Process theology

Process theology is a type of theology developed from Alfred North Whitehead's (1861–1947) process philosophy, most notably by Charles Hartshorne (1897–2000) and John B. Cobb (b. 1925). Process theology and process philosophy are collectively referred to as "process thought".

For both Whitehead and Hartshorne, it is an essential attribute of God to affect and be affected by temporal processes, contrary to the forms of theism that hold God to be in all respects non-temporal (eternal), unchanging (immutable), and unaffected by the world (impassible). Process theology does not deny that God is in some respects eternal (will never die), immutable (in the sense that God is unchangingly good), and impassible (in the sense that God's eternal aspect is unaffected by actuality), but it contradicts the classical view by insisting that God is in some respects temporal, mutable, and passible.[1]

According to Cobb, "process theology may refer to all forms of theology that emphasize event, occurrence, or becoming over substance. In this sense theology influenced by Hegel is process theology just as much as that influenced by Whitehead. This use of the term calls attention to affinities between these otherwise quite different traditions."[2][3] Also Pierre Teilhard de Chardin can be included among process theologians,[4] even if they are generally understood as referring to the Whiteheadian/Hartshornean school, where there continue to be ongoing debates within the field on the nature of God, the relationship of God and the world, and immortality.

Contents

History

Various theological and philosophical aspects have been expanded and developed by Charles Hartshorne (1897–2000), John B. Cobb, Jr., and David Ray Griffin.[5] 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.[6] 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 applied process theology to the New Thought variant of Christianity.

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

God and the World relationship

Whitehead's classical statement is a set of antithetical statements that attempt to avoid self-contradiction by shifting them from a set of oppositions into a contrast:

- It is as true to say that God is permanent and the World fluent, as that the World is permanent and God is fluent.
- It is as true to say that God is one and the World many, as that the World is one and God many.
- It is as true to say that, in comparison with the World, God is actual eminently, as that, in comparison with God, the World is actual eminently.
- It is as true to say that the World is immanent in God, as that God is immanent in the World.
- It is as true to say that God transcends the World, as that the World transcends God.
- It is as true to say that God creates the World, as that the World creates God.[7]

Themes

- 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.[8]
- 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.[9]
- 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.[10]
- 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).[11]

Relationship to liberation theology

Henry Young combines Black theology and Process theology in his book *Hope in Process*. Young seeks a model for American society that goes beyond the alternatives of integration of Blacks into white society and Black separateness. He finds useful the process model of the many becoming one. Here the one is a new reality that emerges from the discrete contributions of the many, not the assimilation of the many to an already established one.[12]

Monica Coleman has combined Womanist theology and Process theology in her book *Making a Way Out of No Way*. In it, she argues that 'making a way out of no way' and 'creative transformation' are complementary insights from the respective theological traditions. She is one of many theologians who identify both as a process theologian and feminist/womanist/ecofeminist theologian, which includes persons such as Sallie McFague, Rosemary Radford Ruether, and Marjorie Hewitt Suchocki.[13][14]

C. Robert Mesle, in his book *Process Theology*, outlines three aspects of a process theology of liberation:[15]

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.[16]

Relationship to the doctrine of the incarnation

Contrary to Christian orthodoxy, the *Christ* of mainstream process theology is not the mystical and historically exclusive union of divine and human natures in one hypostasis, the eternal Logos of God uniquely enfleshed in and identifiable as the man Jesus. Rather God is incarnate in the lives of all people when they act according to a call from God. Jesus fully and in every way responded to God's call, thus the person of Jesus is theologically understood as "the divine Word in human form." Jesus is not singularly or essentially God, but he was perfectly synchronized to God at all moments of life.[17] Cobb expressed the Incarnation in process terms that link it to his understanding of actualization of human potential: "'Christ' refers to the Logos as incarnate hence as the process of creative transformation in and of the world".

Debate about process theology's conception of God's power

A criticism of process theology is that it offers a too severely diminished conception of God's power. Process theologians argue that God does not have unilateral, coercive control over everything in the universe. In process theology, God cannot override a person's freedom, nor perform miracles that violate the laws of nature, nor perform physical actions such as causing or halting a flood or an avalanche. Critics argue that this conception diminishes divine power to such a degree that God is no longer worshipful.[5][18][19][20][21]

The process theology response to this criticism is that the traditional Christian conception of God is actually *not* worshipful as it stands, and that the traditional notion of God's omnipotence fails to make sense.[22]

First, power is a relational concept. It is not exerted in a vacuum, but always by some entity A over some other entity B.[23] As such, power requires analysis of both the being exerting power, and the being that power is being exerted upon. To suppose that an entity A (in this case, God), can always successfully control any other entity B is to say, in effect, that B does not exist as a free and individual being in any meaningful sense, since there is no possibility of its resisting A if A should decide to press the issue.[24]

Mindful of this, process theology makes several important distinctions between different kinds of power. The first distinction is between "coercive" power and "persuasive" power.[25] Coercive power is the kind that is exerted by one physical body over another, such as one billiard ball hitting another, or one arm twisting another. Lifeless bodies (such as the billiard balls) cannot resist such applications of physical force at all, and even living bodies (like arms) can only resist so far, and can be coercively overpowered. While finite, physical creatures can exert coercive power over one another in this way, God—lacking a physical body—*cannot* (not merely *will* not) exert coercive control over the world.[26]

But process theologians argue that coercive power is actually a secondary or derivative form of power, while persuasion is the primary form.[25] Even the act of self-motion (of an arm, for instance) is an instance of persuasive power. The arm may not perform in the way a person wishes it to—it may be broken, or asleep, or otherwise unable to perform the desired action. It is only after the persuasive act of self-motion is successful that an entity can even *begin* to exercise coercive control over other finite physical bodies. But no amount of coercive control can alter the free decisions of other entities; only persuasion can do so.[27]

For example, a child is told by his parent that he must go to bed. The child, as a self-conscious, decision-making individual, can always make the decision to *not* go to bed. The parent may then respond by picking up the child bodily and carrying him to his room, but nothing can force the child to alter his decision to resist the parent's directive. It is only the *body* of the child that can be coercively controlled by the body of the physically stronger parent; the child's free will remains intact. While process theologians argue that God does not have coercive power, they also argue that God has *supreme persuasive power*, that God is always influencing/persuading us to choose the good.

One classic exchange over the issue of divine power is between philosophers Frederick Sontag and John K. Roth and process theologian David Ray Griffin.[28] Sontag and Roth argued that the process God's inability to, for instance, stop the genocide at Auschwitz meant that God was not worthy of worship, since there is no point in worshipping a God that cannot save us from such atrocities. Griffin's response was as follows:

> One of the stronger complaints from Sontag and Roth is that, given the enormity of evil in the world, a deity that is [merely] doing its best is not worthy of worship. The implication is that a deity that is *not* doing its best *is* worthy of worship. For example, in reference to Auschwitz, Roth mocks my God with the statement that "the best that God could possibly do was to permit 10,000 Jews a day to go up in smoke." Roth prefers a God who had the power to prevent this Holocaust but did not do it! This illustrates how much people can differ in what they consider worthy of worship. For Roth, it is clearly brute *power* that evokes worship. The question is: is this what *should* evoke worship? To refer back to the point about revelation: is this kind of power worship consistent with the Christian claim that divinity is decisively revealed in Jesus? Roth finds my God too small to evoke worship; I find his too gross.[28]

The process argument, then, is that those who cling to the idea of God's coercive omnipotence are defending power for power's sake, which would seem to be inconsistent with the life of Jesus, who Christians believe died for humanity's sins rather than overthrow the Roman empire. Griffin argues that it is actually the God whose omnipotence is defined in the "traditional" way that is not worshipful.[28]

One other distinction process theologians make is between the idea of "unilateral" power versus "relational" power.[29] Unilateral power is the power of a king (or more accurately, a tyrant) who wishes to exert control over his subjects *without* being affected *by* them.[30] However, most people would agree that a ruler who is not changed or affected by the joys and sorrows of his subjects is actually a despicable ruler and a psychopath.[31] Process theologians thus stress that God's power is relational; rather than being unaffected and unchanged by the world, God is the being *most* affected by every other being in the universe.[32] As process theologian C. Robert Mesle puts it:

> Relational power takes great strength. In stark contrast to unilateral power, the radical manifestations of relational power are found in people like Martin Luther King, Jr., Mahatma Gandhi, and Jesus. It requires the willingness to endure tremendous suffering while refusing to hate. It demands that we keep our hearts open to those who wish to slam them shut. It means offering to open up a relationship with people who hate us, despise us, and wish to destroy us.[29]

In summation, then, process theologians argue that their conception of God's power does not diminish God, but just the opposite. Rather than see God as one who unilaterally coerces other beings, judges and punishes them, and is completely unaffected by the joys and sorrows of others, process theologians see God as the one who persuades the universe to love and peace, is supremely affected by even the tiniest of joys and the smallest of sorrows, and is able to love all beings despite the most heinous acts they may commit. God is, as Whitehead says, "the fellow sufferer who understands."[33]

Process theologians

- Alfred North Whitehead
- Arthur Peacocke
- Blake Ostler
- Carol Patrice Christ
- Bradley Shavit Artson
- Bruce G. Epperly
- C. Robert Mesle
- Catherine Keller
- Charles Birch
- Charles Hartshorne
- Daniel Day Williams
- David Ray Griffin
- Franklin I. Gamwell
- George V. Pixley
- Harold Kushner
- Jay McDaniel
- John B. Cobb
- Joseph A. Bracken
- Marjorie Hewitt Suchocki
- Michael Lerner
- Monica Coleman
- Nancy R. Howell
- Norman Pittenger
- Paul S. Fiddes
- Philip Clayton
- Richard Rice
- Roland Faber
- Schubert M. Ogden
- Stephen T. Franklin
- Terence E. Fretheim
- Thomas Berry
- Thomas Jay Oord
- William E. Kaufman
- Wolfgang Smith

See also

- Conceptions of God
- Essence–Energies distinction
- Liberal naturalism
- New Thought
- Open theism
- Panentheism
- Philosophical theism
- Philosophical theology
- Postliberal theology
- Process philosophy
- Synergism (theology)
- Theopoetics
- Earthseed
- Neo-Hasidism

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Further reading

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- 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).

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- 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.
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External links

- The Center for Process Studies (http://www.ctr4process.org)
- Process and Faith (http://www.processandfaith.org)

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Alfred North Whitehead

Alfred North Whitehead OM FRS FBA (15 February 1861 – 30 December 1947) was an English mathematician and philosopher. He is best known as the defining figure of the philosophical school known as process philosophy,[21] which today has found application to a wide variety of disciplines, including ecology, theology, education, physics, biology, economics, and psychology, among other areas.

In his early career Whitehead wrote primarily on mathematics, logic, and physics. His most notable work in these fields is the three-volume *Principia Mathematica* (1910–1913), which he wrote with former student Bertrand Russell. *Principia Mathematica* is considered one of the twentieth century's most important works in mathematical logic, and placed 23rd in a list of the top 100 English-language nonfiction books of the twentieth century by Modern Library.[22]

Beginning in the late 1910s and early 1920s, Whitehead gradually turned his attention from mathematics to philosophy of science, and finally to metaphysics. He developed a comprehensive metaphysical system which radically departed from most of western philosophy. Whitehead argued that reality consists of processes rather than material objects, and that processes are best defined by their relations with other processes, thus rejecting the theory that reality is fundamentally constructed by bits of matter that exist independently of one another.[23] Today Whitehead's philosophical works – particularly *Process and Reality* – are regarded as the foundational texts of process philosophy.

Whitehead's process philosophy argues that "there is urgency in coming to see the world as a web of interrelated processes of which we are integral parts, so that all of our choices and actions have consequences for the world around us."[23] For this reason, one of the most promising applications of Whitehead's thought in recent years has been in the area of ecological civilization and environmental ethics pioneered by John B. Cobb.[24][25]

Alfred North Whitehead	
OM FRS FBA	
Born	15 February 1861 Ramsgate, England
Died	30 December 1947 (aged 86) Cambridge, Massachusetts, US
Alma mater	Trinity College, Cambridge
Era	20th-century philosophy
Region	Western philosophy
School	Analytic philosophy (early) Process philosophy Process theology
Institutions	Imperial College London Harvard University
Academic advisors	Edward Routh[1]
Doctoral students	Raphael Demos · Charles Hartshorne · Susanne Langer · W. V. O. Quine ·

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Signature

Life

Childhood, education

Whewell's Court north range at Trinity College, Cambridge. Whitehead spent thirty years at Trinity, five as a student and twenty-five as a senior lecturer.

Alfred North Whitehead was born in Ramsgate, Kent, England, in 1861.[26] His father, Alfred Whitehead, was a minister and schoolmaster of Chatham House Academy, a school for boys established by Thomas Whitehead, Alfred North's grandfather.[27] Whitehead himself recalled both of them as being very successful schools, but that his grandfather was the more extraordinary man.[27]

Whitehead's mother was Maria Sarah Whitehead, formerly Maria Sarah Buckmaster. Whitehead was apparently not particularly close with his mother, as he never mentioned her in any of his writings, and there is evidence that Whitehead's wife, Evelyn, had a low opinion of her.[28]

Whitehead was educated at Sherborne School, Dorset, one of the best public schools in the country.[29] His childhood was described as over-protected,[30] but when at school he excelled in sports and mathematics[31] and was head prefect of his class.[32]

In 1880, Whitehead began attending Trinity College, Cambridge, and studied mathematics.[33] His academic advisor was Edward Routh.[1] He earned his BA from Trinity in 1884, and graduated as fourth wrangler.[34]

Career

Elected a fellow of Trinity in 1884, Whitehead would teach and write on mathematics and physics at the college until 1910, spending the 1890s writing his *Treatise on Universal Algebra* (1898), and the 1900s collaborating with his former pupil, Bertrand Russell, on the first edition of *Principia Mathematica*.[35] He was a Cambridge Apostle.[36]

In 1890, Whitehead married Evelyn Wade, an Irish woman raised in France; they had a daughter, Jessie Whitehead, and two sons, Thomas North Whitehead and Eric Whitehead.[32] Eric Whitehead died in action at the age of 19, while serving in the Royal Flying Corps during World War I.[37] Alfred's brother Henry became Bishop of Madras, and wrote the closely observed ethnographic account *Village Gods of South-India* (Calcutta: Association Press, 1921), which is still of value today.

