy. One of his most influential ideas was the emergence of mind and self from the communication process between organisms, discussed in *Mind, Self and Society*, also known as social behaviorism.<sup>[15]</sup> This concept of the how mind and self emerge from the social process of communication by signs founded the symbolic interactionist school of sociology. Rooted intellectually in Hegelian dialectics and process philosophy, Mead, like Dewey, developed a more materialist process philosophy that was based upon human action and specifically communicative action. Human activity is, in a pragmatic sense, the criterion of truth, and through human activity meaning is made. Joint activity, including communicative activity, is the means through which our sense of self is constituted. The essence of Mead's social behaviorism is that mind is not a substance located in some transcendent realm, nor is it merely a series of events that takes place within the human physiological structure. This approach opposed the traditional view of the mind as separate from the body. The emergence of mind is contingent upon interaction between the human organism and its social environment; it is through participation in the social act of communication that individuals realize their potential for significantly symbolic behavior, that is, thought. Mind, in Mead's terms, is the individualized focus of the communicational process. It is linguistic behavior on the part of the individual. There is, then, no "mind or thought without language;" and language (the content of mind) "is only a development and product of social interaction" (*Mind, Self and Society* 191-192). Thus, mind is not reducible to the neurophysiology of the organic individual, but is emergent in "the dynamic, ongoing social process" that constitutes human experience (*Mind, Self and Society* 7).<sup>[13]</sup>

For Mead, mind arises out of the social act of communication. Mead's concept of the social act is relevant, not only to his theory of mind, but to all facets of his social philosophy. His theory of "mind, self, and society" is, in effect, a philosophy of the act from the standpoint of a social process involving the interaction of many individuals, just as his theory of knowledge and value is a philosophy of the act from the standpoint of the experiencing individual in interaction with an environment.<sup>[13]</sup> Action is very important to his social theory and, according to Mead, actions also occur within a communicative process. The initial phase of an act constitutes a gesture. A gesture is a preparatory movement that enables other individuals to become aware of the intentions of the given organism. The rudimentary situation is a conversation of gestures, in which a gesture on the part of the first individual evokes a preparatory movement on the part of the second, and the gesture of the second organism in turn calls out a response in the first person. On this level no communication occurs. Neither organism is aware of the effect of its own gestures upon the other; the gestures are nonsignificant. For communication to take place, each organism must have knowledge of how the other individual will respond to his own ongoing act. Here the gestures are significant symbols.<sup>[15]</sup> A significant symbol is a kind of gesture that only humans can make. Gestures become significant symbols when they arouse in the individual who is making them the same kind of response they are supposed to elicit from those to whom the gestures are addressed. Only when we have significant symbols can we truly have communication.<sup>[4]</sup> :356–357 Mead grounded human perception in an "action-nexus" (Joas 1985: 148). We perceive the world in terms of the "means of living" (Mead 1982: 120). To perceive food, is to perceive eating. To perceive a house, is to perceive shelter. That is to say, perception is in terms of action. Mead's theory of perception is similar to that of J. J. Gibson.

Mead the social psychologist argued the antipositivistic view that the individual is a product of society, or more specifically, social interaction. The *self* arises when the individual becomes an object to themselves. Mead argued that we are objects first to other people, and secondarily we become objects to ourselves by taking the perspective of other people. Language enables us to talk about ourselves in the same way as we talk about other people, and thus

through language we become other to ourselves.<sup>[16]</sup> In joint activity, which Mead called 'social acts', humans learn to see themselves from the standpoint of their co-actors. A central mechanism within the social act, which enables perspective taking, is position exchange. People within a social act often alternate social positions (e.g., giving/receiving, asking/helping, winning/losing, hiding/seeking, talking/listening). In children's games there is repeated position exchange, for example in hide-and-seek, and Mead argued that this is one of the main ways that perspective taking develops.

However, for Mead, unlike John Dewey and J. J. Gibson, the key is not simply human action, but rather social action. In humans the "manipulatory phase of the act" is socially mediated, that is to say, in acting towards objects humans simultaneously take the perspectives of others towards that object. This is what Mead means by "the social act" as opposed to simply "the act" (the latter being a Deweyan concept). Non-human animals also manipulate objects, but that is a non-social manipulation, they do not take the perspective of other organisms toward the object. Humans on the other hand, take the perspective of other actors towards objects, and this is what enables complex human society and subtle social coordination. In the social act of economic exchange, for example, both buyer and seller must take each other's perspectives towards the object being exchanged. The seller must recognize the value for the buyer, while the buyer must recognize the desirability of money for the seller. Only with this mutual perspective taking can the economic exchange occur (Mead was influenced on this point by Adam Smith).

## Nature of the self

A final piece of Mead's social theory is the mind as the individual importation of the social process. As previously discussed, Mead presented the self and the mind in terms of a social process. As gestures are taken in by the individual organism, the individual organism also takes in the collective attitudes of others, in the form of gestures, and reacts accordingly with other organized attitudes. This process is characterized by Mead as the "I" and the "Me". The "Me" is the social self and the "I" is the response to the "Me." In other words, the "I" is the response of an individual to the attitudes of others, while the "me" is the organized set of attitudes of others which an individual assumes.<sup>[17]</sup> Mead develops William James' distinction between the "I" and the "me." The "me" is the accumulated understanding of "the generalized other" i.e. how one thinks one's group perceives oneself etc. The "I" is the individual's impulses. The "I" is self as subject; the "me" is self as object. The "I" is the knower, the "me" is the known. The mind, or stream of thought, is the self-reflective movements of the interaction between the "I" and the "me." These dynamics go beyond selfhood in a narrow sense, and form the basis of a theory of human cognition. For Mead the thinking process is the internalized dialogue between the "I" and the "me." Mead rooted the self's "perception and meaning" deeply and sociologically in "a common praxis of subjects" (Joas 1985: 166) found specifically in social encounters. Understood as a combination of the 'I' and the 'me', Mead's self proves to be noticeably entwined within a sociological existence. For Mead, existence in community comes before individual consciousness. First one must participate in the different social positions within society and only subsequently can one use that experience to take the perspective of others and thus become self-conscious.

## Philosophy of science

Mead is a major American philosopher by virtue of being, along with John Dewey, Charles Peirce and William James, one of the founders of pragmatism. He also made significant contributions to the philosophies of nature, science, and history, to philosophical anthropology, and to process philosophy. Dewey and Alfred North Whitehead considered Mead a thinker of the first rank. He is a classic example of a social theorist whose work does not fit easily within conventional disciplinary boundaries.

As far as his work on the philosophy of science, Mead sought to find the psychological origin of science in the efforts of individuals to attain power over their environment. The notion of a physical object arises out of manipulatory experience. There is a social relation to inanimate objects, for the organism takes the role of things that it manipulates directly, or that it manipulates indirectly in perception. For example, in taking (introjecting or



imitating) the resistant role of a solid object, an individual obtains cognition of what is "inside" nonliving things. Historically, the concept of the physical object arose from an animistic conception of the universe.

Contact experience includes experiences of position, balance, and support, and these are used by the organism when it creates its conceptions of the physical world. Our scientific concepts of space, time, and mass are abstracted from manipulatory experience. Such concepts as that of the electron are also derived from manipulation. In developing a science we construct hypothetical objects in order to assist ourselves in controlling nature. The conception of the present as a distinct unit of experience, rather than as a process of becoming and disappearing, is a scientific fiction devised to facilitate exact measurement. In the scientific worldview immediate experience is replaced by theoretical constructs. The ultimate in experience, however, is the manipulation and contact at the completion of an act.<sup>[15]</sup>

## Play and game and the generalized other

Mead theorized that human beings begin their understanding of the social world through "play" and "game". "Play" comes first in the child's development. The child takes different roles he/she observes in "adult" society, and plays them out to gain an understanding of the different social roles. For instance, he first plays the role of policeman and then the role of thief while playing "Cops and Robbers," and plays the role of doctor and patient when playing "Doctor." As a result of such play, the child learns to become both subject and object and begins to become able to build a self. However, it is a limited self because the child can only take the role of distinct and separate others, they still lack a more general and organized sense of themselves.<sup>[4] :360</sup>

In the next stage, the game stage, it is required that a person develop a self in the full sense of the term. Whereas in the play stage the child takes on the role of distinct others, in the game stage the child must take the role of everyone else involved in the game. Furthermore, these roles must have a definite relationship to one another. To illustrate the game stage, Mead gives his famous example of a baseball game:

But in a game where a number of individuals are involved, then the child taking one role must be ready to take the role of everyone else. If he gets in a ball nine he must have the responses of each position involved in his own position. He must know what everyone else is going to do in order to carry out his own play. He has to take all of these roles. They do not all have to be present in consciousness at the same time, but at some moments he has to have three or four individuals present in his own attitude, such as the one who is going to throw the ball, the one who is going to catch it and so on. These responses must be, in some degree, present in his own make-up. In the game, then, there is a set of responses of such others so organized that the attitude of one calls out the appropriate attitudes of the other. (Mead, 1934/1962:151)

In the game stage, organization begins and definite personalities start to emerge. Children begin to become able to function in organized groups and most importantly, to determine what they will do within a specific group.<sup>[4] :360–361</sup> Mead calls this the child's first encounter with "the generalized other", which is one of the main concepts Mead proposes for understanding the emergence of the (social) self in human beings. "The generalized other" can be understood as understanding the given activity and the actors place within the activity from the perspective of all the others engaged in the activity. Through understanding "the generalized other" the individual understands what kind of behavior is expected, appropriate and so on, in different social settings. The mechanism of perspective taking within social acts is the exchange of social positions.

