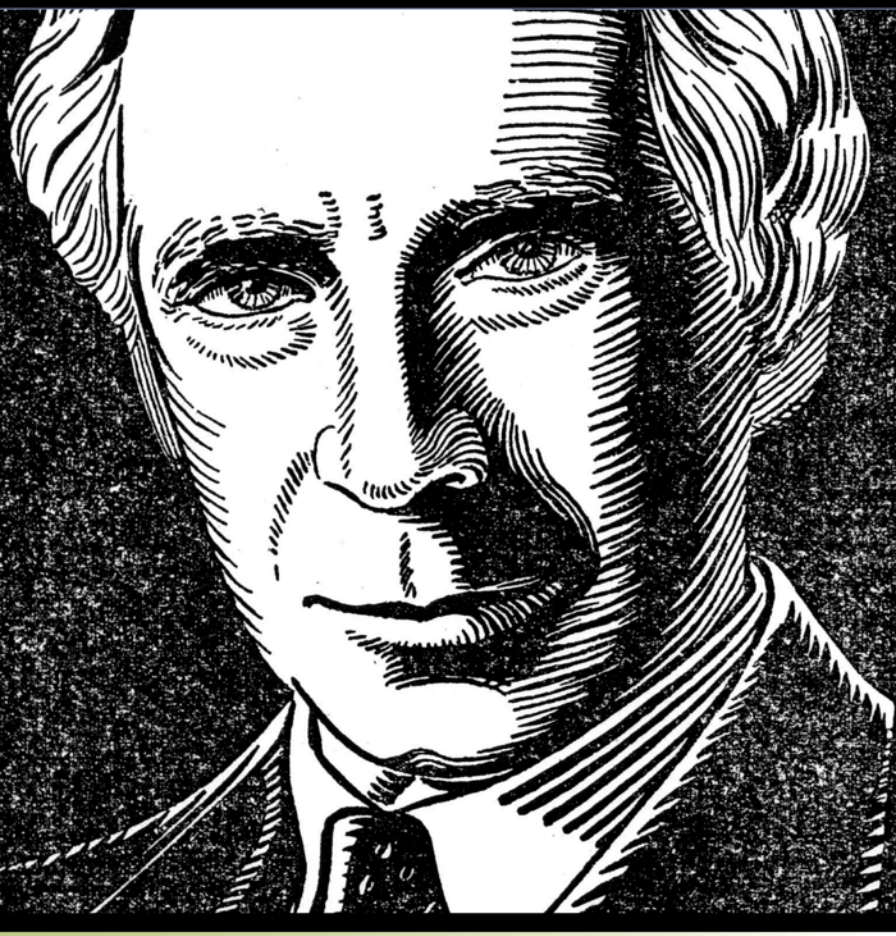
HISTORICAL DICTIONARY OF

BERTRAND RUSSELL'S Philosophy



ROSALIND CAREY and JOHN ONGLEY

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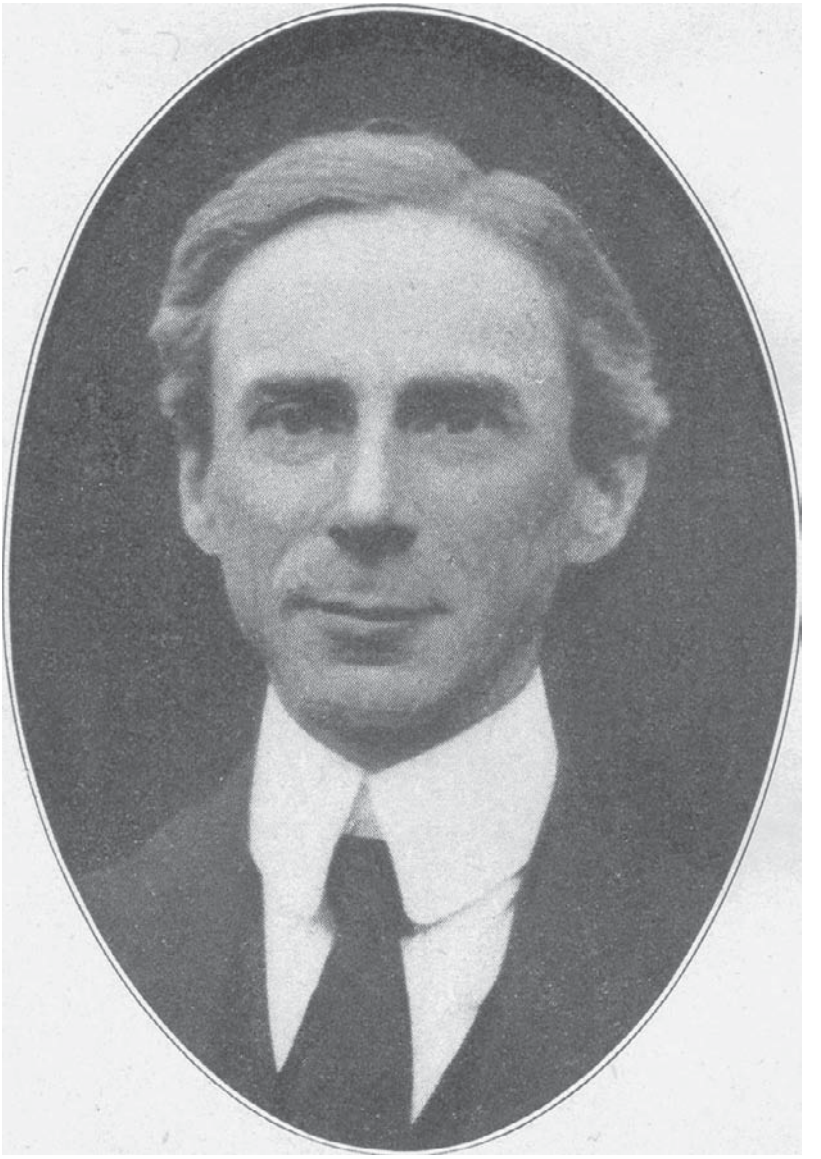