In 1910, Whitehead resigned his senior lectureship in mathematics at Trinity and moved to London without first lining up another job.[38] After being unemployed for a year, Whitehead accepted a position as lecturer in applied mathematics and mechanics at University College London, but was passed over a year later for the Goldsmid Chair of Applied Mathematics and Mechanics, a position for which he had hoped to be seriously considered.[39]

Bertrand Russell in 1907. Russell was a student of Whitehead's at Trinity College, and a longtime collaborator and friend.

In 1914 Whitehead accepted a position as professor of applied mathematics at the newly chartered Imperial College London, where his old friend Andrew Forsyth had recently been appointed chief professor of mathematics.[40]

In 1918 Whitehead's academic responsibilities began to seriously expand as he accepted a number of high administrative positions within the University of London system, of which Imperial College London was a member at the time. He was elected dean of the Faculty of Science at the University of London in late 1918 (a post he held for four years), a member of the University of London's Senate in 1919, and chairman of the Senate's Academic (leadership) Council in 1920, a post which he held until he departed for America in 1924.[40] Whitehead was able to exert his newfound influence to successfully lobby for a new history of science department, help establish a Bachelor of Science degree (previously only Bachelor of Arts degrees had been offered), and make the school more accessible to less wealthy students.[41]

Toward the end of his time in England, Whitehead turned his attention to philosophy. Though he had no advanced training in philosophy, his philosophical work soon became highly regarded. After publishing *The Concept of Nature* in 1920, he served as president of the Aristotelian Society from 1922 to 1923.[42]

Move to the US, 1924

In 1924, Henry Osborn Taylor invited the 63-year-old Whitehead to join the faculty at Harvard University as a professor of philosophy.[43]

During his time at Harvard, Whitehead produced his most important philosophical contributions. In 1925, he wrote *Science and the Modern World*, which was immediately hailed as an alternative to the Cartesian dualism that plagued popular science.[44] Lectures from 1927 to 1928, were published in 1929 as a book named *Process and Reality*, which has been compared to Immanuel Kant's *Critique of Pure Reason*.[24]

The Whiteheads spent the rest of their lives in the United States. Alfred North Whitehead retired from Harvard in 1937 and remained in Cambridge, Massachusetts, until his death on 30 December 1947.[45]
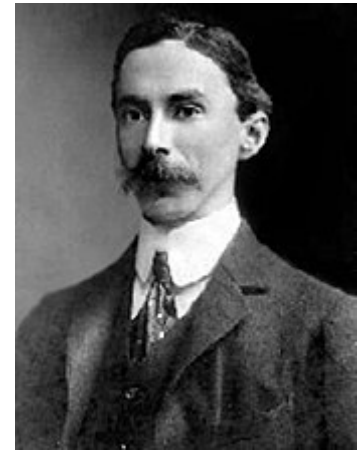
The two-volume biography of Whitehead by Victor Lowe[46] is the most definitive presentation of the life of Whitehead. However, many details of Whitehead's life remain obscure because he left no *Nachlass* (personal archive); his family carried out his instructions that all of his papers be destroyed after his death.[47] Additionally, Whitehead was known for his "almost fanatical belief in the right to privacy", and for writing very few personal letters of the kind that would help to gain insight on his life.[47] This led to Lowe himself remarking on the first page of Whitehead's biography, "No professional biographer in his right mind would touch him."[26]

Led by Executive Editor Brian G. Henning and General Editor George R. Lucas Jr., the Whitehead Research Project of the Center for Process Studies is currently working on a critical edition of Whitehead's published and unpublished works.[48] The first volume of the *Edinburgh Critical Edition of the Complete Works of Alfred North Whitehead* was published in 2017 by Paul A. Bogaard and Jason Bell as *The Harvard Lectures of Alfred North Whitehead, 1924–1925: The Philosophical Presuppositions of Science*.[49]

Mathematics and logic

In addition to numerous articles on mathematics, Whitehead wrote three major books on the subject: *A Treatise on Universal Algebra* (1898), *Principia Mathematica* (co-written with Bertrand Russell and published in three volumes between 1910 and 1913), and *An Introduction to Mathematics* (1911). The former two books were aimed exclusively at professional mathematicians, while the latter book was intended for a larger audience, covering the history of mathematics and its philosophical foundations.[50] *Principia Mathematica* in particular is regarded as one of the most important works in mathematical logic of the 20th century.

In addition to his legacy as a co-writer of *Principia Mathematica*, Whitehead's theory of "extensive abstraction" is considered foundational for the branch of ontology and computer science known as "mereotopology", a theory describing spatial relations among wholes, parts, parts of parts, and the boundaries between parts.[51]

A Treatise on Universal Algebra

In *A Treatise on Universal Algebra* (1898) the term *universal algebra* had essentially the same meaning that it has today: the study of algebraic structures themselves, rather than examples ("models") of algebraic structures.[52] Whitehead credits William Rowan Hamilton and Augustus De Morgan as originators of the subject matter, and James Joseph Sylvester with coining the term itself.[52][53]

At the time structures such as Lie algebras and hyperbolic quaternions drew attention to the need to expand algebraic structures beyond the associatively multiplicative class. In a review Alexander Macfarlane wrote: "The main idea of the work is not unification of the several methods, nor generalization of ordinary algebra so as to include them, but rather the comparative study of their several structures."[54] In a separate review, G. B. Mathews wrote, "It possesses a unity of design which is really remarkable, considering the variety of its themes."[55]

A Treatise on Universal Algebra sought to examine Hermann Grassmann's theory of extension ("Ausdehnungslehre"), Boole's algebra of logic, and Hamilton's quaternions (this last number system was to be taken up in Volume II, which was never finished due to Whitehead's work on *Principia Mathematica*).[56] Whitehead wrote in the preface:

> Such algebras have an intrinsic value for separate detailed study; also they are worthy of comparative study, for the sake of the light thereby thrown on the general theory of symbolic reasoning, and on algebraic symbolism in particular ... The idea of a generalized conception of space has been made prominent, in the belief that the properties and operations involved in it can be made to form a uniform method of interpretation of the various algebras.[57]

Whitehead, however, had no results of a general nature.[52] His hope of "form[ing] a uniform method of interpretation of the various algebras" presumably would have been developed in Volume II, had Whitehead completed it. Further work on the subject was minimal until the early 1930s, when Garrett Birkhoff and Øystein Ore began publishing on universal algebras.[58]

Principia Mathematica

Principia Mathematica (1910–1913) is Whitehead's most famous mathematical work. Written with former student Bertrand Russell, *Principia Mathematica* is considered one of the twentieth century's most important works in mathematics, and placed 23rd in a list of the top 100 English-language nonfiction books of the twentieth century by Modern Library.[22]

Principia Mathematica's purpose was to describe a set of axioms and inference rules in symbolic logic from which all mathematical truths could in principle be proven. Whitehead and Russell were working on such a foundational level of mathematics and logic that it took them until page 86 of Volume II to prove that 1+1=2, a proof humorously accompanied by the comment, "The above proposition is occasionally useful."[59]
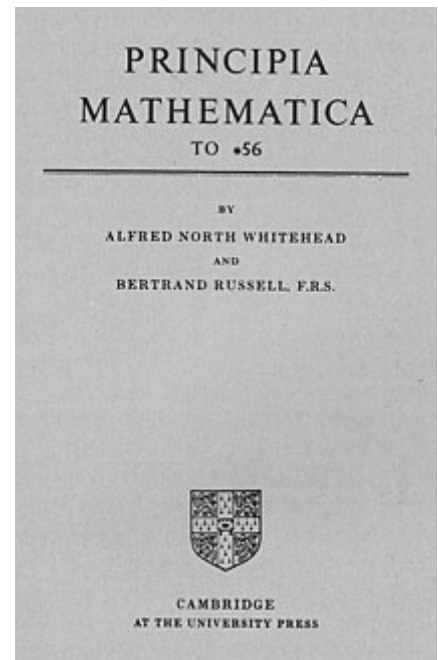
Whitehead and Russell had thought originally that *Principia Mathematica* would take a year to complete; it ended up taking them ten years.[60] When it came time for publication, the three-volume work was so long (more than 2,000 pages) and its audience so narrow (professional mathematicians) that it was initially published at a loss of 600 pounds, 300 of which was paid by Cambridge University Press, 200 by the Royal Society of London, and 50 apiece by Whitehead and Russell themselves.[60] Despite the initial loss, today there is likely no major academic library in the world which does not hold a copy of *Principia Mathematica*.[61]

The title page of the shortened version of the *Principia Mathematica to *56*

The ultimate substantive legacy of *Principia Mathematica* is mixed. It is generally accepted that Kurt Gödel's incompleteness theorem of 1931 definitively demonstrated that for any set of axioms and inference rules proposed to encapsulate mathematics, there would in fact be some truths of mathematics which could not be deduced from them, and hence that *Principia Mathematica* could never achieve its aims.[62] However, Gödel could not have come to this conclusion without Whitehead and Russell's book. In this way, *Principia Mathematica*'s legacy might be described as its key role in disproving the possibility of achieving its own stated goals.[63] But beyond this somewhat ironic legacy, the book popularized modern mathematical logic and drew important connections between logic, epistemology, and metaphysics.[64]

An Introduction to Mathematics

Unlike Whitehead's previous two books on mathematics, *An Introduction to Mathematics* (1911) was not aimed exclusively at professional mathematicians, but was intended for a larger audience. The book covered the nature of mathematics, its unity and internal structure, and its applicability to nature.[50] Whitehead wrote in the opening chapter:

> The object of the following Chapters is not to teach mathematics, but to enable students from the very beginning of their course to know what the science is about, and why it is necessarily the foundation of exact thought as applied to natural phenomena.[65]

The book can be seen as an attempt to understand the growth in unity and interconnection of mathematics as a whole, as well as an examination of the mutual influence of mathematics and philosophy, language, and physics.[66] Although the book is little-read, in some ways it prefigures certain points of Whitehead's later work in philosophy and metaphysics.[67]

Views on education

Whitehead showed a deep concern for educational reform at all levels. In addition to his numerous individually written works on the subject, Whitehead was appointed by Britain's Prime Minister David Lloyd George as part of a 20-person committee to investigate the educational systems and practices of the UK in 1921 and recommend reform.[68]

Whitehead's most complete work on education is the 1929 book *The Aims of Education and Other Essays*, which collected numerous essays and addresses by Whitehead on the subject published between 1912 and 1927. The essay from which *Aims of Education* derived its name was delivered as an address in 1916 when Whitehead was president of the London Branch of the Mathematical Association. In it, he cautioned against the teaching of what he called "inert ideas" – ideas that are disconnected scraps of information, with no application to real life or culture. He opined that "education with inert ideas is not only useless: it is, above all things, harmful."[69]

Rather than teach small parts of a large number of subjects, Whitehead advocated teaching a relatively few important concepts that the student could organically link to many different areas of knowledge, discovering their application in actual life.[70] For Whitehead, education should be the exact opposite of the multidisciplinary, value-free school model[69][71] – it should be *trans*disciplinary, and laden with values and general principles that provide students with a bedrock of wisdom and help them to make connections between areas of knowledge that are usually regarded as separate.

In order to make this sort of teaching a reality, however, Whitehead pointed to the need to minimize the importance of (or radically alter) standard examinations for school entrance. Whitehead writes:

> Every school is bound on pain of extinction to train its boys for a small set of definite examinations. No headmaster has a free hand to develop his general education or his specialist studies in accordance with the opportunities of his school, which are created by its staff, its environment, its class of boys, and its endowments. I suggest that no system of external tests which aims primarily at examining individual scholars can result in anything but educational waste.[72]

Whitehead argued that curriculum should be developed specifically for its own students by its own staff, or else risk total stagnation, interrupted only by occasional movements from one group of inert ideas to another.

Above all else in his educational writings, Whitehead emphasized the importance of imagination and the free play of ideas. In his essay "Universities and Their Function", Whitehead writes provocatively on imagination:

> Imagination is not to be divorced from the facts: it is a way of illuminating the facts. It works by eliciting the general principles which apply to the facts, as they exist, and then by an intellectual survey of alternative possibilities which are consistent with those principles. It enables men to construct an intellectual vision of a new world.[73]

Whitehead's philosophy of education might adequately be summarized in his statement that "knowledge does not keep any better than fish."[74] In other words, bits of disconnected knowledge are meaningless; all knowledge must find some imaginative application to the students' own lives, or else it becomes so much useless trivia, and the students themselves become good at parroting facts but not thinking for themselves.

Philosophy and metaphysics

Richard Rummell's 1906 watercolor landscape view of Harvard University, facing northeast.[75] Whitehead taught at Harvard from 1924 to 1937.

Whitehead did not begin his career as a philosopher.[26] In fact, he never had any formal training in philosophy beyond his undergraduate education. Early in his life he showed great interest in and respect for philosophy and metaphysics, but it is evident that he considered himself a rank amateur. In one letter to his friend and former student Bertrand Russell, after discussing whether science aimed to be explanatory or merely descriptive, he wrote: "This further question lands us in the ocean of metaphysic, onto which my profound ignorance of that science forbids me to enter."[76] Ironically, in later life Whitehead would become one of the 20th century's foremost metaphysicians.