## Notes

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- [6] ([http://www.brocku.ca/MeadProject/Mead/pubs/Mead\\_1900a.html](http://www.brocku.ca/MeadProject/Mead/pubs/Mead_1900a.html)) "Suggestions Towards a Theory of the Philosophical Disciplines" (1900)
- [7] ([http://www.brocku.ca/MeadProject/Mead/pubs/Mead\\_1910a.html](http://www.brocku.ca/MeadProject/Mead/pubs/Mead_1910a.html)) "Social Consciousness and the Consciousness of Meaning" (1910)
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- [12] ([http://www.brocku.ca/MeadProject/Mead/pubs/Mead\\_1922.html](http://www.brocku.ca/MeadProject/Mead/pubs/Mead_1922.html)) "A Behavioristic Account of the Significant Symbol" (1922)
- [13] Cronk, George (2005), "George Herbert Mead" (<http://www.iep.utm.edu/mead/>), in Fieser, James; Dowden, Bradley, *The Internet Encyclopedia of Philosophy*,
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## External links

- Internet Encyclopedia of Philosophy: " George Herbert Mead (<http://www.utm.edu/research/iep/m/mead.htm>)" -- by George Cronk.
- Mead Project 2.0 (<http://www.brocku.ca/MeadProject/>). Mead's published and unpublished writings, many of which are available online, along with others'.
- Review materials for studying George Herbert Mead (<http://www.bolenderinitiatives.com/sociology/george-herbert-mead-1863-1931>)
- The Social Self (<http://psychclassics.yorku.ca/Mead/socialself.htm>) - by George Herbert Mead (1913)
- George Herbert Mead (<http://plato.stanford.edu/entries/mead/>) by Mitchell Aboulafia - Stanford Encyclopedia of Philosophy


# Pragmatism

**Pragmatism** is a philosophical tradition centered on the linking of practice and theory. It describes a process where theory is extracted from practice, and applied back to practice to form what is called *intelligent practice*. Important positions characteristic of pragmatism include instrumentalism, radical empiricism, verificationism, conceptual relativity, a denial of the fact-value distinction, a high regard for science, and fallibilism.

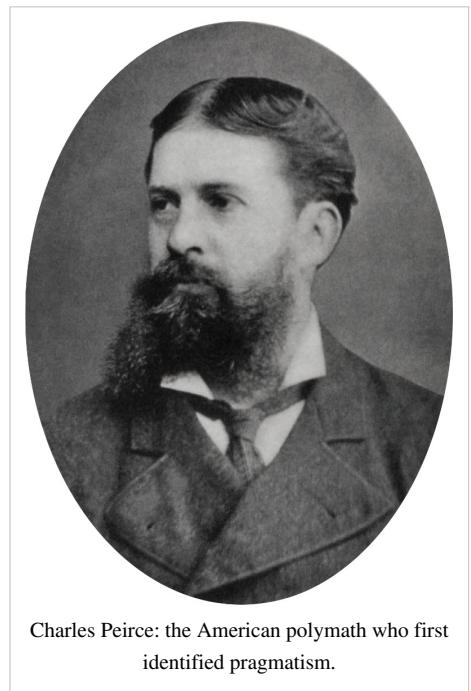
Charles Sanders Peirce (and his pragmatic maxim) deserves most of the credit for pragmatism,<sup>[1]</sup> along with later twentieth century contributors William James, John Dewey and George Santayana.

Pragmatism enjoyed renewed attention after W. V. O. Quine and Wilfrid Sellars used a revised pragmatism to criticize logical positivism in the 1960s. Another brand of pragmatism, known sometimes as neopragmatism, gained influence through Richard Rorty, the most influential of the late 20th-century pragmatists. Contemporary pragmatism may be broadly divided into a strict analytic tradition and "neo-classical" pragmatism (such as Susan Haack) that adheres to the work of Peirce, James, and Dewey.

## Origins

Pragmatism as a philosophical movement began in the United States in the 1870s. Its direction was determined by The Metaphysical Club members Charles Sanders Peirce (  /'pɜrs/ like "purse"), William James, and Chauncey Wright, as well as John Dewey and George Herbert Mead.

The first use in print of the name *pragmatism* was in 1898 by James, who credited Peirce with coining the term during the early 1870s.<sup>[2]</sup> James regarded Peirce's 1877–8 "Illustrations of the Logic of Science" series (including "The Fixation of Belief", 1877 and especially "How to Make Our Ideas Clear", 1878) as the foundation of pragmatism.<sup>[3]</sup> <sup>[4]</sup> Peirce in turn wrote in 1906<sup>[5]</sup> that Nicholas St. John Green had been instrumental by emphasizing the importance of applying Alexander Bain's definition of belief, which was "that upon which a man is prepared to act." Peirce wrote that "from this definition, pragmatism is scarce more than a corollary; so that I am disposed to think of him as the grandfather of pragmatism." John Shook has said, "Chauncey Wright also deserves considerable credit, for as both Peirce and James recall, it was Wright who demanded a phenomenalist and fallibilist empiricism as an alternative to rationalistic speculation."<sup>[6]</sup>



Charles Peirce: the American polymath who first identified pragmatism.

Inspiration for the various pragmatists included:

- Francis Bacon who coined the saying *ipsa scientia potestas est* ("knowledge itself is power")
- David Hume for his naturalistic account of knowledge and action
- Thomas Reid, for his direct realism
- Immanuel Kant, for his idealism and from whom Peirce derives the name "pragmatism"
- G. W. F. Hegel who introduced temporality into philosophy (Pinkard in Misak 2007)
- J. S. Mill for his nominalism and empiricism
- George Berkeley for his project to eliminate all unclear concepts from philosophy (Peirce 8:33)

## Summary

Peirce developed the idea that inquiry depends on real doubt, not mere verbal or hyperbolic doubt<sup>[7]</sup> and said, in order to understand a conception in a fruitful way, "Consider the practical effects of the objects of your conception. Then, your conception of those effects is the whole of your conception of the object"<sup>[8]</sup> — which he later called the pragmatic maxim. It equates any conception of an object to a conception of that object's effects to a general extent of the effects' conceivable implications for informed practice. It is the heart of his pragmatism as a method of experimental mental reflection arriving at conceptions in terms of conceivable confirmatory and disconfirmatory circumstances — a method hospitable to the generation of explanatory hypotheses, and conducive to the employment and improvement of verification. Typical of Peirce is his concern with inference to explanatory hypotheses as outside the usual foundational alternative between deductivist rationalism and inductivist empiricism, though he himself was a mathematical logician and a founder of statistics.

Peirce lectured and further wrote on pragmatism to make clear his own interpretation. While framing a conception's meaning in terms of conceivable tests, Peirce emphasized that, since a conception is general, its meaning, its intellectual purport, equates to its acceptance's implications for general practice, rather than to any definite set of actual consequences (or test results) themselves; a conception's clarified meaning points toward its conceivable verifications, but actual outcomes are not meanings but individual upshots. Peirce in 1905 coined the new name pragmaticism "for the precise purpose of expressing the original definition",<sup>[9]</sup> saying that "all went happily" with James's and Schiller's variant uses of the old name "pragmatism" and that he nonetheless coined the new name because of the old name's growing use in "literary journals, where it gets abused". Yet in a 1906 manuscript he cited as causes his differences with James and Schiller.<sup>[10]</sup> and, in a 1908 publication,<sup>[11]</sup> his differences with James as well as literary author Giovanni Papini. Peirce in any case regarded his views that truth is immutable and infinity is real, as being opposed by the other pragmatists, but he remained allied with them on other issues.<sup>[11]</sup>

## Central pragmatist tenets

### The primacy of practice

Pragmatism is based on the premise that the human capability to theorize is necessary for intelligent practice. Theory and practice are not separate spheres; rather, theories and distinctions are tools or maps for finding our way in the world. As John Dewey put it, there is no question of theory *versus* practice but rather of intelligent practice versus uninformed practice.

### Anti-reification of concepts and theories

Dewey, in *The Quest For Certainty*, criticized what he called "the philosophical fallacy": philosophers often take categories (such as the mental and the physical) for granted because they don't realize that these are merely nominal concepts that were invented to help solve specific problems. This causes metaphysical and conceptual confusion. Various examples are the "ultimate Being" of Hegelian philosophers, the belief in a "realm of value", the idea that logic, because it is an abstraction from concrete thought, has nothing to do with the act of concrete thinking, and so on. David L. Hildebrand sums up the problem: "Perceptual inattention to the specific functions comprising inquiry led realists and idealists alike to formulate accounts of knowledge that project the products of extensive abstraction back onto experience." (Hildebrand 2003)

A summary of which can conclude that pragmatism is subjugated by perception.

## Naturalism and anti-Cartesianism

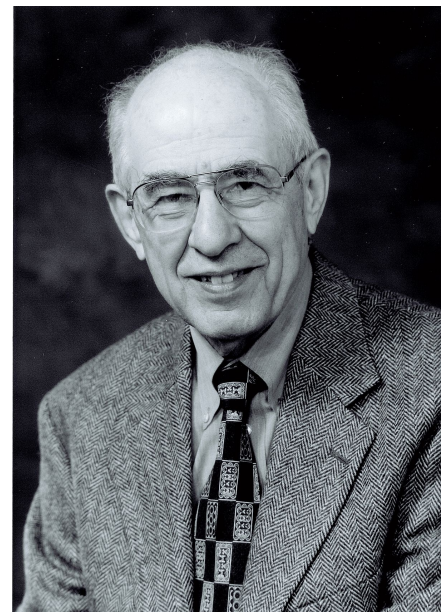
From the outset, pragmatists wanted to reform philosophy and bring it more in line with the scientific method as they understood it. They argued that idealist and realist philosophy had a tendency to present human knowledge as something beyond what science could grasp. These philosophies then resorted either to a phenomenology inspired by Kant or to correspondence theories of knowledge and truth. Pragmatists criticized the former for its a priorism, and the latter because it takes correspondence as an unanalyzable fact. Pragmatism instead tries to explain, psychologically and biologically, how the relation between knower and known 'works' in the world.

In 1868,<sup>[12]</sup> C.S. Peirce argued there is no power of *intuition* in the sense of a cognition unconditioned by inference, and no power of introspection, intuitive or otherwise, and that awareness of an internal world is by hypothetical inference from external facts. Introspection and intuition were staple philosophical tools at least since Descartes. He argued that there is no absolutely first cognition in a cognitive process; such a process has its beginning but can always be analyzed into finer cognitive stages. That which we call introspection does not give privileged access to knowledge about the mind - the self is a concept that is derived from our interaction with the external world and not the other way around (De Waal 2005, pp. 7–10). At the same time he held persistently that pragmatism and epistemology in general could not be derived from principles of psychology understood as a special science<sup>[13]</sup> : what we *do* think is too different from what we *should* think; in his "Illustrations of the Logic of Science" series, Peirce formulated both pragmatism and principles of statistics as aspects of scientific method in general.<sup>[14]</sup> This is an important point of disagreement with most other pragmatists, who advocate a more thorough naturalism and psychologism.