Bertrand Russell

Historical Dictionary of Bertrand Russell's Philosophy

Rosalind Carey
John Ongley

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The influence of our wishes upon our beliefs is a matter of common knowledge and observation, yet the nature of this influence is very generally misconceived. It is customary to suppose that the bulk of our beliefs are derived from some rational ground, and that desire is only an occasional disturbing force. The exact opposite of this would be nearer the truth: the great mass of beliefs by which we are supported in our daily life is merely the bodying forth of desire, corrected here and there, at isolated points, by the rude shock of facts. Man is essentially a dreamer, wakened sometimes for a moment by some particularly obtrusive element in the outer world, but lapsing again quickly into the happy somnolence of imagination.

Bertrand Russell, "Dreams and Facts," *Sceptical Essays*

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Editor's Foreword

Bertrand Russell was a philosopher like few others. Not since Aristotle has a thinker made such an impact on virtually all branches of philosophy—logic, epistemology, metaphysics, and ethics—nor has anyone since Zeno raised paradoxes that have caused so much consternation among philosophers and logicians. Yet his mastery over the most abstruse points of philosophy did not lead Russell to withdraw from the world. Instead, he threw himself into the role of public intellectual, writing on such controversial subjects of the day as education reform, sexual morality, women's suffrage, socialism, fascism, Bolshevism and Russia, the development of China, pacifism, industrial society, and religion, as well as starting his own school, running for Parliament, and leading antiwar and antinuclear campaigns. And this, as the *Historical Dictionary of Bertrand Russell's Philosophy* shows, is just a part of what Russell did. His achievements affect us still, as they will future generations.

It is no small task to write about such a complex, multifaceted figure as Russell. Yet a historical dictionary is the ideal format for doing just that, where it is possible to deal with each concept, fact, theory, essay, book, person, influence, place, and event one at a time, entry by entry. This the present dictionary does well, with the introduction, chronology, and cross-references then drawing the many strands of Russell's busy life and work in so many fields together, while the bibliography provides an up-to-date guide to Russell's writings along with writings about Russell by others.

Writing a historical dictionary on a figure such as Bertrand Russell is a demanding project, requiring scholarly knowledge on a broad range of subjects, patience, and sensitivity to the man's life—qualities evident in its authors. Rosalind Carey, an assistant professor of philosophy at Lehman College of the City University of New York, specializes in

the history of early analytic philosophy and has written and lectured extensively on Russell's epistemology, metaphysics, and logic. She is the author of *Russell and Wittgenstein on the Nature of Judgment*. John Ongley, who specializes in the continental roots of the history of analytic philosophy, is editor of the *Bertrand Russell Society Quarterly* and has likewise written and lectured on various aspects of Russell's thought. Both are on the board of directors of the Bertrand Russell Society. Together they have written an informative and comprehensive encyclopedia, and, worthy of special note, one no more technical than necessary to lead nonspecialist and specialist alike through an often complex but very rewarding life's work.

Jon Woronoff
Series Editor

Acknowledgments

We are indebted to the Bertrand Russell Archives, the Bertrand Russell Research Centre at McMaster University in Ontario, Canada, the Bertrand Russell Society, and russell-l, the online Bertrand Russell study group, for information, ideas, and stimulation of our own thoughts on Russell. We are particularly grateful for the assistance and counsel of Dr. Ray Perkins Jr., professor of philosophy at Plymouth State University, and Dr. Kenneth Blackwell, honorary Russell archivist at the Bertrand Russell Archives. Special thanks go to David Smith, reference librarian at the Humanities and Social Sciences Research Division of the New York Public Library, where many of this dictionary's entries were written.

Abbreviations

Dates following the name of the work abbreviated refer to the edition used for citations in the dictionary.