However, interest in metaphysics – the philosophical investigation of the nature of the universe and existence – had become unfashionable by the time Whitehead began writing in earnest about it in the 1920s. The ever-more impressive accomplishments of empirical science had led to a general consensus in academia that the development of comprehensive metaphysical systems was a waste of time because they were not subject to empirical testing.[77]

Whitehead was unimpressed by this objection. In the notes of one of his students for a 1927 class, Whitehead was quoted as saying: "Every scientific man in order to preserve his reputation has to say he dislikes metaphysics. What he means is he dislikes having his metaphysics criticized."[78] In Whitehead's view, scientists and philosophers make metaphysical assumptions about how the universe works all the time, but such assumptions are not easily seen precisely because they remain unexamined and unquestioned. While Whitehead acknowledged that "philosophers can never hope finally to formulate these metaphysical first principles,"[79] he argued that people need to continually re-imagine their basic assumptions about how the universe works if philosophy and science are to make any real progress, even if that progress remains permanently asymptotic. For this reason Whitehead regarded metaphysical investigations as essential to both good science and good philosophy.[80]

Perhaps foremost among what Whitehead considered faulty metaphysical assumptions was the Cartesian idea that reality is fundamentally constructed of bits of matter that exist totally independently of one another, which he rejected in favor of an event-based or "process" ontology in which events are primary and are fundamentally interrelated and dependent on one another.[81] He also argued that the most basic elements of reality can all be regarded as experiential, indeed that everything is constituted by its experience. He used the term "experience" very broadly, so that even inanimate processes such as electron collisions are said to manifest some degree of experience. In this, he went against Descartes' separation of two different kinds of real existence, either exclusively material or else exclusively mental.[82] Whitehead referred to his metaphysical system as "philosophy of organism", but it would become known more widely as "process philosophy."[82]

Whitehead's philosophy was highly original, and soon garnered interest in philosophical circles. After publishing *The Concept of Nature* in 1920, he served as president of the Aristotelian Society from 1922 to 1923, and Henri Bergson was quoted as saying that Whitehead was "the best philosopher writing in English."[83] So impressive and different was Whitehead's philosophy that in 1924 he was invited to join the faculty at Harvard University as a professor of philosophy at 63 years of age.[43]

This is not to say that Whitehead's thought was widely accepted or even well understood. His philosophical work is generally considered to be among the most difficult to understand in all of the western canon.[24] Even professional philosophers struggled to follow Whitehead's writings. One famous story illustrating the level of difficulty of Whitehead's philosophy centres around the delivery of Whitehead's Gifford lectures in 1927–28 – following Arthur Eddington's lectures of the year previous – which Whitehead would later publish as *Process and Reality*:

Eckhart Hall at the University of Chicago. Beginning with the arrival of Henry Nelson Wieman in 1927, Chicago's Divinity School become closely associated with Whitehead's thought for about thirty years.[84]

> Eddington was a marvellous popular lecturer who had enthralled an audience of 600 for his entire course. The same audience turned up to Whitehead's first lecture but it was completely unintelligible, not merely to the world at large but to the elect. My father remarked to me afterwards that if he had not known Whitehead well he would have suspected that it was an imposter making it up as he went along ... The audience at subsequent lectures was only about half a dozen in all.[85]

Indeed, it may not be inappropriate to speculate that some fair portion of the respect generally shown to Whitehead by his philosophical peers at the time arose from their sheer bafflement. The Chicago theologian Shailer Mathews once remarked of Whitehead's 1926 book *Religion in the Making*: "It is infuriating, and I must say embarrassing as well, to read page after page of relatively familiar words without understanding a single sentence."[86]

However, Mathews' frustration with Whitehead's books did not negatively affect his interest. In fact, there were numerous philosophers and theologians at Chicago's Divinity School that perceived the importance of what Whitehead was doing without fully grasping all of the details and implications. In 1927 they invited one of America's only Whitehead experts, Henry Nelson Wieman, to Chicago to give a lecture explaining Whitehead's thought.[86] Wieman's lecture was so brilliant that he was promptly hired to the faculty and taught there for twenty years, and for at least thirty years afterward Chicago's Divinity School was closely associated with Whitehead's thought.[84]

Shortly after Whitehead's book *Process and Reality* appeared in 1929, Wieman famously wrote in his 1930 review:

> Not many people will read Whitehead's recent book in this generation; not many will read it in any generation. But its influence will radiate through concentric circles of popularization until the common man will think and work in the light of it, not knowing whence the light came. After a few decades of discussion and analysis one will be able to understand it more readily than can now be done.[87]

Wieman's words proved prophetic. Though *Process and Reality* has been called "arguably the most impressive single metaphysical text of the twentieth century,"[88] it has been little-read and little-understood, partly because it demands – as Isabelle Stengers puts it – "that its readers accept the adventure of the questions that will separate them from every consensus."[89] Whitehead questioned western philosophy's most dearly held assumptions about how the universe works, but in doing so he managed to anticipate a number of 21st century scientific and philosophical problems and provide novel solutions.[90]

Whitehead's conception of reality

Whitehead was convinced that the scientific notion of matter was misleading as a way of describing the ultimate nature of things. In his 1925 book *Science and the Modern World*, he wrote that

> There persists ... [a] fixed scientific cosmology which presupposes the ultimate fact of an irreducible brute matter, or material, spread through space in a flux of configurations. In itself such a material is senseless, valueless, purposeless. It just does what it does do, following a fixed routine imposed by external relations which do not spring from the nature of its being. It is this assumption that I call "scientific materialism." Also it is an assumption which I shall challenge as being entirely unsuited to the scientific situation at which we have now arrived.[81]

In Whitehead's view, there are a number of problems with this notion of "irreducible brute matter". First, it obscures and minimizes the importance of change. By thinking of any material thing (like a rock, or a person) as being fundamentally the *same* thing throughout time, with any changes to it being secondary to its "nature", scientific materialism hides the fact that nothing ever stays the same. For Whitehead, change is fundamental and inescapable; he emphasizes that "all things flow."[91]

In Whitehead's view, then, concepts such as "quality", "matter", and "form" are problematic. These "classical" concepts fail to adequately account for change, and overlook the active and experiential nature of the most basic elements of the world. They are useful abstractions, but are not the world's basic building blocks.[92] What is ordinarily conceived of as a single person, for instance, is philosophically described as a continuum of overlapping events.[93] After all, people change all the time, if only because they have aged by another second and had some further experience. These occasions of experience are logically distinct, but are progressively connected in what Whitehead calls a "society" of events.[94] By assuming that enduring objects are the most real and fundamental things in the universe, materialists have mistaken the abstract for the concrete (what Whitehead calls the "fallacy of misplaced concreteness").[82][95]

To put it another way, a thing or person is often seen as having a "defining essence" or a "core identity" that is unchanging, and describes what the thing or person *really is*. In this way of thinking, things and people are seen as fundamentally the same through time, with any changes being qualitative and secondary to their core identity (e.g. "Mark's hair has turned gray as he has gotten older, but he is still the same person"). But in Whitehead's cosmology, the only fundamentally existent things are discrete "occasions of experience" that overlap one another in time and space, and jointly make up the enduring person or thing. On the other hand, what ordinary thinking often regards as "the essence of a thing" or "the identity/core of a person" is an abstract generalization of what is regarded as that person or thing's most important or salient features across time. Identities do not define people, people define identities. Everything changes from moment to moment, and to think of anything as having an "enduring essence" misses the fact that "all things flow", though it is often a useful way of speaking.

Whitehead pointed to the limitations of language as one of the main culprits in maintaining a materialistic way of thinking, and acknowledged that it may be difficult to ever wholly move past such ideas in everyday speech.[96] After all, each moment of each person's life can hardly be given a different proper name, and it is easy and convenient to think of people and objects as remaining fundamentally the same things, rather than constantly keeping in mind that each thing is a different thing from what it was a moment ago. Yet the limitations of everyday living and everyday speech should not prevent people from realizing that "material substances" or "essences" are a convenient generalized description of a continuum of particular, concrete processes. No one questions that a ten-year-old person is quite different by the time he or she turns thirty years old, and in many ways is not the same person at all; Whitehead points out that it is not philosophically or ontologically sound to think that a person is the same from one second to the next.

A second problem with materialism is that it obscures the importance of *relations*. It sees every object as distinct and discrete from all other objects. Each object is simply an inert clump of matter that is only *externally* related to other things. The idea of matter as primary makes people think of objects as being fundamentally separate in time and space, and not necessarily related to anything. But in Whitehead's view, relations take a primary role, perhaps even more important than the relata themselves.[97] A

John Locke was one of Whitehead's primary influences. In the preface to *Process and Reality*, Whitehead wrote: "The writer who most fully anticipated the main positions of the philosophy of organism is John Locke in his Essay."[5]

student taking notes in one of Whitehead's fall 1924 classes wrote that, "Reality applies to *connections*, and only relatively to the things connected. (A) is real for (B), and (B) is real for (A), but [they are] not absolutely real independent of each other."[98] In fact, Whitehead describes any entity as in some sense nothing more and nothing less than the sum of its relations to other entities – its *synthesis of* and *reaction to* the world around it.[99] A real thing is just that which forces the rest of the universe to in some way conform to it; that is to say, if theoretically a thing made strictly no difference to any other entity (i.e. it was not *related* to any other entity), it could not be said to really exist.[100] Relations are not secondary to what a thing is, they *are* what the thing is.

It must be emphasized, however, that an entity is not *merely* a sum of its relations, but also a valuation of them and reaction to them.[101] For Whitehead, creativity is the absolute principle of existence, and every entity (whether it is a human being, a tree, or an electron) has some degree of novelty in how it responds to other entities, and is not fully determined by causal or mechanistic laws.[102] Of course, most entities do not have consciousness.[103] As a human being's actions cannot always be predicted, the same can be said of where a tree's roots will grow, or how an electron will move, or whether it will rain tomorrow. Moreover, inability to predict an electron's movement (for instance) is not due to faulty understanding or inadequate technology; rather, the fundamental creativity/freedom of all entities means that there will always remain phenomena that are unpredictable.[104]

The other side of creativity/freedom as the absolute principle is that every entity is constrained by the social structure of existence (i.e., its relations) – each actual entity must conform to the settled conditions of the world around it.[100] Freedom always exists within limits. But an entity's uniqueness and individuality arise from its own self-determination as to just how it will take account of the world within the limits that have been set for it.[105]

In summary, Whitehead rejects the idea of separate and unchanging bits of matter as the most basic building blocks of reality, in favor of the idea of reality as interrelated events in process. He conceives of reality as composed of processes of dynamic "becoming" rather than static "being", emphasizing that all physical things change and evolve, and that changeless "essences" such as matter are mere abstractions from the interrelated events that are the final real things that make up the world.[82]

Theory of perception

Since Whitehead's metaphysics described a universe in which all entities experience, he needed a new way of describing perception that was not limited to living, self-conscious beings. The term he coined was "prehension", which comes from the Latin *prehensio*, meaning "to seize".[106] The term is meant to indicate a kind of perception that can be conscious or unconscious, applying to people as well as electrons. It is also intended to make clear Whitehead's rejection of the theory of *representative* perception, in which the mind only has private ideas about other entities.[106] For Whitehead, the term "prehension" indicates that the perceiver actually incorporates aspects of the perceived thing into itself.[106] In this way, entities are constituted by their perceptions and relations, rather than being independent of them. Further, Whitehead regards perception as occurring in two modes, *causal efficacy* (or "physical prehension") and *presentational immediacy* (or "conceptual prehension").[103]

Whitehead describes causal efficacy as "the experience dominating the primitive living organisms, which have a sense for the fate from which they have emerged, and the fate towards which they go."[107] It is, in other words, the sense of causal relations between entities, a feeling of being influenced and affected by the surrounding environment, unmediated by the senses.

Presentational immediacy, on the other hand, is what is usually referred to as "pure sense perception", unmediated by any causal or symbolic interpretation, even unconscious interpretation. In other words, it is pure appearance, which may or may not be delusive (e.g. mistaking an image in a mirror for "the real thing").[108]

In higher organisms (like people), these two modes of perception combine into what Whitehead terms "symbolic reference", which links appearance with causation in a process that is so automatic that both people and animals have difficulty refraining from it. By way of illustration, Whitehead uses the example of a person's encounter with a chair. An ordinary person looks up, sees a colored shape, and immediately infers that it is a chair. However, an artist, Whitehead supposes, "might not have jumped to the notion of a chair", but instead "might have stopped at the mere contemplation of a beautiful color and a beautiful shape."[109] This is not the normal human reaction; most people place objects in categories by habit and instinct, without even thinking about it. Moreover, animals do the same thing. Using the same example, Whitehead points out that a dog "would have acted immediately on the hypothesis of a chair and would have jumped onto it by way of using it as such."[110] In this way symbolic reference is a fusion of pure sense perceptions on the one hand and causal relations on the other, and that it is in fact the causal relationships that dominate the more basic mentality (as the dog illustrates), while it is the sense perceptions which indicate a higher grade mentality (as the artist illustrates).[111]

Evolution and value

Whitehead believed that when asking questions about the basic facts of existence, questions about value and purpose can never be fully escaped. This is borne out in his thoughts on abiogenesis, or the hypothetical natural process by which life arises from simple organic compounds.

Whitehead makes the startling observation that "life is comparatively deficient in survival value."[112] If humans can only exist for about a hundred years, and rocks for eight hundred million, then one is forced to ask why complex organisms ever evolved in the first place; as Whitehead humorously notes, "they certainly did not appear because they were better at that game than the rocks around them."[113] He then observes that the mark of higher forms of life is that they are actively engaged in modifying their environment, an activity which he theorizes is directed toward the three-fold goal of living, living well, and living better.[114] In other words, Whitehead sees life as directed toward the purpose of increasing its own satisfaction. Without such a goal, he sees the rise of life as totally unintelligible.