Richard Rorty expanded on these and other arguments in *Philosophy and the Mirror of Nature* in which he criticized attempts by many philosophers of science to carve out a space for epistemology that is entirely unrelated to - and sometimes thought of as superior to - the empirical sciences. W.V. Quine, instrumental in bringing naturalized epistemology back into favor with his essay *Epistemology Naturalized* (Quine 1969), also criticized 'traditional' epistemology and its "Cartesian dream" of absolute certainty. The dream, he argued, was impossible in practice as well as misguided in theory because it separates epistemology from scientific inquiry.

## The reconciliation of anti-skepticism and fallibilism

Hilary Putnam has suggested that the reconciliation of anti-skepticism and fallibilism is the central goal of American pragmatism. Although all human knowledge is partial, with no ability to take a 'God's-eye-view,' this does not necessitate a globalized skeptical attitude, a radical philosophical skepticism (as distinguished from that which is called scientific skepticism). Peirce insisted that (1) in reasoning, there is the presupposition, and at least the hope,<sup>[15]</sup> that truth and the real are discoverable and *would* be discovered, sooner or later but still inevitably, by investigation taken far enough,<sup>[8]</sup> and (2) contrary to Descartes' famous and influential methodology in the *Meditations on First Philosophy*, doubt cannot be feigned or created by verbal *fiat* so as to motivate fruitful inquiry, and much less can philosophy begin in universal doubt.<sup>[16]</sup> Doubt, like belief, requires justification. Genuine doubt irritates and inhibits, in the sense that belief is that upon which one is prepared to act.<sup>[8]</sup> It arises from confrontation with some specific recalcitrant matter of fact (which Dewey called a 'situation'), which unsettles our belief in some specific



Hilary Putnam asserts that the combination of antiskepticism and fallibilism is a central feature of pragmatism.

proposition. Inquiry is then the rationally self-controlled process of attempting to return to a settled state of belief about the matter. Note that anti-skepticism is a reaction to modern academic skepticism in the wake of Descartes. The pragmatist insistence that all knowledge is tentative is actually quite congenial to the older skeptical tradition.

### Pragmatist theory of truth and epistemology

The epistemology of early pragmatism was heavily influenced by Charles Darwin. Pragmatism was not the first to apply evolution to theories of knowledge: Schopenhauer advocated a *biological idealism* as what's useful to an organism to believe might differ wildly from what is true. Here knowledge and action are portrayed as two separate spheres with an absolute or transcendental truth above and beyond any sort of inquiry organisms use to cope with life. Pragmatism challenges this idealism by providing an "ecological" account of knowledge: inquiry is how organisms can get a grip on their environment. *Real* and *true* are functional labels in inquiry and cannot be understood outside of this context. It is not *realist* in a traditionally robust sense of realism (what Hilary Putnam would later call metaphysical realism), but it is realist in how it acknowledges an external world which must be dealt with.

Many of James' best-turned phrases—*truth's cash value* (James 1907, p. 200) and *the true is only the expedient in our way of thinking* (James 1907, p. 222)—were taken out of context and caricatured in contemporary literature as representing the view where any idea with practical utility is true. William James wrote:

It is high time to urge the use of a little imagination in philosophy. The unwillingness of some of our critics to read any but the silliest of possible meanings into our statements is as discreditable to their imaginations as anything I know in recent philosophic history. Schiller says the truth is that which 'works.' Thereupon he is treated as one who limits verification to the lowest material utilities. Dewey says truth is what gives 'satisfaction'! He is treated as one who believes in calling everything true which, if it were true, would be pleasant. (James 1907, p. 90)

In reality, James asserts, the theory is a great deal more subtle. (See Dewey 1910 for a 'FAQ')

The role of belief in representing reality is widely debated in pragmatism. Is a belief valid when it represents reality? *Copying is one (and only one) genuine mode of knowing*, (James 1907, p. 91). Are beliefs dispositions which qualify as true or false depending on how helpful they prove in inquiry and in action? Is it only in the struggle of intelligent organisms with the surrounding environment that beliefs acquire meaning? Does a belief only become true when it succeeds in this struggle? In Pragmatism nothing practical or useful is held to be necessarily true, nor is anything which helps to survive merely in the short term. For example, to believe my cheating spouse is faithful may help me feel better now, but it is certainly not useful from a more long-term perspective because it doesn't accord with the facts (and is therefore not true).

### Pragmatism in other fields of philosophy

While pragmatism started out simply as a criterion of meaning, it quickly expanded to become a full-fledged epistemology with wide-ranging implications for the entire philosophical field. Pragmatists who work in these fields share a common inspiration, but their work is diverse and there are no received views.

### Philosophy of science

In the philosophy of science, instrumentalism is the view that concepts and theories are merely useful instruments and progress in science cannot be couched in terms of concepts and theories somehow mirroring reality. Instrumentalist philosophers often define scientific progress as nothing more than an improvement in explaining and predicting phenomena. Instrumentalism does not state that truth doesn't matter, but rather provides a specific answer to the question of what truth and falsity mean and how they function in science.

One of C.I. Lewis' main arguments in *Mind and the World Order: Outline of a Theory of Knowledge* was that science does not merely provide a copy of reality but must work with conceptual systems and that those are chosen for pragmatic reasons, that is, because they aid inquiry. Lewis' own development of multiple modal logics is a case in point. Lewis is sometimes called a 'conceptual pragmatist' because of this. (Lewis 1929)

Another development is the cooperation of logical positivism and pragmatism in the works of Charles W. Morris and Rudolph Carnap. The influence of pragmatism on these writers is mostly limited to the incorporation of the pragmatic maxim into their epistemology. Pragmatists with a broader conception of the movement don't often refer to them.

W. V. Quine's paper "Two Dogmas of Empiricism", published 1951, is one of the most celebrated papers of twentieth-century philosophy in the analytic tradition. The paper is an attack on two central tenets of the logical positivists' philosophy. One is the distinction between analytic statements (tautologies and contradictions) whose truth (or falsehood) is a function of the meanings of the words in the statement ('all bachelors are unmarried'), and synthetic statements, whose truth (or falsehood) is a function of (contingent) states of affairs. The other is reductionism, the theory that each meaningful statement gets its meaning from some logical construction of terms which refers exclusively to immediate experience. Quine's argument brings to mind Peirce's insistence that axioms aren't a priori truths but synthetic statements.

## Logic

Later in his life Schiller became famous for his attacks on logic in his textbook "Formal Logic." By then, Schiller's pragmatism had become the nearest of any of the classical pragmatists to an ordinary language philosophy. Schiller sought to undermine the very possibility of formal logic, by showing that words only had meaning when used in an actual context. The least famous of Schiller's main works was the constructive sequel to his destructive book "Formal Logic." In this sequel, "Logic for Use," Schiller attempted to construct a new logic to replace the formal logic that he had criticized in "Formal Logic." What he offers is something philosophers would recognize today as a logic covering the context of discovery and the hypothetico-deductive method.

Whereas F.C.S. Schiller actually dismissed the possibility of formal logic, most pragmatists are critical rather of its pretension to ultimate validity and see logic as one logical tool among others - or perhaps, considering the multitude of formal logics, one *set* of tools among others. This is the view of C.I. Lewis. C.S. Peirce developed multiple methods for doing formal logic.

Stephen Toulmin's *The Uses of Argument* inspired scholars in informal logic and rhetoric studies (although it is actually an epistemological work).

## Metaphysics

James and Dewey were empirical thinkers in the most straightforward fashion: experience is the ultimate test and experience is what needs to be explained. They were dissatisfied with ordinary empiricism because in the tradition dating from Hume, empiricists had a tendency to think of experience as nothing more than individual sensations. To the pragmatists, this went against the spirit of empiricism: we should try to explain all that is given in experience including connections and meaning, instead of explaining them away and positing sense data as the ultimate reality. Radical empiricism, or Immediate Empiricism in Dewey's words, wants to give a place to meaning and value instead of explaining them away as subjective additions to a world of whizzing atoms.



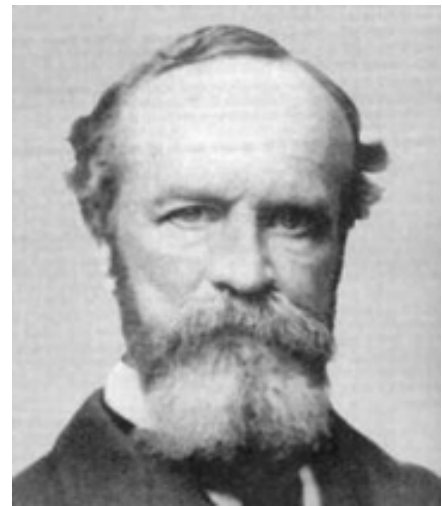


## Ethics

Pragmatism sees no fundamental difference between practical and theoretical reason, nor any ontological difference between facts and values. Both facts and values have cognitive content: knowledge is what we should believe; values are hypotheses about what is good in action. Pragmatist ethics is broadly humanist because it sees no ultimate test of morality beyond what matters for us as humans. Good values are those for which we have good reasons, viz. the Good Reasons approach. The pragmatist formulation pre-dates those of other philosophers who have stressed important similarities between values and facts such as Jerome Schneewind and John Searle.

William James' contribution to ethics, as laid out in his essay *The Will to Believe* has often been misunderstood as a plea for relativism or irrationality. On its own terms it argues that ethics always involves a certain degree of trust or faith and that we cannot always wait for adequate proof when making moral decisions.

Moral questions immediately present themselves as questions whose solution cannot wait for sensible proof. A moral question is a question not of what sensibly exists, but of what is good, or would be good if it did exist. [...] A social organism of any sort whatever, large or small, is what it is because each member proceeds to his own duty with a trust that the other members will simultaneously do theirs. Wherever a desired result is achieved by the co-operation of many independent persons, its existence as a fact is a pure consequence of the precursive faith in one another of those immediately concerned. A government, an army, a commercial system, a ship, a college, an athletic team, all exist on this condition, without which not only is nothing achieved, but nothing is even attempted. (James 1896)



William James tried to show the meaningfulness of (some kinds of) spirituality but, like other pragmatists, refused to see religion as the basis of meaning or morality.