For Whitehead, there is no such thing as wholly inert matter. Instead, all things have some measure of freedom or creativity, however small, which allows them to be at least partly self-directed. The process philosopher David Ray Griffin coined the term "panexperientialism" (the idea that all entities experience) to describe Whitehead's view, and to distinguish it from panpsychism (the idea that all matter has consciousness).[115]

God

Whitehead's idea of God differs from traditional monotheistic notions.[116] Perhaps his most famous and pointed criticism of the Christian conception of God is that "the Church gave unto God the attributes which belonged exclusively to Caesar."[117] Here Whitehead is criticizing Christianity for defining God as primarily a divine king who imposes his will on the world, and whose most important attribute is power. As opposed to the most widely accepted forms of Christianity, Whitehead emphasized an idea of God that he called "the brief Galilean vision of humility":
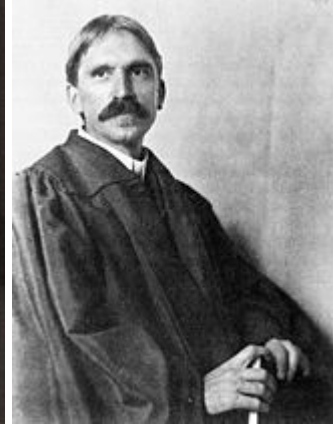
> It does not emphasize the ruling Caesar, or the ruthless moralist, or the unmoved mover. It dwells upon the tender elements in the world, which slowly and in quietness operates by love; and it finds purpose in the present immediacy of a kingdom not of this world. Love neither rules, nor is it unmoved; also it is a little oblivious as to morals. It does not look to the future; for it finds its own reward in the immediate present.[118]
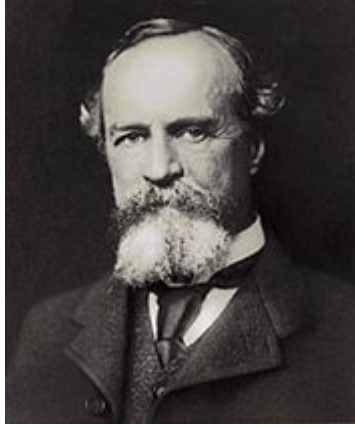
Henri Bergson   William James   John Dewey

"I am also greatly indebted to Bergson, William James, and John Dewey. One of my preoccupations has been to rescue their type of thought from the charge of anti-intellectualism, which rightly or wrongly has been associated with it." – Alfred North Whitehead, *Process and Reality*, preface.[3]

It should be emphasized that for Whitehead, God is not necessarily tied to religion.[119] Rather than springing primarily from religious faith, Whitehead saw God as necessary for his metaphysical system.[119] His system required that an order exist among possibilities, an order that allowed for novelty in the world and provided an aim to all entities. Whitehead posited that these ordered potentials exist in what he called the *primordial nature* of God. However, Whitehead was also interested in religious experience. This led him to reflect more intensively on what he saw as the second nature of God, the *consequent nature*. Whitehead's conception of God as a "dipolar"[120] entity has called for fresh theological thinking.

The primordial nature he described as "the unlimited conceptual realization of the absolute wealth of potentiality,"[118] i.e., the unlimited possibility of the universe. This primordial nature is eternal and unchanging, providing entities in the universe with possibilities for realization. Whitehead also calls this primordial aspect "the lure for feeling, the eternal urge of desire,"[121] pulling the entities in the universe toward as-yet unrealized possibilities.

God's consequent nature, on the other hand, is anything but unchanging – it is God's reception of the world's activity. As Whitehead puts it, "[God] saves the world as it passes into the immediacy of his own life. It is the judgment of a tenderness which loses nothing that can be saved."[122] In other words, God saves and cherishes all experiences forever, and those experiences go on to change the way God interacts with the world. In this way, God is really changed by what happens in the world and the wider universe, lending the actions of finite creatures an eternal significance.

Whitehead thus sees God and the world as fulfilling one another. He sees entities in the world as fluent and changing things that yearn for a permanence which only God can provide by taking them into God's self, thereafter changing God and affecting the rest of the universe throughout time. On the other hand, he sees God as permanent but as deficient in actuality and change: alone, God is merely eternally unrealized possibilities, and requires the world to actualize them. God gives creatures permanence, while the creatures give God actuality and change. Here it is worthwhile to quote Whitehead at length:

> "In this way God is completed by the individual, fluent satisfactions of finite fact, and the temporal occasions are completed by their everlasting union with their transformed selves, purged into conformation with the eternal order which is the final absolute 'wisdom.' The final summary can only be expressed in terms of a group of antitheses, whose apparent self-contradictions depend on neglect of the diverse categories of existence. In each antithesis there is a shift of meaning which converts the opposition into a contrast.
>
> "It is as true to say that God is permanent and the World fluent, as that the World is permanent and God is fluent.
>
> "It is as true to say that God is one and the World many, as that the World is one and God many.

> "It is as true to say that, in comparison with the World, God is actual eminently, as that, in comparison with God, the World is actual eminently.
>
> "It is as true to say that the World is immanent in God, as that God is immanent in the World.
>
> "It is as true to say that God transcends the World, as that the World transcends God.
>
> "It is as true to say that God creates the World, as that the World creates God ...
>
> "What is done in the world is transformed into a reality in heaven, and the reality in heaven passes back into the world ... In this sense, God is the great companion – the fellow-sufferer who understands."[123]

The above is some of Whitehead's most evocative writing about God, and was powerful enough to inspire the movement known as process theology, a vibrant theological school of thought that continues to thrive today.[124][125]

Religion

For Whitehead the core of religion was individual. While he acknowledged that individuals cannot ever be fully separated from their society, he argued that life is an internal fact for its own sake before it is an external fact relating to others.[126] His most famous remark on religion is that "religion is what the individual does with his own solitariness ... and if you are never solitary, you are never religious."[127] Whitehead saw religion as a system of general truths that transformed a person's character.[128] He took special care to note that while religion is often a good influence, it is not *necessarily* good – an idea which he called a "dangerous delusion" (e.g., a religion might encourage the violent extermination of a rival religion's adherents).[129]

However, while Whitehead saw religion as *beginning* in solitariness, he also saw religion as necessarily expanding beyond the individual. In keeping with his process metaphysics in which relations are primary, he wrote that religion necessitates the realization of "the value of the objective world which is a community derivative from the interrelations of its component individuals."[130] In other words, the universe is a community which makes itself whole through the relatedness of each individual entity to all the others – meaning and value do not exist for the individual alone, but only in the context of the universal community. Whitehead writes further that each entity "can find no such value till it has merged its individual claim with that of the objective universe. Religion is world-loyalty. The spirit at once surrenders itself to this universal claim and appropriates it for itself."[131] In this way the individual and universal/social aspects of religion are mutually dependent.

Whitehead also described religion more technically as "an ultimate craving to infuse into the insistent particularity of emotion that non-temporal generality which primarily belongs to conceptual thought alone."[132] In other words, religion takes deeply felt emotions and contextualizes them within a system of general truths about the world, helping people to identify their wider meaning and significance. For Whitehead, religion served as a kind of bridge between philosophy and the emotions and purposes of a particular society.[133] It is the task of religion to make philosophy applicable to the everyday lives of ordinary people.

Influence and legacy

Isabelle Stengers wrote that "Whiteheadians are recruited among both philosophers and theologians, and the palette has been enriched by practitioners from the most diverse horizons, from ecology to feminism, practices that unite political struggle and spirituality with the sciences of education."[89] Indeed, in recent decades attention to Whitehead's work has become more widespread, with interest extending to intellectuals in Europe and China, and coming from such diverse fields as ecology, physics, biology, education, economics, and psychology. One of the first theologians to attempt to interact with Whitehead's thought was the future Archbishop of Canterbury, William Temple. In Temple's Gifford Lectures of 1932-1934 (subsequently published as "Nature, Man and God"), Whitehead is one of a number of philosophers of the emergent evolution approach Temple

interacts with.[134] However, it was not until the 1970s and 1980s that Whitehead's thought drew much attention outside of a small group of philosophers and theologians, primarily Americans, and even today he is not considered especially influential outside of relatively specialized circles.

Early followers of Whitehead were found primarily at the University of Chicago Divinity School, where Henry Nelson Wieman initiated an interest in Whitehead's work that would last for about thirty years.[84] Professors such as Wieman, Charles Hartshorne, Bernard Loomer, Bernard Meland, and Daniel Day Williams made Whitehead's philosophy arguably the most important intellectual thread running through the divinity school.[135] They taught generations of Whitehead scholars, the most notable of whom is John B. Cobb.

Although interest in Whitehead has since faded at Chicago's divinity school, Cobb effectively grabbed the torch and planted it firmly in Claremont, California, where he began teaching at Claremont School of Theology in 1958 and founded the Center for Process Studies with David Ray Griffin in 1973.[136] Largely due to Cobb's influence, today Claremont remains strongly identified with Whitehead's process thought.[137][138]

But while Claremont remains the most concentrated hub of Whiteheadian activity, the place where Whitehead's thought currently seems to be growing the most quickly is in China. In order to address the challenges of modernization and industrialization, China has begun to blend traditions of Taoism, Buddhism, and Confucianism with Whitehead's "constructive post-modern" philosophy in order to create an "ecological civilization".[71] To date, the Chinese government has encouraged the building of twenty-three university-based centres for the study of Whitehead's philosophy,[71][139] and books by process philosophers John Cobb and David Ray Griffin are becoming required reading for Chinese graduate students.[71] Cobb has attributed China's interest in process philosophy partly to Whitehead's stress on the mutual interdependence of humanity and nature, as well as his emphasis on an educational system that includes the teaching of values rather than simply bare facts.[71]

Overall, however, Whitehead's influence is very difficult to characterize. In English-speaking countries, his primary works are little-studied outside of Claremont and a select number of liberal graduate-level theology and philosophy programs. Outside of these circles his influence is relatively small and diffuse, and has tended to come chiefly through the work of his students and admirers rather than Whitehead himself.[140] For instance, Whitehead was a teacher and long-time friend and collaborator of Bertrand Russell, and he also taught and supervised the dissertation of Willard Van Orman Quine,[141] both of whom are important figures in analytic philosophy – the dominant strain of philosophy in English-speaking countries in the 20th century.[142] Whitehead has also had high-profile admirers in the continental tradition, such as French post-structuralist philosopher Gilles Deleuze, who once dryly remarked of Whitehead that "he stands provisionally as the last great Anglo-American philosopher before Wittgenstein's disciples spread their misty confusion, sufficiency, and terror."[143] French sociologist and anthropologist Bruno Latour even went so far as to call Whitehead "the greatest philosopher of the 20th century."[144]

Deleuze's and Latour's opinions, however, are minority ones, as Whitehead has not been recognized as particularly influential within the most dominant philosophical schools.[145] It is impossible to say exactly why Whitehead's influence has not been more widespread, but it may be partly due to his metaphysical ideas seeming somewhat counter-intuitive (such as his assertion that matter is an abstraction), or his inclusion of theistic elements in his philosophy,[146] or the perception of metaphysics itself as passé, or simply the sheer difficulty and density of his prose.[24]

Process philosophy and theology

Historically Whitehead's work has been most influential in the field of American progressive theology.[124][138] The most important early proponent of Whitehead's thought in a theological context was Charles Hartshorne, who spent a semester at Harvard as Whitehead's teaching assistant in 1925, and is widely credited with developing Whitehead's process philosophy into a full-blown process theology.[147] Other notable process theologians include John B. Cobb, David Ray Griffin, Marjorie Hewitt Suchocki, C. Robert Mesle, Roland Faber, and Catherine Keller.

Philosopher Nicholas Rescher. Rescher is a proponent of both Whiteheadian process philosophy and American pragmatism.

Process theology typically stresses God's relational nature. Rather than seeing God as impassive or emotionless, process theologians view God as "the fellow sufferer who understands", and as the being who is supremely affected by temporal events.[148] Hartshorne points out that people would not praise a human ruler who was unaffected by either the joys or sorrows of his followers – so why would this be a praise-worthy quality in God?[149] Instead, as the being who is most affected by the world, God is the being who can most appropriately respond to the world. However, process theology has been formulated in a wide variety of ways. C. Robert Mesle, for instance, advocates a "process naturalism", i.e. a process theology without God.[150]

In fact, process theology is difficult to define because process theologians are so diverse and transdisciplinary in their views and interests. John B. Cobb is a process theologian who has also written books on biology and economics. Roland Faber and Catherine Keller integrate Whitehead with poststructuralist, postcolonialist, and feminist theory. Charles Birch was both a theologian and a geneticist. Franklin I. Gamwell writes on theology and political theory. In *Syntheism - Creating God in The Internet Age*, futurologists Alexander Bard and Jan Söderqvist repeatedly credit Whitehead for the process theology they see rising out of the participatory culture expected to dominate the digital era.

Process philosophy is even more difficult to pin down than process theology. In practice, the two fields cannot be neatly separated. The 32-volume State University of New York series in constructive postmodern thought edited by process philosopher and theologian David Ray Griffin displays the range of areas in which different process philosophers work, including physics, ecology, medicine, public policy, nonviolence, politics, and psychology.[151]

One philosophical school which has historically had a close relationship with process philosophy is American pragmatism. Whitehead himself thought highly of William James and John Dewey, and acknowledged his indebtedness to them in the preface to *Process and Reality*.[3] Charles Hartshorne (along with Paul Weiss) edited the collected papers of Charles Sanders Peirce, one of the founders of pragmatism. Noted neopragmatist Richard Rorty was in turn a student of Hartshorne.[152] Today, Nicholas Rescher is one example of a philosopher who advocates both process philosophy and pragmatism.