Of the classical pragmatists, **John Dewey** wrote most extensively about morality and democracy. (Edel 1993) In his classic article *Three Independent Factors in Morals* (Dewey 1930), he tried to integrate three basic philosophical perspectives on morality: the right, the virtuous and the good. He held that while all three provide meaningful ways to think about moral questions, the possibility of conflict among the three elements cannot always be easily solved. (Anderson, SEP)

Dewey also criticized the dichotomy between **means and ends** which he saw as responsible for the degradation of our everyday working lives and education, both conceived as merely a means to an end. He stressed the need for meaningful labor and a conception of education that viewed it not as a preparation for life but as life itself. (Dewey 2004 [1910] ch. 7; Dewey 1997 [1938], p. 47)

Dewey was opposed to other ethical philosophies of his time, notably the emotivism of Alfred Ayer. Dewey envisioned the possibility of ethics as an experimental discipline, and thought values could best be characterized not as feelings or imperatives, but as hypotheses about what actions will lead to satisfactory results or what he termed *consummatory experience*. A further implication of this view is that ethics is a fallible undertaking, since human beings are frequently unable to know what would satisfy them.

A recent pragmatist contribution to meta-ethics is Todd Lekan's "Making Morality" (Lekan 2003). Lekan argues that morality is a fallible but rational practice and that it has traditionally been misconceived as based on theory or principles. Instead, he argues, theory and rules arise as tools to make practice more intelligent.

## Aesthetics

John Dewey's *Art as Experience*, based on the William James lectures he delivered at Harvard, was an attempt to show the integrity of art, culture and everyday experience. (Field, IEP) Art, for Dewey, is or should be a part of everyone's creative lives and not just the privilege of a select group of artists. He also emphasizes that the audience is more than a passive recipient. Dewey's treatment of art was a move away from the transcendental approach to aesthetics in the wake of Immanuel Kant who emphasized the unique character of art and the disinterested nature of aesthetic appreciation.

A notable contemporary pragmatist aesthetician is Joseph Margolis. He defines a work of art as "a physically embodied, culturally emergent entity", a human "utterance" that isn't an ontological quirk but in line with other human activity and culture in general. He emphasizes that works of art are complex and difficult to fathom, and that no determinate interpretation can be given.

## Philosophy of religion

Both Dewey and James investigated the role that religion can still play in contemporary society, the former in *A Common Faith* and the latter in *The Varieties of Religious Experience*.

It should be noted, from a general point of view, that for William James, something is true *only insofar* as it works. Thus, the statement, for example, that prayer is heard may work on a psychological level but (a) will not actually help to bring about the things you pray for (b) may be better explained by referring to its soothing effect than by claiming prayers are actually heard. As such, pragmatism isn't antithetical to religion but it isn't an apologetic for faith either.

Joseph Margolis, in *Historied Thought, Constructed World* (California, 1995), makes a distinction between "existence" and "reality". He suggests using the term "exists" only for those things which adequately exhibit Peirce's *Secondness*: things which offer brute physical resistance to our movements. In this way, such things which affect us, like numbers, may be said to be "real", though they do not "exist". Margolis suggests that God, in such a linguistic usage, might very well be "real", causing believers to act in such and such a way, but might not "exist".

## Analytical, neoclassical and neopragmatism

Neopragmatism is a broad contemporary category used for various thinkers, some of them radically opposed to one another. The name neopragmatist signifies that the thinkers in question incorporate important insights of, and yet significantly diverge from, the classical pragmatists. This divergence may occur either in their philosophical methodology (many of them are loyal to the analytic tradition) or in actual conceptual formation (C.I. Lewis was very critical of Dewey; Richard Rorty dislikes Peirce). Important analytical neopragmatists include the aforementioned Lewis, W. V. O. Quine, Donald Davidson, Hilary Putnam and the early Richard Rorty. Brazilian social thinker Roberto Unger advocates for a "radical pragmatism," one that 'de-naturalizes' society and culture, and thus insists that we can "transform the character of our relation to social and cultural worlds we inhabit rather than just to change, little by little, the content of the arrangements and beliefs that comprise them."<sup>[17]</sup> Stanley Fish, the later Rorty and Jürgen Habermas are closer to continental thought.

Neoclassical pragmatism denotes those thinkers who consider themselves inheritors of the project of the classical pragmatists. Sidney Hook and Susan Haack (known for the theory of foundherentism) are well-known examples, as are the many publications by Nicholas Rescher which advocate his version of "methodical pragmatism" based on construing pragmatic efficacy not as a replacement for truths but as a means to its evidentiality.

Not all pragmatists are easily characterized. It is probable, considering the advent of postanalytic philosophy and the diversification of Anglo-American philosophy, that more philosophers will be influenced by pragmatist thought without necessarily publicly committing themselves to that philosophical school. Daniel Dennett, a student of Quine's, falls into this category, as does Stephen Toulmin, who arrived at his philosophical position via Wittgenstein,

whom he calls "a pragmatist of a sophisticated kind" (foreword for Dewey 1929 in the 1988 edition, p. xiii). Another example is Mark Johnson whose embodied philosophy (Lakoff and Johnson 1999) shares its psychologism, direct realism and anti-cartesianism with pragmatism. Conceptual pragmatism is a theory of knowledge originating with the work of the philosopher and logician Clarence Irving Lewis. The epistemology of conceptual pragmatism was first formulated in the 1929 book *Mind and the World Order: Outline of a Theory of Knowledge*.

'French Pragmatism' is attended with theorists like Bruno Latour, Michel Crozier and Luc Boltanski and Laurent Thévenot. It is often seen as opposed to structural problems connected to the French Critical Theory of Pierre Bourdieu.

## Legacy and contemporary relevance

In the twentieth century, the movements of logical positivism and ordinary language philosophy have similarities with pragmatism. Like pragmatism, logical positivism provides a verification criterion of meaning that is supposed to rid us of nonsense metaphysics. However, logical positivism doesn't stress action like pragmatism does. Furthermore, the pragmatists rarely used their maxim of meaning to rule out all metaphysics as nonsense. Usually, pragmatism was put forth to correct metaphysical doctrines or to construct empirically verifiable ones rather than to provide a wholesale rejection.

Ordinary language philosophy is closer to pragmatism than other philosophy of language because of its nominalist character and because it takes the broader functioning of language in an environment as its focus instead of investigating abstract relations between *language* and *world*.

Pragmatism has ties to process philosophy. Much of their work developed in dialogue with process philosophers like Henri Bergson and Alfred North Whitehead, who aren't usually considered pragmatists because they differ so much on other points. (Douglas Browning et al. 1998; Rescher, SEP)

Behaviorism and functionalism in psychology and sociology also have ties to pragmatism, which is not surprising considering that James and Dewey were both scholars of psychology and that Mead became a sociologist.

Utilitarianism has some significant parallels to Pragmatism and John Stuart Mill espoused similar values.

## Influence of pragmatism in social sciences

Increasing attention is being given to pragmatist epistemology in social sciences, which have struggled with divisive debates over the status of social scientific knowledge<sup>[18]</sup> <sup>[19]</sup>

Enthusiasts suggest that pragmatism offers an approach which is both pluralist and practical.<sup>[20]</sup>

## Influence of Pragmatism in Public Administration

The classical pragmatism of John Dewey, William James and Charles Sanders Peirce has influenced research in the field of Public Administration. Scholars claim classical pragmatism had a profound influence on the origin of the field of Public Administration.<sup>[21]</sup> <sup>[22]</sup> At the most basic level, public administrators are responsible for making programs "work" in a pluralistic, problems-oriented environment. Public administrators are also responsible for the day-to-day work with citizens. Dewey's participatory democracy can be applied in this environment. Dewey and James' notion of theory as a tool, helps administrators craft theories to resolve policy and administrative problems. Further, the birth of American public administration coincides closely with the period of greatest influence of the classical pragmatists.

Which pragmatism (classical pragmatism or neo-pragmatism) makes the most sense in public administration has been the source of debate. The debate began when Patricia M. Shields introduced Dewey's notion of the Community of Inquiry.<sup>[23]</sup> Hugh Miller objected to one element of the community of inquiry (problematic situation, scientific attitude, participatory democracy) - Scientific attitude.<sup>[24]</sup> A debate that included responses from a practitioner,<sup>[25]</sup> an economist,<sup>[26]</sup> a planner,<sup>[27]</sup> other Public Administration Scholars,<sup>[28]</sup> <sup>[29]</sup> and noted philosophers<sup>[30]</sup> <sup>[31]</sup> followed.

Miller<sup>[32]</sup> and Shields<sup>[33] [34]</sup> also responded.

In addition, applied scholarship of public administration that assesses charter schools,<sup>[35]</sup> contracting out or outsourcing,<sup>[36]</sup> financial management,<sup>[37]</sup> performance measurement,<sup>[38]</sup> urban quality of life initiatives,<sup>[39]</sup> and urban planning<sup>[40]</sup> in part draws on the ideas of classical pragmatism in the development of the conceptual framework and focus of analysis.

## Pragmatism and Feminism

Since the mid 1990s, feminist philosophers have re-discovered classical pragmatism as a source of feminist theories. Works by Seigfried,<sup>[41]</sup> Duran,<sup>[42]</sup> Keith,<sup>[43]</sup> and Whipps<sup>[44]</sup> explore the historic and philosophic links between feminism and pragmatism. The connection between pragmatism and feminism took so long to be rediscovered because pragmatism itself was eclipsed by logical positivism during the middle decades of the 20th century. As a result it was lost from feminine discourse. The very features of pragmatism that led to its decline are the characteristics that feminists now consider its greatest strength. These are “persistent and early criticisms of positivist interpretations of scientific methodology; disclosure of value dimension of factual claims”; viewing aesthetics as informing everyday experience; subordinating logical analysis to political, cultural and social issues; linking the dominant discourses with domination; “realigning theory with praxis; and resisting the turn to epistemology and instead emphasizing concrete experience”.<sup>[45]</sup> These feminist philosophers point to Jane Addams as a founder of classical pragmatism. In addition, the ideas of Dewey, Mead and James are consistent with many feminist tenets. Jane Addams, John Dewey & George Herbert Mead developed their philosophies as all three became friends, influenced each other and were engaged in the Hull-House experience and women’s rights causes.

## Criticism

From the very beginning, pragmatists have been vague about what “pragmatism” is (a method? a theory of truth? a theory of meaning?), and positions as divergent as direct realism and extreme social constructivism have been characterized as “pragmatist”. This drew criticism regarding its somewhat ill-defined nature.

One of the first to recognize these problems was Arthur Oncken Lovejoy, whose 1908 essay “The Thirteen Pragmatisms”<sup>[46]</sup> identifies thirteen different philosophical positions that were each labeled pragmatism. Lovejoy notes the ambiguity in the notion of the consequences of the *truth* of a proposition and those of *belief* in a proposition, and that some pragmatists fail to recognize that distinction.

Bertrand Russell was especially known for his vituperative attacks on pragmatism, which he considered little more than epistemological relativism and short-sighted practicalism. Realists in general often could not fathom how pragmatists could seriously call themselves empirical or realist thinkers and thought pragmatist epistemology was only a disguised manifestation of idealism. (Hildebrand 2003)

Louis Menand argues<sup>[47]</sup> that during the Cold War, the intellectual life of the United States became dominated by ideologies. Since pragmatism seeks “to avoid the violence inherent in abstraction,” it was not very popular at the time.

Neopragmatism as represented by Richard Rorty has been criticized as relativistic both by neoclassical pragmatists such as Susan Haack (Haack 1997) and by many analytic philosophers (Dennett 1998). Rorty’s early analytical work, however, differs notably from his later work which some, including Rorty himself, consider to be closer to literary criticism than to philosophy, and which attracts the brunt of criticism from his detractors.

- see: Criticism texts, Further reading.

## A list of pragmatists

### Classical pragmatists (1850-1950)

Name	Lifetime	Notes
Charles Sanders Peirce	1839–1914	was the founder of American pragmatism (later called by Peirce pragmaticism). He wrote on a wide range of topics, from mathematical logic and semiotics to psychology.
William James	1842–1910	influential psychologist and theorist of religion, as well as philosopher. First to be widely associated with the term "pragmatism" due to Peirce's lifelong unpopularity.
John Dewey	1859–1952	prominent philosopher of education, referred to his brand of pragmatism as instrumentalism.
F.C.S. Schiller	1864–1937	one of the most important pragmatists of his time, Schiller is largely forgotten today.

### Important protopragmatists or related thinkers

Name	Lifetime	Notes
George Herbert Mead	1863–1931	philosopher and sociological social psychologist.
Ralph Waldo Emerson	1803–1882	the American protopragmatist, Transcendentalists, and noted Rhetorician.
Josiah Royce	1855–1916	colleague of James at Harvard who employed pragmatism in an idealist metaphysical framework, he was particularly interested in the philosophy of religion and community; his work is often associated with neo-Hegelianism.
George Santayana	1863–1952	often not considered to be a canonical pragmatist, he applied pragmatist methodologies to naturalism, exemplified in his early masterwork, <i>The Life of Reason</i> .
W. E. B. Du Bois	1868–1963	student of James at Harvard who applied pragmatist principles to his sociological work, especially in <i>The Philadelphia Negro</i> and <i>Atlanta University Studies</i> .

### Fringe figures

Name	Lifetime	Notes
Giovanni Papini	1881–1956	Italian essayist, mostly known because James occasionally mentioned him.
Giovanni Vailati	1863–1909	Italian analytic and pragmatist philosopher.
Hu Shi	1891–1962	Chinese intellectual and reformer, student and translator of Dewey's and advocate of pragmatism in China.
Reinhold Niebuhr	1892–1971	American Philosopher and Theologian, inserted Pragmatism into his theory of Christian Realism.

### Neoclassical pragmatists (1950-)

Neoclassical pragmatists stay closer to the project of the classical pragmatists than neopragmatists do.

Name	Lifetime	Notes
Sidney Hook	1902–1989	a prominent New York intellectual and philosopher, a student of Dewey at Columbia.
Isaac Levi	1930–	seeks to apply pragmatist thinking in a decision-theoretic perspective.
Susan Haack	1945–	teaches at the University of Miami, sometimes called the intellectual granddaughter of C.S. Peirce, known chiefly for foundherentism.
Nicholas Rescher	1928–	advocates a methodological pragmatism that sees functional efficacy as evidentiating validity.

### Analytical, neo- and other pragmatists (1950-)

(Often labelled neopragmatism as well.)

Name	Lifetime	Notes
Richard J. Bernstein	1932–	author of <i>Beyond Objectivism and Relativism: Science, Hermeneutics, and Praxis</i> , <i>The New Constellation: The Ethical-Political Horizons of Modernity/Postmodernity</i> , <i>The Pragmatic Turn</i>
Arthur Fine	1937–	Philosopher of Science who proposed the Natural Ontological Attitude to the debate of scientific realism.
Stanley Fish	1938–	Literary and Legal Studies pragmatist. Criticizes Rorty's and Posner's legal theories as "almost pragmatism" <sup>[48]</sup> and authored the afterword in the collection <i>The Revival of Pragmatism</i> . <sup>[49]</sup>
John Hawthorne		Defends a pragmatist form of contextualism to deal with the lottery paradox in his <i>Knowledge and Lotteries</i> .
Clarence Irving Lewis	1883–1964	
Joseph Margolis	1924–	still proudly defends the original Pragmatists and sees his recent work on Cultural Realism as extending and deepening their insights, especially the contribution of Peirce and Dewey, in the context of a rapprochement with Continental philosophy.
Hilary Putnam	1926–	in many ways the opposite of Rorty and thinks classical pragmatism was too permissive a theory.
Richard Rorty	1931–2007	famous author of <i>Philosophy and the Mirror of Nature</i> .
Willard van Orman Quine	1908–2000	pragmatist philosopher, concerned with language, logic, and philosophy of mathematics.
Roberto Unger	1947–	in <i>The Self Awakened: Pragmatism Unbound</i> , advocates for a "radical pragmatism," one that 'de-naturalizes' society and culture, and thus insists that we can "transform the character of our relation to social and cultural worlds we inhabit rather than just to change, little by little, the content of the arrangements and beliefs that comprise them."
Mike Sandbothe	1961–	Applied Rorty's neopragmatism to media studies and developed a new branch that he called Media Philosophy. Together with authors like Juergen Habermas, Hans Joas, Sami Pihlstrom, Mats Bergmann, Michael Esfeld and Helmut Pape he belongs to a group of European Pragmatists who make use of Peirce, James, Dewey, Rorty, Brandom, Putnam and other representatives of American pragmatism in continental philosophy.
Richard Shusterman		philosopher of art.
Jason Stanley	1969–	Defends a pragmatist form of contextualism against semantic varieties of contextualism in his <i>Knowledge and Practical Interest</i> .
Robert B. Talisse	1970–	defends an epistemological conception of democratic politics that is explicitly opposed to Deweyan democracy and yet rooted in a conception of social epistemology that derives from the pragmatism of Charles Peirce. His work in argumentation theory and informal logic also demonstrates pragmatist leanings.
Stephen Toulmin	1922–2009	student of Wittgenstein, known especially for his <i>The Uses of Argument</i> .

## Other pragmatists

### Legal pragmatists

Name	Lifetime	Notes
Oliver Wendell Holmes, Jr.	1841–1935	justice of the Supreme Court of the United States.
Stephen Breyer	1938–	U.S. Supreme Court Associate Justice.
Richard Posner	1939–	Judge on U.S. Court of Appeals for the Seventh Circuit.

### Pragmatists in the extended sense

Name	Lifetime	Notes
Cornel West	1953–	thinker on race, politics, and religion; operates under the sign of "prophetic pragmatism".
Wilfrid Sellars	1912–1989	broad thinker, attacked foundationalism in the analytic tradition.
Frank P. Ramsey	1903–1930	
Karl-Otto Apel	1922–	
Randolph Bourne	1886–1918	
Robert T. Craig	1947–	author of <i>Communication Theory as a Field</i> .
Jürgen Habermas	1929–	

## Further reading

**IEP** Internet Encyclopedia of Philosophy <sup>[50]</sup> **SEP** Stanford Encyclopedia of Philosophy <sup>[51]</sup>

- Elizabeth Anderson. *Dewey's Moral Philosophy* <sup>[52]</sup>. Stanford Encyclopedia of Philosophy.
- Douglas Browning, William T. Myers (Eds.) *Philosophers of Process*. 1998.
- Robert Burch. *Charles Sanders Peirce* <sup>[53]</sup>. Stanford Encyclopedia of Philosophy.
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- Daniel Dennett. *Postmodernism and Truth* <sup>[54]</sup>. 1998.
- John Dewey. *The Quest for Certainty: A Study of the Relation of Knowledge and Action*. 1929.
- John Dewey. *Three Independent Factors in Morals*. 1930.
- John Dewey. *The Influence of Darwin on Philosophy and Other Essays* <sup>[55]</sup>. 1910.
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- Michael Eldridge. *Transforming Experience: John Dewey's Cultural Instrumentalism*. 1998.
- Richard Field. *John Dewey (1859-1952)* <sup>[57]</sup>. Internet Encyclopedia of Philosophy.
- David L. Hildebrand. *Beyond Realism & Anti-Realism*. 2003.
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- William James. *Pragmatism, A New Name for Some Old Ways of Thinking, Popular Lectures on Philosophy* <sup>[59]</sup>. 1907.
- William James *The Will to Believe* <sup>[60]</sup>. 1896.
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- Hilary Putnam *Reason, Truth and History*. 1981.
- W.V.O. Quine. *Two Dogmas of Empiricism* <sup>[61]</sup>. *Philosophical Review*. January 1951.
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- Richard Rorty *Rorty Truth and Progress: Philosophical Papers. Volume 3*. 1998.
- Stephen Toulmin. *The Uses of Argument*. 1958.
- William Egginton/Mike Sandbothe (Eds.) *The Pragmatic Turn in Philosophy. Contemporary Engagement between Analytic and Continental Thought*. 2004.
- Mike Sandbothe. *Pragmatic Media Philosophy*. 2005.

## Notes and other sources

Papers and online encyclopedias are part of the bibliography. Other sources may include interviews, reviews and websites.

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- Susan Haack. *Vulgar Rortyism* <sup>[63]</sup>. Review in *The New Criterion*. November 1997.
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I refer to Mr. Charles S. Peirce, with whose very existence as a philosopher I dare say many of you are unacquainted. He is one of the most original of contemporary thinkers; and the principle of practicalism or pragmatism, as he called it, when I first heard him enunciate it at Cambridge in the early 70s is the clue or compass by following which I find myself more and more confirmed in believing we may keep our feet upon the proper trail.

James credited Peirce again in 1906 lectures published in 1907 as *Pragmatism: A New Name for Some Old Ways of Thinking*, see Lecture 2, fourth paragraph.

- [3] See James (1897), *Will to Believe* (which James dedicated to Peirce), see p. 124 and footnote via *Google Books* Eprint (<http://books.google.com/books?id=wRMXL4uYEgC&pg=PA124>):

Indeed, it may be said that if two apparently different definitions of the reality before us should have identical consequences, those two definitions would really be identical definitions, made delusively to appear different merely by the different verbiage in which they are expressed.<sup>1</sup>

<sup>1</sup> See the admirably original "Illustrations of the Logic of Science," by C. S. Peirce, especially the second paper, "How to make our Thoughts clear," [*sic*] in the *Popular Science Monthly* for January, 1878.