In addition, while they might not properly be called process philosophers, Whitehead has been influential in the philosophy of Gilles Deleuze, Milič Čapek, Isabelle Stengers, Bruno Latour, Susanne Langer, and Maurice Merleau-Ponty.
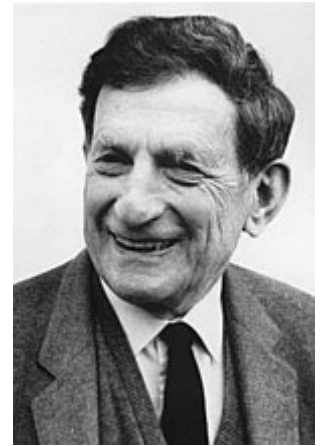
Science

Scientists of the early 20th century for whom Whitehead's work has been influential include physical chemist Ilya Prigogine, biologist Conrad Hal Waddington, and geneticists Charles Birch and Sewall Wright.[18] Henry Murray dedicated his "Explorations in Personality" to Whitehead, a contemporary at Harvard.

In physics, Whitehead's theory of gravitation articulated a view that might perhaps be regarded as dual to Einstein's general relativity. It has been severely criticized.[154][155] Yutaka Tanaka suggested that the gravitational constant disagrees with experimental findings, and proposed that Einstein's work does not actually refute Whitehead's formulation.[156] Whitehead's view has now been rendered obsolete, with the discovery of gravitational waves, phenomena observed locally that largely violate the kind of local flatness of space that Whitehead assumes. Consequently, Whitehead's cosmology must be regarded as a local approximation, and his assumption of a uniform spatio-temporal geometry, Minkowskian in particular, as an often-locally-adequate approximation. An exact replacement of Whitehead's cosmology would need to admit a Riemannian geometry. Also,

although Whitehead himself gave only secondary consideration to quantum theory, his metaphysics of processes has proved attractive to some physicists in that field. Henry Stapp and David Bohm are among those whose work has been influenced by Whitehead.[153]

In the 21 st century, Whiteheadian thought is still a stimulating influence: Timothy E. Eastman and Hank Keeton's *Physics and Whitehead* (2004)[157] and Michael Epperson's *Quantum Mechanics and the Philosophy of Alfred North Whitehead* (2004)[158] and *Foundations of Relational Realism: A Topological Approach to Quantum Mechanics and the Philosophy of Nature* (2013),[159] aim to offer Whiteheadian approaches to physics. Brian G. Henning, Adam Scarfe, and Dorion Sagan's *Beyond Mechanism* (2013) and Rupert Sheldrake's *Science Set Free* (2012) are examples of Whiteheadian approaches to biology.

Theoretical physicist David Bohm. Bohm is one example of a scientist influenced by Whitehead's philosophy.[153]

Ecology, economy, and sustainability

Theologian, philosopher, and environmentalist John B. Cobb founded the Center for Process Studies in Claremont, California with David Ray Griffin in 1973, and is often regarded as the preeminent scholar in the field of process philosophy and process theology.[160][161][162][163]

One of the most promising applications of Whitehead's thought in recent years has been in the area of ecological civilization, sustainability, and environmental ethics.

"Because Whitehead's holistic metaphysics of value lends itself so readily to an ecological point of view, many see his work as a promising alternative to the traditional mechanistic worldview, providing a detailed metaphysical picture of a world constituted by a web of interdependent relations."[24]

This work has been pioneered by John B. Cobb, whose book *Is It Too Late? A Theology of Ecology* (1971) was the first single-authored book in environmental ethics.[164] Cobb also co-authored a book with leading ecological economist and steady-state theorist Herman Daly entitled *For the Common Good: Redirecting the Economy toward Community, the Environment, and a Sustainable Future* (1989), which applied Whitehead's thought to economics, and received the Grawemeyer Award for Ideas Improving World Order. Cobb followed this with a second book, *Sustaining the Common Good: A Christian Perspective on the Global Economy* (1994), which aimed to challenge "economists' zealous faith in the great god of growth."[165]

Education

Whitehead is widely known for his influence in education theory. His philosophy inspired the formation of the Association for Process Philosophy of Education (APPE), which published eleven volumes of a journal titled *Process Papers* on process philosophy and education from 1996 to 2008.[166] Whitehead's theories on education also led to the formation of new modes of learning and new models of teaching.

One such model is the ANISA model developed by Daniel C. Jordan, which sought to address a lack of understanding of the nature of people in current education systems. As Jordan and Raymond P. Shepard put it: "Because it has not defined the nature of man, education is in the untenable position of having to devote its energies to the development of curricula without any coherent ideas about the nature of the creature for whom they are intended."[167]

Another model is the FEELS model developed by Xie Bangxiu and deployed successfully in China. "FEELS" stands for five things in curriculum and education: Flexible-goals, Engaged-learner, Embodied-knowledge, Learning-through-interactions, and Supportive-teacher.[168] It is used for understanding and evaluating educational curriculum under the assumption that the purpose of education is to "help a person become whole." This work is in part the product of cooperation between Chinese government organizations and the Institute for the Postmodern Development of China.[71]

Whitehead's philosophy of education has also found institutional support in Canada, where the University of Saskatchewan created a Process Philosophy Research Unit and sponsored several conferences on process philosophy and education.[169] Howard Woodhouse at the University of Saskatchewan remains a strong proponent of Whiteheadian education.[170]

Three recent books which further develop Whitehead's philosophy of education include: *Modes of Learning: Whitehead's Metaphysics and the Stages of Education* (2012) by George Allan; and *The Adventure of Education: Process Philosophers on Learning, Teaching, and Research* (2009) by Adam Scarfe, and "Educating for an Ecological Civilization: Interdisciplinary, Experiential, and Relational Learning" (2017) edited by Marcus Ford and Stephen Rowe. "Beyond the Modern University: Toward a Constructive Postmodern University," (2002) is another text that explores the importance of Whitehead's metaphysics for thinking about higher education.

Business administration

Whitehead has had some influence on philosophy of business administration and organizational theory. This has led in part to a focus on identifying and investigating the effect of temporal events (as opposed to static things) within organizations through an "organization studies" discourse that accommodates a variety of 'weak' and 'strong' process perspectives from a number of philosophers.[171] One of the leading figures having an explicitly Whiteheadian and panexperientialist stance towards management is Mark Dibben,[172] who works in what he calls "applied process thought" to articulate a philosophy of management and business administration as part of a wider examination of the social sciences through the lens of process metaphysics. For Dibben, this allows "a comprehensive exploration of life as perpetually active experiencing, as opposed to occasional – and thoroughly passive – happening."[173] Dibben has published two books on applied process thought, *Applied Process Thought I: Initial Explorations in Theory and Research (https://www.academia.edu/6359574/Mark_Dibben_and_Thomas_Kelly_eds._Applied_Process_Thought_I_Initial_Explorations_in_Theory_and_Research_2008)* (2008), and *Applied Process Thought II: Following a Trail Ablaze (https://www.academia.edu/6359614/Mark_Dibben_and_Rebecca_Newton_eds._Applied_Process_Thought_II_Following_a_Trail_Ablaze_2009)* (2009), as well as other papers in this vein in the fields of philosophy of management and business ethics.[174]

Margaret Stout and Carrie M. Staton have also written recently on the mutual influence of Whitehead and Mary Parker Follett, a pioneer in the fields of organizational theory and organizational behavior. Stout and Staton see both Whitehead and Follett as sharing an ontology that "understands becoming as a relational process; difference as being related, yet unique; and the purpose of becoming as harmonizing difference."[175] This connection is further analyzed by Stout and Jeannine M. Love in *Integrative Process: Follettian Thinking from Ontology to Administration*[176]

Political views

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.[177]

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."[178]

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See also

- Great refusal
- Relationalism

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Further reading

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External links

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- Center for Process Studies (http://www.ctr4process.org) in Claremont, California. A faculty research center of Claremont School of Theology, in association with Claremont Graduate University. The Center organizes conferences and events and publishes materials pertaining to Whitehead and process thought. It also maintains extensive Whitehead-related bibliographies.
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Process philosophy

Process philosophy — also **ontology of becoming**, **processism**,[1] or **philosophy of organism**[2] — identifies metaphysical reality with change. In opposition to the classical model of change as illusory (as argued by Parmenides) or accidental (as argued by Aristotle), process philosophy regards change as the cornerstone of reality—the cornerstone of being thought of as becoming.

Since the time of Plato and Aristotle, some philosophers have posited true reality as "timeless", based on permanent substances, while 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.[3]

Philosophers who appeal to process rather than substance include Heraclitus, Karl Marx,[4] Friedrich Nietzsche, Henri Bergson, Martin Heidegger, Charles Sanders Peirce, William James, Alfred North Whitehead, Alfred Korzybski, R. G. Collingwood, Alan Watts, Robert M. Pirsig, Roberto Mangabeira Unger, Charles Hartshorne, Arran Gare, Nicholas Rescher, Colin Wilson, Jacques Derrida, and Gilles Deleuze. In physics, Ilya Prigogine[5] distinguishes between the "physics of being" and the "physics of becoming". Process philosophy covers not just scientific intuitions and experiences, but can be used as a conceptual bridge to facilitate discussions among religion, philosophy, and science.[6][7]

Process philosophy is sometimes classified as closer to Continental philosophy than analytic philosophy, because it is usually only taught in Continental departments.[8] However, other sources state that process philosophy should be placed somewhere in the middle between the poles of analytic versus Continental methods in contemporary philosophy.[9][10]

Contents

History

In ancient Greek thought

Heraclitus proclaimed that the basic nature of all things is change.

The quotation from Heraclitus appears in Plato's *Cratylus* twice; in 401d as:[11]

> τὰ ὄντα ἰέναι τε πάντα καὶ μένειν οὐδέν
> *Ta onta ienai te panta kai menein ouden*
> "All entities move and nothing remains still"

and in 402a[12]

> "πάντα χωρεῖ καὶ οὐδὲν μένει" καὶ "δὶς 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"[13]

Heraclitus considered fire as the most fundamental element.

> "All things are an interchange for fire, and fire for all things, just like goods for gold and gold for goods."[14]

The following is an interpretation of Heraclitus's concepts into modern terms by Nicholas Rescher.

> "...reality is not a constellation of things at all, but one of processes. The fundamental "stuff" of the world is not material substance, but volatile flux, namely "fire", and all things are versions thereof (puros tropai). Process is fundamental: the river is not an object, but a continuing flow; the sun is not a thing, but an enduring fire. Everything is a matter of process, of activity, of change (panta rhei)."[15]

An early expression of this viewpoint is in Heraclitus's fragments. He posits strife, ἡ ἔρις (strife, conflict), as the underlying basis of all reality defined by change.[16] The balance and opposition in strife were the foundations of change and stability in the flux of existence.

Twentieth century

In early twentieth century, the philosophy of mathematics 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 facilitate, this program with their seminal book Principia Mathematica, which purported to build a logically consistent set theory on which to found mathematics. After this, Whitehead extended his interest to natural

science, which he held needed a deeper philosophical basis. He intuited that natural science was struggling to overcome a traditional ontology of timeless material substances that does not suit natural phenomena. According to Whitehead, material is more properly understood as 'process'. In 1929, he produced the most famous work of process philosophy, *Process and Reality*,[17] continuing the work begun by Hegel but describing a more complex and fluid dynamic ontology.

Process thought describes truth as "movement" in and through substance (Hegelian truth), rather than substances as fixed concepts or "things" (Aristotelian truth). Since Whitehead, process thought is distinguished from Hegel in that it describes entities that arise or coalesce in *becoming*, rather than being simply dialectically determined from prior posited determinates. These entities are referred to as *complexes of occasions of experience*. 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, i.e., those aspects not befitting 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*

Alfred North Whitehead began teaching and writing on process and metaphysics when he joined Harvard University in 1924.[18]

In his book *Science and the Modern World* (1925), Whitehead noted that the human intuitions and experiences of science, aesthetics, ethics, and religion influence the worldview of a community, but that in the last several centuries science dominates Western culture. Whitehead sought a holistic, comprehensive cosmology that provides a systematic descriptive theory of the world which can be used for the diverse human intuitions gained through ethical, aesthetic, religious, and scientific experiences, and not just the scientific.[6]

Whitehead's influences were not restricted to philosophers or physicists or mathematicians. He was influenced by the French philosopher Henri Bergson (1859–1941), whom he credits along with William James and John Dewey in the preface to *Process and Reality*.[17]

Process metaphysics

For Whitehead, metaphysics is about logical frameworks for the conduct of discussions of the character of the world. It is not directly and immediately about facts of nature, but only indirectly so, in that its task is to explicitly formulate the language and conceptual presuppositions that are used to describe the facts of nature. Whitehead thinks that discovery of previously unknown facts of nature can in principle call for reconstruction of metaphysics.[19]

The process metaphysics elaborated in *Process and Reality*[17] posits an ontology which is based on the two kinds of existence of an entity, that of actual entity and that of abstract entity or abstraction, also called 'object'.[20]

Actual entity is a term coined by Whitehead to refer to the entities that really exist in the natural world.[21] For Whitehead, actual entities are spatiotemporally extended events or processes.[22] An actual entity is how something is happening, and how its happening is related to other actual entities.[22] The actually existing world is a multiplicity of actual entities overlapping one another.[22]

The ultimate abstract principle of actual existence for Whitehead is **creativity**. Creativity is a term coined by Whitehead to show a power in the world that allows the presence of an actual entity, a new actual entity, and multiple actual entities.[22] Creativity is the principle of novelty.[21] It is manifest in what can be called 'singular causality'. This term may be contrasted with the term 'nomic causality'. An example of singular causation is that I woke this morning because my alarm clock rang. An example of nomic causation is that alarm clocks generally wake people in the morning. Aristotle recognizes singular causality as efficient causality. For Whitehead, there are many contributory singular causes for an event. A further contributory singular cause of my being awoken by my alarm clock this morning was that I was lying asleep near it till it rang.