See also James's 1907 *Pragmatism: A New Name for Some Old Ways of Thinking*, Lecture 2, fourth paragraph.

- [4] In addition to James's lectures and publications on pragmatist ideas (*Will to Believe* 1897, etc.) wherein he credited Peirce, James also arranged for two paid series of lectures by Peirce, including the 1903 Harvard lectures on pragmatism. See pp. 261–4, 290–2, & 324 in Brent, Joseph (1998), *Charles Sanders Peirce: A Life*, 2nd edition.
- [5] Peirce, C. S., "The Founding of Pragmatism", manuscript written 1906, published in *The Hound & Horn: A Harvard Miscellany* v. II, n. 3, April–June 1929, pp. 282–5, see 283–4, reprinted 1934 as "Historical Affinities and Genesis" in *Collected Papers* v. 5, paragraphs 11–13, see 12.
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- [7] Peirce, C. S. (1877), The Fixation of Belief, *Popular Science Monthly*, v. 12, pp. 1–15. Reprinted often, including *Collected Papers* v. 5, paragraphs 358–87 and *Essential Peirce* v. 1, pp. 109–23).
- [8] Peirce, C. S. (1878), "How to Make Our Ideas Clear", *Popular Science Monthly*, v. 12, 286–302. Reprinted often, including *Collected Papers* v. 5, paragraphs 388–410 and *Essential Peirce* v. 1, 124–41. See end of §II for the pragmatic maxim. See third and fourth paragraphs in §IV for the discoverability of truth and the real by sufficient investigation.
- [9] Peirce, on p. 165 (<http://books.google.com/books?id=j6oLAAAAIAAJ&pg=PA165>)–166 in "What Pragmatism Is", *The Monist*, v. XV, n. 2, April 1905, pp. 161–81, reprinted in *Collected Papers* v. 5, paragraphs 411–37, see 414.
- [10] Manuscript "A Sketch of Logical Critics", *Essential Peirce* v. 2, pp. 451–62, see pp. 457–8. Peirce wrote:

I have always fathered my pragmaticism (as I have called it since James and Schiller made the word [*pragmatism*] imply "the will to believe," the mutability of truth, the soundness of Zeno's refutation of motion, and pluralism generally), upon Kant, Berkeley, and Leibniz....

- [11] Peirce, C. S. (1908) "A Neglected Argument for the Reality of God", *Hibbert Journal* 7, reprinted in *Collected Papers* v. 6, paragraphs 452–85, *Essential Peirce* v. 2, 434–50, and elsewhere. After discussing James, Peirce stated (Section V, fourth paragraph) as the specific occasion of his coinage "pragmaticism", journalist, pragmatist, and literary author Giovanni Papini's declaration of pragmatism's indefinability (see for example "What Is Pragmatism Like", a translation published in October 1907 in *Popular Science Monthly* v. 71, pp. 351–8, *Google Books* Eprint (<http://books.google.com/books?id=DKkWAAAAIAAJ&pg=PA351>)). Peirce in his closing paragraph wrote that "willing not to exert the will (willing to believe)" should not be confused with "active willing (willing to control thought, to doubt, and to weigh reasons)", and discussed his dismay by that which he called the other pragmatists' "angry hatred of strict logic". He also rejected their nominalist tendencies. But he remained allied with them about the falsity of necessitarianism and about the reality of generals and habits understood in terms of potential concrete effects even if unactualized.
- [12] Peirce, C. S. (1868) "Questions Concerning Certain Faculties Claimed For Man", *Journal of Speculative Philosophy* v. 2, n. 2, pp. 103–114. Reprinted *Collected Peirce* v. 5, paragraphs 213–263, *Writings* v. 2, pp. 193–211, *Essential Peirce* v. 2, pp. 11–27, and elsewhere. *Peirce.org* Eprint (<http://www.peirce.org/writings/p26.html>). *Google Books* Eprint ([http://books.google.com/books?id=YHkqP2JHJ\\_IC&pg=RA1-PA140](http://books.google.com/books?id=YHkqP2JHJ_IC&pg=RA1-PA140)).
- [13] Kasser, Jeff (1998), "Peirce's Supposed Psychologism" in *Transactions of the Charles S. Peirce Society*, v. 35, n. 3, summer 1999, pp. 501–527. *Arisbe* Eprint (<http://www.cspeirce.com/menu/library/aboutcsp/kasser/psychol.htm>).
- [14] Peirce held that (philosophical) logic is a normative field, that pragmatism is a method developed in it, and that philosophy, though not deductive or so general as mathematics, still concerns positive phenomena in general, including phenomena of matter and mind, without depending on special experiences or experiments such as those of optics and experimental psychology, in both of which Peirce was active. See quotes under "Philosophy (<http://www.helsinki.fi/science/commens/terms/philosophy.html>)" at the *Commens Dictionary of Peirce's Terms*. Peirce also harshly criticized the Cartesian approach of starting from hyperbolic doubts rather than from the combination of established beliefs and genuine doubts. See the opening of his 1868 "Some Consequences of Four Incapacities", *Journal of Speculative Philosophy* v. 2, n. 3, pp. 140–157. Reprinted *Collected Papers* v. 5, paragraphs 264–317, *Writings* v. 2, pp. 211–42, and *Essential Peirce* v. 1, pp. 28–55. Eprint (<http://www.cspeirce.com/menu/library/bycsp/conseq/cn-frame.htm>).
- [15] Peirce (1902), The Carnegie Institute Application, Memoir 10, MS L75.361-2, *Arisbe* Eprint (<http://www.cspeirce.com/menu/library/bycsp/l75/ver1/l75v1-04.htm#m10>).
- [16] Peirce, C. S. (1868), "Some Consequences of Four Incapacities", *Journal of Speculative Philosophy* v. 2, n. 3, pp. 140 ([http://books.google.com/books?id=YHkqP2JHJ\\_IC&pg=RA1-PA140](http://books.google.com/books?id=YHkqP2JHJ_IC&pg=RA1-PA140))–57, see opening pages. Reprinted *Collected Papers* v. 5, paragraphs 264–317, *Writings* v. 2, pp. 211–42, *Essential Peirce* v. 1, pp. 28–55. *Peirce.org* Eprint (<http://www.peirce.org/writings/p27.html>).
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- [34] Patricia M. Shields. 2005. "Classical Pragmatism does not need an upgrade: Lessons for Public Administration. *Administration & Society*. 37(4):504-518. abstract (<http://aas.sagepub.com/cgi/content/abstract/37/4/504>)
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## Further reading

### Surveys

- John J. Stuhr, ed. *One Hundred Years of Pragmatism: William James's Revolutionary Philosophy* (Indiana University Press; 2010) 215 pages; Essays on pragmatism and American culture, pragmatism as a way of thinking and settling disputes, pragmatism as a theory of truth, and pragmatism as a mood, attitude, or temperament.

### Important introductory primary texts

Note that this is an *introductory* list: some important works are left out and some less monumental works that are excellent introductions are included.

- C. S. Peirce, "The Fixation of Belief" (paper)
- C. S. Peirce, "How to Make Our Ideas Clear" (paper)
- C. S. Peirce, "A Definition of Pragmatism" (paper as titled by Menand in *Pragmatism: A Reader*, from *Collected Papers of Charles Sanders Peirce* v. 8, some or all of paragraphs 191–195.)
- William James, *Pragmatism: A New Name for Some Old Ways of Thinking* (especially lectures I, II and VI)
- John Dewey, *Reconstruction in Philosophy* (<http://books.google.com/books?id=ZUg8AAAAIAAJ&printsec=frontcover>)
- John Dewey, "Three Independent factors in Morals" (lecture published as paper)
- John Dewey, "A short catechism concerning truth" ([http://spartan.ac.brocku.ca/~lward/Dewey/Dewey\\_1910b/Dewey\\_1910\\_06.html](http://spartan.ac.brocku.ca/~lward/Dewey/Dewey_1910b/Dewey_1910_06.html))" (chapter)
- W. V. O. Quine, "Three Dogmas of Empiricism" (paper)

### Secondary texts

- Cornelis De Waal, *On Pragmatism*
- Louis Menand, *The Metaphysical Club: A Story of Ideas in America*
- Hilary Putnam, *Pragmatism: An Open Question*
- Abraham Edel, *Pragmatic Tests and Ethical Insights* ([http://www.crvp.org/book/Series01/I-11/chapter\\_i.htm](http://www.crvp.org/book/Series01/I-11/chapter_i.htm))
- D. S. Clarke, *Rational Acceptance and Purpose*
- Haack, Susan & Lane, Robert, Eds. (2006). *Pragmatism Old and New: Selected Writings*. New York: Prometheus Books.
- Louis Menand, ed., *Pragmatism: A Reader* (includes essays by Peirce, James, Dewey, Rorty, others)

### Criticism texts

- Edward W. Younkins, *Dewey's Pragmatism and the Decline of Education* ([http://rebirthofreason.com/Articles/Younkins/Deweys\\_Pragmatism\\_and\\_the\\_Decline\\_of\\_Education.shtml](http://rebirthofreason.com/Articles/Younkins/Deweys_Pragmatism_and_the_Decline_of_Education.shtml)).
- *Pragmatism* (<http://aynrandlexicon.com/lexicon/pragmatism.html>), Ayn Rand Lexicon.
- Albert Schinz, *Anti-Pragmatism: An Examination into the Respective Rights of Intellectual Aristocracy and Social Democracy*. Boston: Small, Maynard and Company, 1909.