An actual entity is a general philosophical term for an utterly determinate and completely concrete individual particular of the actually existing 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 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. 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's ontology of processes as defining the world, the actual entities exist as the only fundamental elements of reality.

The actual entities are of two kinds, temporal and atemporal.

With one exception, all actual entities for Whitehead are **temporal** and are **occasions of experience** (which are not to be confused with consciousness). An entity that people commonly think of as a simple concrete object, or that Aristotle would think of as a substance, is, in this ontology, considered to be a temporally serial composite of indefinitely many overlapping occasions of experience. A human being is thus composed of indefinitely many occasions of experience.

The one exceptional actual entity is at once both temporal and **atemporal**: God. He is objectively immortal, as well as being immanent in the world. He is objectified in each temporal actual entity; but He is not an eternal object.

The occasions of experience are of four grades. The first grade comprises processes in a physical vacuum such as the propagation of an electromagnetic wave or gravitational influence across empty space. The occasions of experience of the second grade involve just inanimate matter; "matter" being the composite overlapping of occasions of experience from the previous grade. The occasions of experience of the third grade involve living organisms. Occasions of experience of the fourth 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; for the actual entities must be of the ultimately general kind. Consequently, it is inessential that an occasion of experience have an aspect in the mode of presentational immediacy; occasions of the grades one, two, and three, lack that aspect.

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, both being abstractions of a kind known as *persistent physical objects*, neither being actual entities. Though not recognized by Aristotle, there is biological evidence, written about by Galen,[23] 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, all three being abstractions from their indefinitely many constitutive occasions of experience, which are actual entities.

Time, causality, and process

Inherent in each actual entity is its respective dimension of time. Potentially, each Whiteheadean occasion of experience is causally consequential on every other occasion of experience that precedes it in time, and has as its causal 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. In time defined relative to it, each occasion of experience is causally influenced by prior occasions of experiences, and causally influences future occasions of experience. An occasion of experience consists of a process of prehending other occasions of experience, reacting to them. This is the process in process philosophy.

Such process is never deterministic. Consequently, 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 is in perfect agreement with the viewpoint of the Einstein theory of special relativity and with the Minkowski geometry of spacetime.[24] 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*[25] as well as in *Process and Reality*. Time in this view is relative to an inertial reference frame, different reference frames defining different versions of time.

Atomicity

The actual entities, the occasions of experience, are logically **atomic** in the sense that an occasion of experience cannot be cut and separated into two other occasions of experience. This kind of logical atomicity is perfectly compatible with indefinitely many spatio-temporal overlaps of occasions of experience. One can explain this kind of atomicity by saying that an occasion of experience has an internal causal structure that could not be reproduced in each of the two complementary sections into which it might be cut. Nevertheless, an actual entity can completely contain each of indefinitely many other actual entities.

Another aspect of the atomicity of occasions of experience is that they do not change. An actual entity is what it is. An occasion of experience can be described as a process of change, but it is itself unchangeable.

The reader should bear in mind that the atomicity of the actual entities is of a simply logical or philosophical kind, thoroughly different in concept from the natural kind of atomicity that describes the atoms of physics and chemistry.

Topology

Whitehead's theory of extension was concerned with the spatio-temporal features of his occasions of experience. Fundamental to both Newtonian and to quantum theoretical mechanics is the concept of momentum. The measurement of a momentum 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 overlapping or contained occasions of experience, as explained in *Process and Reality*.[17] 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.

Nexus is a term coined by Whitehead to show the network actual entity from universe. In the universe of actual entities spread[21] actual entity. Actual entities are clashing with each other and form other actual entities.[22] The birth of an actual entity based on an actual entity, actual entities around him referred to as nexus.[21]

An example of a nexus of temporally overlapping occasions of experience is what Whitehead calls an **enduring physical object**, which corresponds closely with an Aristotelian substance. An enduring physical object has a temporally earliest and a temporally last member. Every member (apart from the earliest) of such a nexus is a causal consequence of the earliest member of the nexus, and every member (apart from the last) of such a nexus is a causal antecedent of the last member of the nexus. There are indefinitely many other causal antecedents and consequences of the enduring physical object, which overlap, but are not members, of the nexus. No member of the nexus is spatially separate from any other member. Within the nexus are indefinitely many continuous streams of overlapping nexūs, each stream including the earliest and the last member of the enduring physical object. Thus an enduring physical object, like an Aristotelian substance, undergoes changes and adventures during the course of its existence.

In some contexts, especially in the theory of relativity in physics, the word 'event' refers to a single point in Minkowski or in Riemannian space-time. A point event is not a process in the sense of Whitehead's metaphysics. Neither is a countable sequence or array of points. A Whiteheadian process is most importantly characterized by extension in space-time, marked by a continuum

of uncountably many points in a Minkowski or a Riemannian space-time. The word 'event', indicating a Whiteheadian actual entity, is not being used in the sense of a point event.

Whitehead's abstractions

Whitehead's **abstractions** are conceptual entities that are abstracted from or derived from and founded upon his actual entities. Abstractions are themselves not actual entities. They are the only entities that can be real but are not actual entities. This statement is one form of Whitehead's 'ontological principle'.

An abstraction is a conceptual entity that refers to 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 emphasized or dragged away from their actuality, while other aspects are de-emphasized or left out or left behind.

'Eternal object' is a term coined by Whitehead. It is an abstraction, a possibility, or pure potential. It can be ingredient into some actual entity.[21] It is a principle that can give a particular form to an actual entity.[22][26]

Whitehead admitted indefinitely many eternal objects. An example of an **eternal object** is a number, such as the number 'two'. Whitehead held that eternal objects are abstractions of a very high degree of abstraction. Many abstractions, including eternal objects, are potential ingredients of processes.

Relation between actual entities and abstractions stated in the ontological principle

For Whitehead, besides its temporal generation by the actual entities which are its contributory causes, a process may be considered as a concrescence of abstract **ingredient** eternal objects. God enters into every temporal actual entity.

Whitehead's **ontological principle** is that whatever reality pertains to an abstraction is derived from the actual entities upon which it is founded or of which it is comprised.

Causation and concrescence of a process

Concrescence is a term coined by Whitehead to show the process of jointly forming an actual entity that was without form, but about to manifest itself into an entity Actual full (*satisfaction*) based on datums or for information on the universe.[21] The process of forming an actual entity is the case based on the existing datums. Concretion process can be regarded as *subjectification process.*[22]

Datum is a term coined by Whitehead to show the different variants of information possessed by actual entity. In process philosophy, datum is obtained through the events of concrescence. Every actual entity has a variety of datum.[21][22]

Commentary on Whitehead and on process philosophy

Whitehead is not an idealist in the strict sense. Whitehead's thought may be regarded as related to the idea of panpsychism (also known as panexperientialism, because of Whitehead's emphasis on experience).[27]

On God

Whitehead's philosophy is very complex, subtle and nuanced and in order to comprehend his thinking regarding what is commonly referred to by many religions as "God", it is recommended that one read from *Process and Reality Corrected Edition*, wherein regarding "God" the authors elaborate Whitehead's conception.

> "He is the unconditioned actuality of conceptual feeling at the base of things; so that by reason of this primordial actuality, there is an order in the relevance of eternal objects to the process of creation (343 of 413) (Location 7624 of 9706 Kindle ed.) Whitehead continues later with, "The particularities of the actual world presuppose it ; while it merely presupposes the general metaphysical character of creative advance, of which it is the primordial exemplification (344 of 413) (Location 7634 of 9706 Kindle Edition)."

Process philosophy, might be considered according to some theistic forms of religion to give a God a special place in the universe of occasions of experience. Regarding Whitehead's use of the term, "occasions" in reference to, "God" it is explained in *Process and Reality Corrected Edition* that

> "'Actual entities'-also termed 'actual occasions'-are the final real things of which the world is made up. There is no going behind actual entities to find anything [28] more real. They differ among themselves: God is an actual entity, and so is the most trivial puff of existence in far-off empty space. But, though there are gradations of importance, and diversities of function, yet in the principles which actuality exemplifies all are on the same level. The final facts are, all alike, actual entities; and these actual entities are drops of experience, complex and interdependent.

It also can be assumed within some forms of theology that a God encompasses all the other occasions of experience but also transcends them and this might lead to it being argued that Whitehead endorses some form of panentheism.[28] Since, it is argued theologically, that "free will" is inherent to the nature of the universe, Whitehead's God is not omnipotent in Whitehead's metaphysics.[29] 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.[30]

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.[31]

Legacy and applications

Biology

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.[32][33]

In evolution and in development, the nature of the changes of biological objects are considered by many authors to be more radical than in physical systems. In biology, changes are not just changes of state in a pre-given space, instead the space and more generally the mathematical structures required to understand object change over time.[34][35]

Ecology

With its perspective that everything is interconnected, that all life has value, and that non-human entities are also experiencing subjects, process philosophy has played an important role in discourse on ecology and sustainability. The first book to connect process philosophy with environmental ethics was John B. Cobb, Jr.'s 1971 work, *Is It Too Late: A Theology of Ecology*.[36] In a more recent book (2018) edited by John B. Cobb, Jr. and Wm. Andrew Schwartz, *Putting Philosophy to Work: Toward an Ecological Civilization*[37] contributors explicitly explore the ways in which process philosophy can be put to work to address the most urgent issues facing our world today, by contributing to a transition toward an ecological civilization. That book emerged out of the largest international conference held on the theme of ecological civilization (*Seizing an Alternative: Toward an Ecological Civilization*) which was organized by the Center for Process Studies in June 2015. The conference brought together roughly 2,000 participants from around the world and featured such leaders in the environmental movement as Bill McKibben, Vandana Shiva, John B. Cobb, Jr., Wes Jackson, and Sheri Liao.[38] The notion of ecological civilization is often affiliated with the process philosophy of Alfred North Whitehead--especially in China.[39]

Mathematics

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, 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*.

Medicine

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.

Psychology

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 to prehend 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: In 2000, Michel Weber created the Whitehead Psychology Nexus: an open forum dedicated to the cross-examination of Alfred North Whitehead's process philosophy and the various facets of the contemporary psychological field.[40]

See also

Concepts

- *Anicca*, the Buddhist doctrine that all is "transient, evanescent, inconstant"
- Dialectic
- Dialectical monism
- Elisionism
- Holomovement
- Speculative realism

People

- John B. Cobb
- David Ray Griffin
- Arthur Peacocke
- Michel Weber
- Arran Gare
- Joseph A. Bracken
- Milič Čapek
- Wilmon Henry Sheldon

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7. Cf. Michel Weber (ed.), *After Whitehead: Rescher on Process Metaphysics (https://www.academia.edu/6359324/ Michel_Weber_ed._After_Whitehead_Rescher_on_Process_Metaphysics_2004)*, Frankfurt / Paris / Lancaster, Ontos Verlag, 2004.

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9. Seibt, Johanna. "Process Philosophy" (https://plato.stanford.edu/entries/process-philosophy/). In Zalta, Edward N. (ed.). *Stanford Encyclopedia of Philosophy*.

10. Nicholas Gaskill, A. J. Nocek, *The Lure of Whitehead*, University of Minnesota Press, 2014, p. 4: "it is no wonder that Whitehead fell by the wayside. He was too scientific for the "continentals," not scientific enough for the "analytics," and too metaphysical—which is to say uncritical—for them both" and p. 231: "the analytics and Continentals are both inclined toward Kantian presuppositions in a manner that Latour and Whitehead brazenly renounce."

11. *Cratylus* Paragraph Crat. 401 section d line 5 (http://www.perseus.tufts.edu/hopper/text?doc=Perseus%3Atext%3A1999.01.0171%3Atext%3DCrat.%3Asection%3D401d).

12. *Cratylus* Paragraph 402 section a line 8 (http://www.perseus.tufts.edu/hopper/text?doc=Plat.+Crat.+402&fromdoc=Perseus%3Atext%3A1999.01.0171).

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John B. Cobb

John Boswell Cobb Jr. (born February 9, 1925) is an American theologian, philosopher, and environmentalist. Cobb is often regarded as the preeminent scholar in the field of process philosophy and process theology, the school of thought associated with the philosophy of Alfred North Whitehead.[3] Cobb is the author of more than fifty books.[4] In 2014, Cobb was elected to the prestigious American Academy of Arts and Sciences.[5]

A unifying theme of Cobb's work is his emphasis on ecological interdependence —the idea that every part of the ecosystem is reliant on all the other parts. Cobb has argued that humanity's most urgent task is to preserve the world on which it lives and depends,[6] an idea which his primary influence, Whitehead, described as "world-loyalty".[7]

Cobb is well known for his transdisciplinary approach, integrating insights from many different areas of study and bringing different specialized disciplines into fruitful communication. Because of his broad-minded interest and approach, Cobb has been influential in a wide range of disciplines, including theology, ecology, economics, biology, and social ethics.

In 1971, he wrote the first single-author book in environmental ethics, *Is It Too Late? A Theology of Ecology*, which argued for the relevance of religious thought in approaching the ecological crisis.[8] In 1989, he co-authored the book *For the Common Good: Redirecting the Economy Toward Community, Environment, and a Sustainable Future*, which critiqued current global economic practice and advocated for a sustainable, ecology-based economics. He has written extensively on religious pluralism and interfaith dialogue, particularly between Buddhism and Christianity, as well as the need to reconcile religion and science.