## External links

- Pragmatism (<http://www.bbc.co.uk/programmes/p003k9f5>) on In Our Time at the BBC. ( listen now ([http://www.bbc.co.uk/iplayer/console/p003k9f5/In\\_Our\\_Time\\_Pragmatism](http://www.bbc.co.uk/iplayer/console/p003k9f5/In_Our_Time_Pragmatism)))
- A short film about the pragmatist revival (<http://www.youtube.com/watch?v=GlrEbffVVjM>)

### Journals

There are several peer-reviewed journals dedicated to pragmatism, for example

- Transactions of the Charles S. Peirce Society (<http://www.peircesociety.org/transactions.html>)
- Contemporary Pragmatism
- William James Studies (<http://williamjamesstudies.press.uiuc.edu/>)
- European Journal of Pragmatism and American Philosophy (<http://lnx.journalofpragmatism.eu/>)

### Organizations and online resources

- Pragmatism Cybrary (<http://www.pragmatism.org>)
- Arisbe: The Peirce Gateway (<http://www.cspeirce.org/>)
- Associazione Culturale Pragma (Italy) (<http://www.associazionepragma.com/>)
- Center for Dewey Studies (<http://www.siuc.edu/~deweyctr/>)
- CEPF - The Central European Pragmatist Forum (<http://www.cepf.sk/>)
- Charles S. Peirce Studies (<http://www.peirce.org/>)
- Dutch Pragmatism Foundation (<http://www.pragmatisme.nl/>)
- Helsinki Peirce Research Center (<http://www.helsinki.fi/peirce/>), including:
  - Commens Dictionary of Peirce's Terms (<http://www.helsinki.fi/science/commens/dictionary.html>) — see Pragmatism (<http://www.helsinki.fi/science/commens/terms/pragmatism.html>), Pragmaticism (<http://www.helsinki.fi/science/commens/terms/pragmaticism.html>), and Pragmatism: Maxim of (<http://www.helsinki.fi/science/commens/terms/pragmatismmaxim.html>)
- Institute for American Thought (<http://liberalarts.iupui.edu/iat/>)
- John Dewey Society (<http://doe.concordia.ca/jds/>)
- Neopragmatism.org (<http://neopragmatism.org>)
- Nordic Pragmatism Network (<http://www.nordprag.org/>)
- Society for the Advancement of American Philosophy (<http://www.american-philosophy.org/>)
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# Chicago school (sociology)

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In sociology and later criminology, the **Chicago School** (sometimes described as the **Ecological School**) was the first major body of works emerging during the 1920s and 1930s specialising in urban sociology, and the research into the urban environment by combining theory and ethnographic fieldwork in Chicago, now applied elsewhere. While involving scholars at several Chicago area universities, the term is often used interchangeably to refer to the University of Chicago's sociology department—one of the oldest and one of the most prestigious. Following World War II, a "Second Chicago School" arose whose members used symbolic interactionism combined with methods of field research, to create a new body of works. This was one of the first institutions to use quantitative methods in criminology.

The major researchers in the first Chicago School included Nels Anderson, Ernest Burgess, Ruth Shonle Cavan, Edward Franklin Frazier, Everett Hughes, Roderick D. McKenzie, George Herbert Mead, Robert E. Park, Walter C. Reckless, Edwin Sutherland, W. I. Thomas [1], Frederic Thrasher, Louis Wirth, Florian Znaniecki.

## Discussion

The Chicago School is best known for its urban sociology and for the development of the symbolic interactionist approach. It has focused on human behavior as determined by social structures and physical environmental factors, rather than genetic and personal characteristics. Biologists and anthropologists have accepted the theory of evolution as demonstrating that animals adapt to their environments. As applied to humans who are considered responsible for their own destinies, the School believed that the natural environment which the community inhabits is a major factor in shaping human behavior, and that the city functions as a microcosm:

*"In these great cities, where all the passions, all the energies of mankind are released, we are in a position to investigate the process of civilization, as it were, under a microscope."* [1]

The work of Frederic E. Clements (1916) was particularly influential. He proposed that a community of vegetation is a superorganism and that communities develop in a fixed pattern of successional stages from inception through to some single climax state or to a self-regulating state of equilibrium. By analogy, an individual is born, grows, matures, and dies, but the community which the individual inhabited continues to grow and exhibit properties which are greater than the sum of the properties of the parts.

Members of the School have concentrated on the city of Chicago as the object of their study, seeking evidence whether urbanization (Wirth: 1938) and increasing social mobility have been the causes of the contemporary social problems. Originally, Chicago was a clean slate, an empty physical environment. By 1860, Chicago was a small town with a population of 10,000. There was great growth after the fire of 1871. By 1910, the population exceeded two million. The rapidity of the increase was due to an influx of immigrants and it produced homelessness (Anderson: 1923), poor housing conditions, and bad working conditions based on low wages and long hours. But equally, Thomas and Znaniecki (1918) stress that the sudden freedom of immigrants released from the controls of Europe to the unrestrained competition of the new city was a dynamic for growth. See also the broken windows thesis.

*"Ecological studies consisted of making spot maps of Chicago for the place of occurrence of specific behaviors, including alcoholism, homicides, suicides, psychoses, and poverty, and then computing rates based on census data. A visual comparison of the maps could identify the concentration of certain types of behavior in some areas. Correlations of rates by areas were not made until later."* [2]

For Thomas, the groups themselves had to reinscribe and reconstruct themselves to prosper. Burgess studied the history of development and concluded that the city had not grown at the edges. Although the presence of Lake Michigan prevented the complete encirclement, he postulated that all major cities would be formed by radial expansion from the center in concentric rings which he described as zones, i.e. the business area in the center, the

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slum area (called the zone in transition and studied by Wirth: 1928, Zorbaugh: 1929, and Suttles: 1968) around the central area, the zone of workingmen's homes farther out, the residential area beyond this zone, and then the bungalow section and the commuter's zone on the periphery. Under the influence of Albion Small, the research at the School mined the mass of official data including census reports, housing/welfare records and crime figures, and related the data spatially to different geographical areas of the city. Shaw and McKay created maps:

- spot maps to demonstrate the location of a range of social problems with a primary focus on juvenile delinquency;
- rate maps which divided the city into block of one square mile and showed the population by age, gender, ethnicity, etc.;
- zone maps which demonstrated that the major problems were clustered in the city center.

Thomas also developed techniques of self-reporting life histories to provide subjective balance to the analysis. Park, Burgess, and McKenzie are credited with institutionalizing, if not establishing, sociology as a science. They are also criticized for their overly empiricist and idealised approach to the study of society but, in the inter-war years, their attitudes and prejudices were normative. Three broad themes characterized this dynamic period of Chicago studies:

1. culture contact and conflict. This arises from Thomas and Znaniecki (1918) and studies how ethnic groups interact and compete in a process of community succession and institutional transformation (Hughes and Hughes: 1952). An important part of this work concerned African Americans; works including E. Franklin Frazier (1932) and Drake and Cayton (1945) shaped white America's perception of black communities for decades.
2. succession in community institutions as stakeholders and actors in the ebb and flow of ethnic groups. Cressey (1932) studied the dance hall and commercialized entertainment services, Kincheloe (1938) studied church succession, Janowitz (1952) studied the community press, and Hughes (1979) studied the real-estate board.
3. city politics. Merriam's commitment to practical reform politics was matched by Gosnell who researched voting and other forms of participation. Gosnell (1935), Wilson (1960), Grimshaw (1992) considered African American politics, and Banfield and Wilson (1963) placed Chicago city politics in a broader context.

The School is perhaps best known for the Subculture Theories of Thrasher, Frazier, and Sutherland, and for applying the principles of ecology to develop the Social Disorganization Theory which refers to consequences of the failure of:

- social institutions or social organizations including the family, schools, church, political institutions, policing, business, etc. in identified communities and/or neighborhoods, or in society at large; and
- social relationships that traditionally encourage co-operation between people.

Thomas defined social disorganization as "the inability of a neighborhood to solve its problems together" which suggested a level of social pathology and personal disorganization, so the term, "differential social organization" was preferred by many, and may have been the source of Sutherland's (1947) Differential Association Theory. The researchers have provided a clear analysis that the city is a place where life is superficial, where people are anonymous, where relationships are transitory and friendship and family bonds are weak. They have observed the weakening of primary social relationships and relate this to a process of social disorganization (comparison with the concept of *anomie* and the Strain Theories is instructive).

*For a complete discussion, see Social Disorganization Theory and Subcultural Theory.*

## Ecology and social theories

Vasishth and Sloane (2000) argue that while it is tempting to draw analogies between organisms in nature and the human condition, the problem lies in reductionism, i.e. that the science of biology is oversimplified into rules that are then applied mechanically to explain the growth and dynamics of human communities. The most fundamental difficulties are definitional. If a community is a group of individuals who inhabit the same place, is the community merely the sum of individuals and their activities, or is it something more than an aggregation of individuals? This is critical in planning research into group interactions. Will research be effective if it focuses on the individuals



comprising a group, or is the community itself a proper subject of research independently of the individuals who comprise it? If the former, then data on individuals will explain the community, but if the community either directly or indirectly affects the behavior of its members, then research must consider the patterns and processes of community as distinct from patterns and processes in populations of individuals. But this requires a definition and distinction between "pattern" and "process". The structures, forms, and patterns are relatively easy to observe and measure, but they are nothing more than evidence of underlying processes and functions which are the real constitutive forces in nature and society. The Chicago School wanted to develop tools by which to research and then change society by directing urban planning and social intervention agencies. It recognized that urban expansion was not haphazard but quite strongly controlled by community-level forces such as land values, zoning ordinances, landscape features, circulation corridors, and historical contingency. This was characterized as ecological because the external factors were neither chance nor intended, but rather arose from the natural forces in the environment which limit the adaptive spatial and temporal relationships between individuals. The School sought to derive patterns from a study of processes, rather than to ascribe processes to observed patterns and the patterns they saw emerge, are strongly reminiscent of Clements' ideas of community development.

## Conclusions

The Chicago Area Project (CAP) was a practical attempt by sociologists to apply their theories in a city laboratory. Subsequent research showed that the youth athletic leagues, recreation programs, and summer camp worked best along with urban planning and alternatives to incarceration as crime control policy. Such programs are non-entrepreneurial and non-self-sustaining, and they fail when local or central government does not make a sustained financial commitment to them. Although with hindsight, the School's attempts to map crime may have produced some distortions, the work was valuable in that it moved away from a study of pattern and place toward a study of function and scale. To that extent, this was work of high quality that represented the best science available to the researchers at the time.

The Social Disorganization Theory itself was a landmark and, since it focuses on the absence or breakdown of social control mechanisms, there are obvious links with social control theory. In *Causes of Delinquency* (1969) Travis Hirschi argued that variations in delinquent behavior among youth could be explained by variations in the dimensions of the social bond, namely attachment to others, commitments to conventional goals, acceptance of conventional moral standards or beliefs, and involvement in conventional activities. The greater the social bonds between a youth and society, the lower the odds of involvement in delinquency. When social bonds to conventional role models, values and institutions are aggregated for youth in a particular setting, they measure much the same phenomena as captured by concepts such as network ties or social integration. But the fact that these theories focus on the absence of control or the barriers to progress, means that they are ignoring the societal pressures and cultural values that drive the system Merton identified in the Strain Theory or the motivational forces Cohen proposed were generating crime and delinquency. More modern theorists like Empey (1967) argue that the system of values, norms and beliefs can be disorganized in the sense that there are conflicts among values, norms and beliefs within a widely shared, dominant culture. While condemning crime in general, law-abiding citizens may nevertheless respect and admire the criminal who takes risks and successfully engages in exciting, dangerous activities. The depiction of a society as a collection of socially differentiated groups with distinct subcultural perspectives that lead some of these groups into conflict with the law is another form of cultural disorganization, is typically called cultural conflict.