Cobb is the co-founder and current co-director of the Center for Process Studies in Claremont, California.[9] The Center for Process Studies remains the leading Whitehead-related institute, and has witnessed the launch of more than thirty related centers at academic institutions throughout the world, including twenty-three centers in China.[10][11]
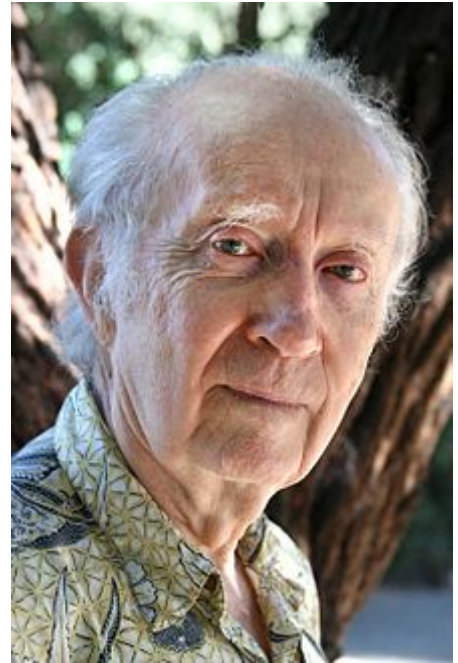
John B. Cobb	
Cobb in 2013	
Born	John Boswell Cobb Jr. February 9, 1925 Kobe, Hyōgo Prefecture, Japan
Residence	Claremont, California, US
Nationality	American
Spouse(s)	Jean L. Cobb (m. 1947) [1]
Academic background	
Alma mater	University of Chicago
Thesis	*The Independence of Christian Faith from Speculative Beliefs*[2] (1952)
Doctoral advisor	Charles Hartshorne
Influences	Richard McKeon · Alfred North

Contents

	Whitehead · Daniel Day Williams
Academic work	
Discipline	Theology · philosophy
School or tradition	Process philosophy · process theology
Institutions	Emory University Claremont School of Theology
Doctoral students	Catherine Keller · Ernest L. Simmons
Main interests	Metaphysics · environmental ethics
Notable ideas	Christocentric pluralism
Influenced	David Ray Griffin · C. Robert Mesle · Roland Faber · Monica Coleman · Bruce Epperly · Michel Weber

Biography

John Cobb was born in Kobe, Japan, on February 9, 1925, to parents who were Methodist missionaries.[12] Until age 15, he lived primarily in Kobe and Hiroshima and received most of his early education in the multi-ethnic Canadian Academy in Kobe,[12] to which he attributes the beginnings of his pluralistic outlook.[13]

In 1940, Cobb moved to Georgia, US, to finish high school.[12] He found himself both bewildered and disgusted by the pervasive racism in the region, particularly the demonization of the Japanese.[14] Seeing how the same events could be presented in such different ways based on the country in which he was living, Cobb became ever-more counter-cultural and critical of the dominant views in churches, media, universities, and government.[15]

After his graduation from high school, Cobb attended Emory College in Oxford, Georgia, before joining the US Army in 1943.[16] He was chosen for the Japanese language program, which was filled mainly with Jewish and Catholic intellectuals who helped make him aware of the narrow, parochial nature of his Georgia Protestantism.[17]

Cobb served in the occupation of Japan, then returned to the United States and left the army soon afterward. He then entered an interdepartmental program at

Harborland in Kobe, Hyōgo prefecture, Japan

the University of Chicago in 1947. There, he set out to test his faith by learning the modern world's objections to Christianity.[18] His faith did not come out intact.

> I was determined to expose my faith to the worst the world could offer. Within six months of such exposure my faith was shattered ... God, who had been my constant companion and Lord up to that point, simply evaporated, and my prayers bounced back from the ceiling unheard.[18]

Hoping to reconstruct a Christian faith more compatible with scientific and historical knowledge, Cobb entered the University of Chicago Divinity School.[19] He was successful in restoring his personal faith primarily with the help of Richard McKeon, Daniel Day Williams, and Charles Hartshorne.[19] McKeon introduced Cobb to philosophical relativism, while Hartshorne and Williams

taught him Whiteheadian process philosophy and process theology. Alfred North Whitehead's thought became the central theme of Cobb's own work.

After receiving his Doctor of Philosophy degree from the University of Chicago under the supervision of Charles Hartshorne in 1952,[20] he spent three years teaching at Young Harris College in north Georgia, while also serving as part-time pastor to a six-church circuit and establishing a seventh congregation in the area.[21] Ernest Cadman Colwell, formerly president of the University of Chicago, brought Cobb to Emory University in Georgia to teach in the new graduate institute for liberal arts. In 1958, Cobb followed Colwell to Claremont, California,[22] where he was named Ingraham Professor of Theology at Claremont School of Theology and Avery Professor of Religion at Claremont Graduate University.[4] He established the *Process Studies* journal with Lewis S. Ford in 1971 and co-founded the Center for Process Studies with David Ray Griffin in 1973, making Claremont the center of Whiteheadian process thought.[22] Twenty-five years later, together with Herman Greene, he organized the International Process Network. This organization holds biennial conferences, the tenth of which will be taking place in Claremont in 2015.[23]

During his career, Cobb has also served as Visiting Professor at Harvard Divinity School, Chicago Divinity School, Vanderbilt Divinity School, Iliff School of Theology, Rikkyo University in Japan, and the University of Mainz in Germany.[4] He has received six honorary doctorates.[24]

Transdisciplinary work

Although Cobb is most often described as a theologian, the overarching tendency of his thought has been toward the integration of many different areas of knowledge, employing Alfred North Whitehead's transdisciplinary philosophical framework as his guiding insight.[25] As a result, Cobb has done work in a broad range of fields.

Philosophy of education

Cobb has consistently opposed the splitting of education and knowledge into discrete and insulated disciplines and departments.[26] He believes that the current university model encourages excessive abstraction because each specialized area of study defines its own frame of reference and then tends to ignore the others, discouraging interdisciplinary dialogue and inhibiting a broad understanding of the world.[26]

To combat these problems, Cobb argues that discrete "disciplines" in general—and theology in particular—need to re-emerge from their mutual academic isolation.[27] Theology should once again be tied to ethical questions and practical, everyday concerns, as well as a theoretical understanding of the world. In service to this vision, Cobb has consistently sought to integrate knowledge from biology, physics, economics, and other disciplines into his theological and philosophical work.[28]

Constructive postmodern philosophy

Cobb was convinced that Alfred North Whitehead was right in viewing both nature and human beings as more than just purposeless machines.[29] Rather than seeing nature as purely mechanical and human consciousness as a strange exception which must be explained away, Whiteheadian naturalism went in the opposite direction by arguing that subjective experience of the world should inform a view of the rest of nature as more than just mechanical. In short, nature should be seen as having a subjective and purposive aspect that deserves attention.[29]

Speaking to this need of moving beyond classically "modern" ideas, in the 1960s Cobb was the first to label Whiteheadian thought as "postmodern".[30] Later, when deconstructionists began to describe their thought as "postmodern", Whiteheadians changed their own label to "*constructive* postmodernism".[31]

Like its deconstructionist counterpart, constructive postmodernism arose partly in response to dissatisfaction with Cartesian mind–matter dualism, which viewed matter as an inert machine and the human mind as wholly different in nature.[31][32] While modern science has uncovered voluminous evidence against this idea, Cobb argues that dualistic assumptions continue to persist:

> On the whole, dualism was accepted by the general culture. To this day it shapes the structure of the university, with its division between the sciences and the humanities. Most people, whether they articulate it or not, view the world given to them in sight and touch as material, while they consider themselves to transcend that purely material status.[31]

While deconstructionists have concluded that we must abandon any further attempts to create a comprehensive vision of the world, Cobb and other constructive postmodernists believe that metaphysics and comprehensive world-models are possible and still needed.[31][33] In particular, they have argued for a new Whiteheadian metaphysics based on events rather than substances.[31][34] In this formulation, it is incorrect to say that a person or thing ("substance") has a fundamental identity that remains constant, and that any changes to the person or thing are secondary to what it is.[35] Instead, each moment in a person's life ("event") is seen as a new actuality, thus asserting that continual change and transformation are fundamental, while static identities are far less important.[36] This view more easily reconciles itself with certain findings of modern science, such as evolution and wave–particle duality.[37]

Environmental ethics

Ecological themes have been pervasive in Cobb's work since 1969, when he turned his attention to the ecological crisis.[6] He became convinced that environmental issues constituted humanity's most pressing problem. Cobb writes:

> During the seventies my sense of the theological vocation changed. I did not lose interest in developing the Christian tradition so as to render it intelligible, convincing, and illuminating in a changing context. But I did reject the compartmentalization of my discipline of 'constructive theology,' especially in its separation from ethics, and more generally in its isolation from other academic disciplines ... I was persuaded that no problem could be more critical than that of a decent survival of a humanity that threatened to destroy itself by exhausting and polluting its natural context.[6]

Cobb went on to write the first single-author book in environmental ethics, *Is It Too Late? A Theology of Ecology*, in 1971.[38] In the book, he argued for an ecological worldview that acknowledges the continuity between human beings and other living things, as well as their mutual dependence. He also proposed that Christianity specifically needed to appropriate knowledge from the biological sciences in order to undercut its anthropocentrism (human-centeredness) and devaluation of the non-human world.[39]

Critique of growth-oriented economics

Cobb's economic critiques arose as a natural extension of his interest in ecological issues. He recognized that he could not write about an ecological, sustainable, and just society without including discussion of economics.[40]

As part of his investigation into why economic policies so frequently worsened the ecological situation, in the 1980s Cobb decided to re-evaluate gross national product and gross domestic product as measures of economic progress.[41] Together with his son, Clifford Cobb, he developed an alternative model, the Index of Sustainable Economic Welfare,[41] which sought to "consolidate economic, environmental, and social elements into a common framework to show net progress."[42] The name of the metric would later change to genuine progress indicator.[43] A recent (2013) article has shown that global GPI per capita peaked in 1978, meaning that the social and environmental costs of economic growth have outweighed the benefits since that time.[44]

Cobb also co-authored a book with Herman Daly in 1989 entitled *For the Common Good: Redirecting the Economy Toward Community, Environment, and a Sustainable Future*, which outlined policy changes intended to create a society based on community and ecological balance. In 1992, *For the Common Good* earned Cobb and Daly the Grawemeyer Award for Ideas Improving World Order.[45]

In recent years, Cobb has described current growth-oriented economic systems as the "prime example of corruption" in American culture and religion:

> Since the rise of modern economics, Christians have been forced to give up their criticism of greed, because the economists said "greed is good, and if you really want to help people, be as greedy as possible."[46]

Cobb sees such values as being in direct opposition with the message of Jesus, which in many places explicitly criticizes the accumulation of wealth. Because of Christianity's widespread acceptance of such economic values, Cobb sees Christians as far less confident in proclaiming the values of Jesus.[46]

Biology and religion

Along with Whitehead, Cobb has sought to reconcile science and religion in places where they appear to conflict, as well as to encourage religion to make use of scientific insights and vice versa.[47]

In the area of religion and biology, he co-wrote *The Liberation of Life: From the Cell to the Community* with Australian geneticist Charles Birch in 1981. The book critiqued the dominant biological model of mechanism, arguing that it leads to the study of organisms in abstraction from their environments.[48] Cobb and Birch argue instead for an "ecological model" which draws no sharp lines between the living and non-living, or between an organism and its environment.[49] The book also argues for an idea of evolution in which adaptive behavior can lead to genetic changes.[50] Cobb and Birch stress that a species "*co*-evolves with its environment" and that in this way intelligent purpose plays a role in evolution:

> Evolution is not a process of ruthless competition directed to some goal of ever-increasing power or complexity. Such an attitude, by failing to be adaptive, is, in fact, not conducive to evolutionary success. A species co-evolves with its environment. Equally, there is no stable, harmonious nature to whose wisdom humanity should simply submit. Intelligent purpose plays a role in adaptive behaviour, and as environments change its role is increased.[51]

The Liberation of Life stresses that *all* life (not just human life) is purposeful and that it aims for the realization of richer experience.[52] Cobb and Birch develop the idea of "trusting life" as a religious impulse, rather than attempting to achieve a settled, perfected social structure that does not allow for change and evolution.[53]

Religious pluralism and interreligious dialogue

Cobb has participated in extensive interreligious and interfaith dialogue, most notably with Masao Abe, a Japanese Buddhist of the Kyoto School of philosophy.[54] Cobb's explicit aim was to gain ideas and insights from other religions with an eye toward augmenting and "universalizing" Christianity.[55] Cobb writes:

> ... it is the mission of Christianity to become a universal faith in the sense of taking into itself the alien truths that others have realized. This is no mere matter of addition. It is instead a matter of creative transformation. An untransformed Christianity, that is, a Christianity limited to its own parochial traditions, cannot fulfill its mission of realizing the universal meaning of Jesus Christ.[56]

In short, Cobb does not conceive of dialogue as useful primarily to convert or be converted, but rather as useful in order to transform both parties mutually, allowing for a broadening of ideas and a reimagining of each faith in order that they might better face the challenges of the modern world.[57][58]

Cobb has also been active in formulating his own theories of religious pluralism, partly in response to another Claremont Graduate University professor, John Hick.[59] Cobb's pluralism has sometimes been identified as a kind of "deep" pluralism or, alternately, as a "complementary" pluralism.[60] He believes that there are actually three distinct religious ultimates: (1) God, (2) Creativity/Emptiness/Nothingness/Being-itself, and (3) the cosmos/universe.[61] Cobb believes that all of these elements are necessary and present in some form in every religion but that different faiths tend to stress one ultimate over the others.[62] Viewed in this way, different religions may be seen to complement each other by providing insight into different religious ultimates.[63] Cobb's pluralism thus avoids the criticism of conflating religions that are actually very different (for instance, Buddhism and Christianity) while still affirming the possible truths of both.[63]

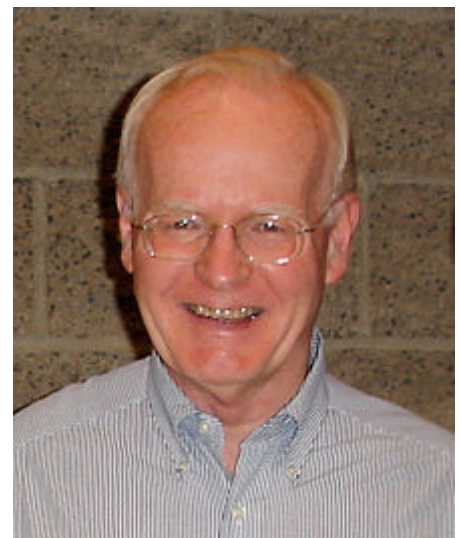## Revitalizing Christianity in a pluralistic world

Cobb believed that through at least the nineteenth century and the first half of the twentieth century, American Protestant theology had been largely derivative from European (specifically German) theology.[64] In the late 1950s, Cobb and Claremont professor James Robinson decided that the time had come to end this one-sidedness and move to authentic dialogue between American and European theologians.[65] To establish real mutuality, they organized a series of conferences of leading theologians in Germany and the United States and published a series of volumes called "New Frontiers in Theology."[66]

After writing several books surveying contemporary forms of Protestantism, Cobb turned in the mid-1960s to more original work which sought to bring Alfred North Whitehead's ideas into the contemporary American Protestant scene.[67] Cobb aimed to reconstruct a Christian vision that was more compatible with modern knowledge and more ready to engage with today's pluralistic world.[60] He did this in a number of ways.

David Ray Griffin, with whom Cobb co-founded the Center for Process Studies in 1973

For one, Cobb has stressed the problems inherent in what he calls the "substantialist" worldview—ultimately derived from Classical Greek philosophy —that still dominates Christian theology, as well as most of western thought.[68] This "substantialist" way of thinking necessitates a mind–matter dualism, in which matter and mind are two fundamentally different kinds of entities. It also encourages seeing relations between entities as being unimportant to what the entity is "in itself".[69] In contrast to this view, Cobb follows Whitehead in attributing primacy to events and processes rather than substances.[68] In this Whiteheadian view, nothing is contained within its own sharp boundaries. In fact, the way in which a thing relates to other things is what makes it "what it is". Cobb writes:

> If the substantialist view is abandoned, a quite different picture emerges. Each occasion of human experience is constituted not only by its incorporation of the cellular occasions of its body but also by its incorporation of aspects of other people. That is, people internally relate to one another. Hence, the character of one's being, moment by moment, is affected by the health and happiness of one's neighbors.[68]

For Cobb, this metaphysics of process is better-aligned with the Bible, which stresses history, community, and the importance of one's neighbors.[68]

Claremont School of Theology, 2013

Also, instead of turning further inward to preserve a cohesive Christian community, Cobb turned outward in order to discover truths that Christianity may not yet possess.[55] This is in direct opposition to those who feel that Christianity as a religious system is absolutely final, complete, and free of error. Cobb has not only turned to other religions (most notably Buddhism) in order to supplement Christian ideas and systems,[70] but also to other disciplines, including biology, physics, and economics.

In fact, Cobb has not shied away even from re-imaging what is now regarded as the "traditional" Christian notion of God. He does not believe that God is omnipotent in the sense of having unilateral control over all events, since Cobb sees reconciling total coercive power with love and goodness to be an impossible task.[68] Instead, all creatures are viewed as having some degree of freedom that God cannot override.[71] Cobb solves the problem of evil by denying God's omnipotence, stressing instead that God's power is persuasive rather than coercive, that God can influence creatures but not determine what they become or do.[72] For Cobb, God's role is to liberate and empower.[73]

Against traditional theism, Cobb has also denied the idea that God is immutable (unchanging) and impassible (unfeeling).[74] Instead, he stresses that God is affected and changed by the actions of creatures, both human and otherwise.[68] For Cobb, the idea that God experiences and changes does not mean that God is imperfect—quite the contrary. Instead, God is seen as experiencing with all beings, and hence understanding and empathizing with all beings, becoming "the fellow sufferer who understands."[75] Cobb argues that this idea of God is more compatible with the Bible, in which Jesus suffers and dies.

Additionally, Cobb's theology has argued against the idea of salvation as a singular, binary event in which one is either saved or not saved for all time. Rather than seeing one's time in the world as a test of one's morality in order to enter a heavenly realm, Cobb sees salvation as the continual striving to transform and perfect our experience in this world.[68] Cobb's idea of salvation focuses less on moral categories and more on aesthetic categories—such as a preference for intense experience over dull experience, or beauty rather than ugliness. Cobb writes:

> If morality is bound up with contributing to others, the crucial question is: What is to be contributed? One contribution might be making them more moral, and that is fine. But finally, true morality cannot aim simply at the spread of morality. It must aim at the wellbeing of those it tries to help in some broader sense. For process thought that must be the perfection of their experience inclusively.[68]

Cobb admits that the idea of morality being subservient to aesthetics is "shocking to many Christians",[68] yet he argues that there must be more to life than simply being morally good or morally bad and that aesthetic categories fulfill this function specifically because they are defined as goods in themselves.

Within the last twenty years, Cobb has become increasingly distressed by the popular identification of Christianity with the religious right and the weak response of mainstream Protestants. To encourage a stronger response, he organized Progressive Christians Uniting with the Episcopal priest George Regas in 1996,[76] chaired its reflection committee, and edited a number of its books. As the perceived gap between the policies of the American government and Christian teaching grew wider, these books moved beyond simply reformist proposals. The last of these was entitled *Resistance: The New Role of Progressive Christians*.

Cobb's most recent book is entitled *Spiritual Bankruptcy: A Prophetic Call to Action*. It argues against both religiousness and secularism, claiming that what is needed is the secularization of the wisdom traditions.[77]

The influence of Cobb's thought in China

Process philosophy in the tradition of Alfred North Whitehead is often considered a primarily American philosophical movement, but it has spread globally and has been of particular interest to Chinese thinkers. As one of process philosophy's leading figures, Cobb has taken a leadership role in bringing process thought to the East, most specifically to help China develop a more ecological civilization—a goal which the current Chinese government has written into its constitution.[11][78]

With Zhihe Wang, Cobb founded the Institute for Postmodern Development of China (IPDC) in 2005, and currently serves on its board of directors.[79] Through the IPDC, Cobb helps to coordinate the work of twenty-three collaborative centers in China, as well as to organize annual conferences on ecological civilization.[10][11]

Institutions founded

Cobb has founded numerous non-profit organizations throughout his career.

In 1973, Cobb co-founded the Center for Process Studies with David Ray Griffin as a faculty research center of the Claremont School of Theology, and currently still serves as its Co-Director.[80] The Center for Process Studies is the leading institute on the process philosophy and process theology inspired by Alfred North Whitehead, Charles Hartshorne, and others.

In 1996, Cobb co-founded the Claremont Consultation with George Regas in an effort to organize and mobilize progressive Christian communities.[81] In 2003, the organization's name was changed to *Progressive Christians Uniting*. PCU today describes itself as "a social justice and faith organization dedicated to amplifying hope and actions individuals can take that lead to a more compassionate and just world."

In 2005, Cobb was the founding President of the Institute for the Postmodern Development of China (http://postmodernchina.org/).[79] The IPDC works to promote new modes of development in China and the West, drawing from both classical Chinese philosophy and constructive forms of Western thought in order to address practical problems associated with economic growth, social change, and globalization. Cobb continues to work on the IPDC's board of directors.

In 2013, Cobb was a founding board member of Process Century Press (http://processcenturypress.com/), an academic press dedicated to transdisciplinary applications of process thought. He remains on PCP's advisory board.[82]

In 2014, Cobb was the founding chairperson of the board for Pando Populus (https://pandopopulus.com/), an LA-based non-profit organization that seeks to enact a more ecologically balanced way of life in the LA area. Cobb remains on Pando Populus' board of directors.[83]

In 2015, Cobb was a founding board member of Toward Ecological Civilization (http://ecociv.org/) (EcoCiv), a non-profit organization which seeks to enact "a fully sustainable human society in harmony with surrounding ecosystems and communities of life." Cobb remains on EcoCiv's board of directors.[84]

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See also

- Ingersoll Lectures on Human Immortality
- Progressive Christianity

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- Process and Faith (http://processandfaith.org)
- Institute for the Postmodern Development of China (http://www.postmodernchina.com/about-us.html)
- International Process Network (https://sites.google.com/site/internationalprocessnetwork)
- Progressive Christians Uniting (http://www.progressivechristiansuniting.org/PCU/about.html)
- Claremont School of Theology (http://www.cst.edu/about)

Awards		
Preceded by **World Commission on Environment and Development**	**Grawemeyer Award for Ideas Improving World Order** 1992 With: **Samuel P. Huntington** **Herman Daly**	Succeeded by **Donald Akenson**

Charles Hartshorne

Charles Hartshorne (/ˈhɑːrtsˌhɔːrn/; June 5, 1897 – October 9, 2000) was an American philosopher who concentrated primarily on the philosophy of religion and metaphysics, but also contributed to ornithology. 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.

Contents

Early life and education

Hartshorne (pronounced harts-horn) was born in Kittanning, Pennsylvania, and was a son of Reverend Francis Cope Hartshorne (October 4, 1868 - April 16, 1950) and Marguerite Haughton (September 6, 1868 - November 4, 1959), who were married on April 25, 1895 in Bryn Mawr, Montgomery County, Pennsylvania. Rev. F. C. Hartshorne, who was a minister in the Protestant Episcopal Church, was rector of St. Paul's Episcopal Church in Kittanning from 1897-1909, then rector of St. Peter's Episcopal Church in Phoenixville, Pennsylvania for 19 years (from 1909-1928). After resigning from the ministry in late 1927 or early 1928, within a few years Francis was appointed pension fund manager of the Protestant Episcopal Diocese of Philadelphia.

Among Charles' brothers was the prominent geographer Richard Hartshorne.
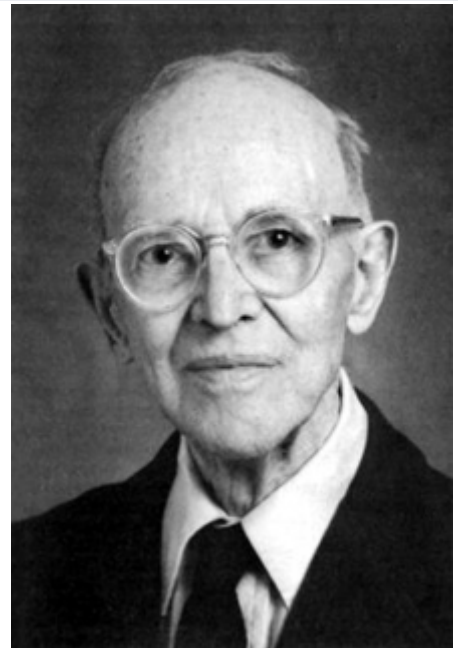
Charles Hartshorne	
Portrait of Charles Hartshorne circa 1990	
Born	June 5, 1897 Kittanning, Pennsylvania
Died	October 9, 2000 (aged 103) Austin, Texas
Era	20th-century philosophy
Region	Western philosophy
School	Process philosophy
Main interests	Metaphysics, Philosophy of religion
Notable ideas	Process theology Modal proof of the existence of God
Influences	
Alfred North Whitehead, Charles Sanders Peirce, William Ernest Hocking, Josiah Royce, Jules Lequier	
Influenced	
John B. Cobb, David Ray Griffin, Donald W. Viney	

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 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.

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.[1]

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.[2]

Intellectual influences

Hartshorne acknowledged that he was greatly influenced by Matthew Arnold (*Literature and Dogma*), Emerson's *Essays*, Charles Sanders Peirce, and especially by Alfred North Whitehead.[3] 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 M. Ogden (born March 2, 1928) and John B. Cobb, on the American philosophers Frank Ebersole and Daniel Dombrowski, 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 philosophy and the related area of process theology. The roots of process thinking in Western philosophy can be found in the Greek Heraclitus and in Eastern philosophy in Buddhism. Contemporary process philosophy arose in large measure from the work of Alfred North Whitehead, but with important contributions by William James, Charles Peirce, and Henri Bergson, 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 feeling 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 on his own ideas, many of the elements of his philosophy are evident in his dissertation, written in 1923, prior to his encounter with Whitehead. Moreover, Hartshorne was not always in agreement with Whitehead, especially on the nature of possibility. Whitehead construed the realm of possibilities in terms of what he called Eternal Objects. Hartshorne was never happy with this way of speaking and followed Peirce in thinking of the realm of possibility as a continuum which, by definition, has no least member and which can be "cut" in infinitely many ways. Definite qualities, for example, a particular shade of blue, emerge in the creative process.

Another difference between Whitehead and Hartshorne is that the Englishman usually spoke of God as a single actual entity whereas Hartshorne thought it better to think of God as a personally ordered series of actual entities, each exhibiting the abstract character of divinity, as necessarily supreme in love, knowledge and power. 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), although this is not an expression he used.

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 Classical 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 universe, 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 formula, "God is that than which no greater can be conceived." Anselm's argument used the concept of perfection. While Hartshorne believed that his reformulated ontological argument is sound, he never claimed that it was sufficient unto itself to establish the existence of God. Throughout his career, from the time of his dissertation, he relied upon a multiple argument strategy, commonly called a cumulative case, to establish the rationality of his di-polar theism.

Hartshorne accepts that, by definition, God is perfect. However, he maintains that classical theism, be it Jewish, Christian, or Muslim, has held to a self-contradictory notion of perfection. He argues that the classical concept of a deity for which all potentialities are actualized 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".[4]

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.[5]

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 Gordon Gruenler (born January 10, 1930), 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 Wayne Gragg (born July 17, 1932) 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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See also

- American philosophy
- List of American philosophers
- List of science and religion scholars

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External links

- Charles Hartshorne (http://plato.stanford.edu/entries/hartshorne/) by Dan Dombrowski, from the Stanford Encyclopedia of Philosophy
- Hartshorne's collected papers are archived at the Center for Process Studies (http://www.ctr4process.org/programs/Archives.shtml)
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