Modern versions of the theory sometimes use different terminology to refer to the same ecological causal processes. For example, Crutchfield, Geerken and Gove (1982: 467-482) hypothesize that the social integration of communities is inhibited by population turnover and report supporting evidence in the explanation of variation in crime rates among cities. The greater the mobility of the population in a city, the higher the crime rates. These arguments are identical to those proposed by social disorganization theorists and the evidence in support of it is as indirect as the evidence cited by social disorganization theorists. But, by referring to social integration rather than disintegration,

this research has not generated the same degree of criticism as social disorganization theory.

[1] Robert E. Park, "Human Migration and the Marginal Man," *AJS* 33:6 (May 1928), p.890

[2] Ruth Shonle Cavan, "The Chicago School of Sociology," 1983, p.415

## External links

- For an overview of the history of the Chicago School, see the web version of an article by Howard S. Becker, himself a member of the "Second Chicago School". (<http://web.archive.org/web/20080203122901/http://home.earthlink.net/~hsbecker/chicago.html>)
- University of Chicago Department of Sociology (<http://sociology.uchicago.edu/>)

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For a comprehensive history of the Chicago School, see Martin Bulmer (1984) and Lester Kurtz (1984).

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# Symbolic interactionism

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**Symbolic interactionism** is a major sociological perspective that places emphasis on micro-scale social interaction, which is particularly important in subfields such as urban sociology and social psychology. Symbolic interactionism is derived from American pragmatism, especially the work of George Herbert Mead and Charles Cooley. Herbert Blumer, a student and interpreter of Mead, coined the term and put forward an influential summary of the perspective: people act toward things based on the meaning those things have for them; and these meanings are derived from social interaction and modified through interpretation. Blumer was also influenced by John Dewey, who insisted that human beings are best understood in relation to their environment.<sup>[1]</sup>

Sociologists working in this tradition have researched a wide range of topics using a variety of research methods. However, the majority of interactionist research uses qualitative research methods, like participant observation, to study aspects of 1) social interaction, and/or 2) individuals' selves. Participant observation allows researchers to access symbols and meanings, as in Howard S. Becker's *Art Worlds* (1982) and Arlie Hochschild's *The Managed Heart* (1983).<sup>[2]</sup> Sociological subfields that have been particularly influenced by symbolic interactionism include the sociology of emotions, deviance/criminology, collective behavior/social movements, and the sociology of sex. Interactionist concepts that have gained widespread usage include definition of the situation, emotion work, impression management, looking glass self, and total institution. Semiology is connected to this discipline, but unlike those elements of semiology which are about the structures of language, interactionists typically are more interested in the ways in which meaning is fluid and ambiguous.<sup>[2]</sup>

## Basic premises and approach

Herbert Blumer (1969), who coined the term "symbolic interactionism," set out three basic premises of the perspective:

- "Humans act toward things on the basis of the meanings they ascribe to those things."
- "The meaning of such things is derived from, or arises out of, the social interaction that one has with others and the society."
- "These meanings are handled in, and modified through, an interpretative process used by the person in dealing with the things he/she encounters."

Blumer, following Mead, claimed that people interact with each other by interpret[ing] or 'defin[ing]' each other's actions instead of merely reacting to each other's actions. Their 'response' is not made directly to the actions of one another but instead is based on the meaning which they attach to such actions. Thus, human interaction is mediated by the use of symbols and signification, by interpretation, or by ascertaining the meaning of one another's actions (Blumer 1962). Blumer contrasted this process, which he called "symbolic interaction," with behaviorist explanations of human behavior, which does not allow for interpretation between stimulus and response. Blumer believed that the term symbolic interactionism has come into use as a label for relatively distinctive approach to the study of human group life and human conduct. (Blumer, 8). Other scholars he credits in this field are, Mead, Dewey, Thomas, Park, James, Horton, Cooley, Znaniecki, Baldwin, Redfield, and Wirth.<sup>[3]</sup>

Symbolic interactionist researchers investigate how people create meaning during social interaction, how they present and construct the self (or "identity"), and how they define situations of co-presence with others. One of the perspective's central ideas is that people act as they do because of how they define situations.

## Communication

Symbolic interactionism is a sociologically based theory that informs other theories in the field of communication studies. George Herbert Mead was the front man with this theory and believed that the true test of any theory was that "It was useful in solving complex social problems" (Griffin 59). He was a social activist, and as such this theory is very phenomenologically based. He believed that the "Most human and humanizing activity that people engage in is talking to each other (Griffin 60).<sup>[4]</sup>

There are three core principles to this theory

1. Meaning, which is something we assign
2. Language, which is constructed through our social interactions
3. Thought, which influences our interpretations

Blumer and Mead essentially state that meaning is socially constructed through the way we interact with each other and to various stimuli. Yrjo Engestrom and David Middleton explain the usefulness of symbolic interactionism in the communication field in a "variety of work setting including, courts of law, health care, computer software design, scientific laboratory, telephone sales, control, repair, and maintenance of advance manufacturing system."<sup>[5]</sup>

Erving Goffman, although he claimed not to have been a symbolic interactionist, is recognized as one of the major contributors to the perspective. Interactionists see the social world as a continuously dynamic and dialectical web.<sup>[2]</sup>

## Society for the Study of Symbolic Interaction

The Society for the Study of Symbolic Interaction (SSSI) is the scholarly association for symbolic interactionists. SSSI holds a conference in conjunction with the meeting of the American Sociological Association in August and sponsors the Couch-Stone Symposium each spring.<sup>[6]</sup> It also sponsors the journal *Symbolic Interaction*.<sup>[7]</sup>

## Critique

Although symbolic interactionist concepts have gained widespread use among sociologists, the perspective has been criticized, particularly during the 1970s in the U.S. when quantitative approaches to sociology were dominant. Perhaps the best known of these is by Alvin Gouldner.<sup>[6]</sup>

In addition to methodological criticisms, critics of symbolic interactionism have charged that it is unable to deal with social structure (a fundamental sociological concern) and macro sociological issues. A number of symbolic interactionists have addressed these topics, the best known being Sheldon Stryker's structural symbolic interactionism<sup>[7] [8]</sup> and the formulations of interactionism heavily influenced by this approach (sometimes referred to as the "Indiana School" of symbolic interactionism, including the works of key scholars in sociology and psychology using different methods and theories applying a structural version of interactionism that are represented in a 2003 collection edited by Burke et al.<sup>[9]</sup> Another well-known structural variation of symbolic interactionism that applies quantitative methods is Manford H. Kuhn's (Kuhn and McPartland, 1954) formulation which is often referred to in sociological literature as the "Iowa School." Negotiated Order Theory also applies a structural approach.<sup>[10]</sup>

The work of structural interactionists such as Stryker and Kuhn has had a significant influence on subsequent symbolic interactionists, some of whom use survey research and experimental methods (whereas "Chicago School" interactionism following Herbert Blumer's version relies on ethnography and qualitative in-depth interviewing). But Chicago School or "processual" versions of interactionism currently maintain greater recognition and influence within sociological teaching and research, presented in some texts and coursework as if they were the only variations of symbolic interactionism that exist. This fuels criticisms of the symbolic interactionist framework for failing to account for social structure, as well as criticisms that interactionist theories cannot be assessed via quantitative methods, and cannot be falsifiable or tested empirically. The published literature indicates that structural and processual variations of interactionism are both alive and well in sociology, as is the Blumerian tradition of interactionism, and interactionism has been used more explicitly and more frequently in psychology and

anthropology as well. Much of the symbolic interactionist framework's basic tenets can be found in a very wide range of sociological and psychological work, without being explicitly cited as interactionist, making the influence of symbolic interactionism difficult to recognize given this general acceptance of its assumptions as "common knowledge." Many scholars do not know they are applying interactionist ideas in their own theoretical assumptions and formulations.<sup>[11]</sup>

Some critiques of symbolic interactionism are based on the false assumption that it is a theory, and the critiques apply the criteria for a "good" theory to something that does not claim to be a theory. Some critics find the symbolic interactionist framework too broad and general when they are seeking specific theories. Symbolic interactionism is a theoretical *framework* rather than a theory (see Stryker and Vryan, 2003, for a clear distinction between the two as it pertains to symbolic interactionism).<sup>[11]</sup> Thus, specific theories, hypotheses, and conceptualizations must be (and have successfully been) derived from the general framework that symbolic interactionism provides before interactionist theories can be assessed on the basis of the criteria a good theory (e.g., containing falsifiable hypotheses), or interactionist-inspired conceptualizations can be assessed on the basis of effective conceptualizations. The theoretical framework, as with any theoretical framework, is vague when it comes to analyzing empirical data or predicting outcomes in social life. As a framework rather than a theory, many scholars find it difficult to use. Interactionism being a framework rather than a theory makes it impossible to test interactionism in the manner that a specific theoretical claim about the relationship between specific variables in a given context allows. Unlike the symbolic interactionist framework, the many theories derived from symbolic interactionism, such as Role Theory and the versions of Identity Theory developed by Stryker<sup>[7]</sup> <sup>[12]</sup>, and Burke and colleagues<sup>[13]</sup> <sup>[14]</sup>, clearly define concepts and the relationships between them in a given context, thus allowing for the opportunity to develop and test hypotheses. Further, especially among Blumerian processual interactionists, a great number of very useful conceptualizations have been developed and applied in a very wide range of social contexts, types of populations, types of behaviors, and cultures and subcultures.

## Notes

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## External links

- Assumptions of the Pluralist Paradigm (<http://www.bolenderinitiatives.com/sociology-overview-introduction-discipline-sociology/sociology-overview-paradigms-and-assumptions--1>)
- Society for the Study of Symbolic Interaction website (<http://www.espace.salford.ac.uk/ssi/>)
- *Symbolic Interaction* journal (<http://www.ucpressjournals.com/journalSoc.asp?jIssn=0195-6086>)





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