ABR	*The Autobiography of Bertrand Russell*, 3 vols. (1967–1969)
AI	*Authority and the Individual* (1949)
AM	*The Analysis of Mind* (1921)
CH	*The Conquest of Happiness* (1930)
CPBR	*The Collected Papers of Bertrand Russell* (1983–)
EA	*Essays in Analysis* (1973)
ESO	*Education and the Social Order* (1932)
FF	*Fact and Fiction* (1961)
FO	*Freedom and Organization* (1934)
FOP	"The Future of Pacifism" (1943)
HK	*Human Knowledge: Its Scope and Limits* (1948)
HSEP	*Human Society in Ethics and Politics* (1954)
HWP	*A History of Western Philosophy* (1945)
IMT	*Inquiry into Meaning and Truth* (1940)
IPI	*In Praise of Idleness* (1935)
JWT	*Justice in War-Time* (1916)
LK	*Logic and Knowledge* (1956)
ML	*Mysticism and Logic* (1918)
MM	*Marriage and Morals* (1929)
MPD	*My Philosophical Development* (1959)
NH	*New Hopes for a Changing World* (1951)
OE	*On Education* (1926)
OKEW	*Our Knowledge of the External World* (1914)
OKWH	"On Keeping a Wide Horizon" (1979)
OP	*An Outline of Philosophy* (1927)

P	*Power* (1938)
PBR	*The Philosophy of Bertrand Russell* (1944)
PE	*Philosophical Essays* (1910)
PFM	*Portraits from Memory* (1956)
PI	*Political Ideals* (1917)
PIC	*The Prospects of Industrial Civilization* (1923)
PLA	*The Philosophy of Logical Atomism* (1985)
PM	*Principia Mathematica* (1910–1913)
POM	*Principles of Mathematics* (1903)
PP	*The Problems of Philosophy* (1912)
PRF	*Proposed Roads to Freedom* (1919)
PSR	*Principles of Social Reconstruction* (1916)
RAS	*Religion and Science* (1935)
SE	*Sceptical Essays* (1928)
TWG	*Towards World Government* (1948)
UE	*Unpopular Essays* (1951)
WCV	*War Crimes in Vietnam* (1967)
WIB	*What I Believe* (1925)
WNC	*Why I Am Not a Christian* (1957)

Chronology

1872 Bertrand Russell is born 18 May at Ravenscroft, Wales, to John and Kate, Lord and Lady Amberley. John Stuart Mill is his secular godfather.

1874 His mother and sister die from diphtheria in June and July, respectively.

1876 In January, his father dies of bronchitis. He and his brother, Frank, begin living with their paternal grandparents.

1878 Lord John Russell, the former prime minister and Russell's paternal grandfather, dies, and his grandmother takes charge of his upbringing.

1890 Russell enters Trinity College, Cambridge University, and begins studies in applied mathematics and mathematical physics (e.g., calculus, optics, astronomy, statics, hydrostatics, dynamics). In February, he is elected to the Apostles, an intellectual secret society at Cambridge.

1893 Upon coming of age in May, Russell inherits £20,000. In July, he begins a year of philosophical studies focusing on ethics, metaphysics, and 17th-century philosophy.

1894 Graduating from Cambridge in June, he chooses a fellowship thesis topic on the philosophy of non-Euclidian geometry. He marries Alys Pearsall Smith in December.

1895 Russell attends economics lectures at the University of Berlin from January to March, receives a five-year fellowship from Trinity College in October, and subsequently studies German social democracy while researching his thesis on geometry.

1896 In January, Russell publishes "The Logic of Geometry" and in March studies Georg Cantor's set theory. In October, he visits the United States. In December, he publishes *German Social Democracy*.

1897 In January, Russell publishes a review of Louis Couturat's book on Cantorian set theory, *De l'Infini Mathématique* (1896). In May, he reads Hermann Lotze's *Metaphysik* (1879) and publishes his fellowship thesis as *An Essay on the Foundations of Geometry*. In "Seems Madam? Nay, It Is," a talk given in December to the Apostles, he begins to break with idealism.

1898 Russell's grandmother dies in January. In January and February, he attends John McTaggart's lectures on Lotze. Throughout the year, Russell has frequent discussions with G. E. Moore, leading to their adoption of realism and break with idealism. In September, Russell reads Alexius Meinong's *Über die Bedeutung des Weberschen Gesetzes* (1896). He subsequently travels to Italy, Germany, and France, visiting Couturat in November.

1899 Beginning in January, Russell lectures on G. W. Leibniz at Trinity College. In April, he publishes his review of Meinong's *Über die Bedeutung* and responds to Henri Poincaré's review of his *Essay on the Foundations of Geometry*. In July, he again studies Cantorian set theory.

1900 At Couturat's invitation, Russell gives a talk in August at the International Congress of Philosophy in Paris and attends the Second International Congress of Mathematicians, where he meets Giuseppe Peano and hears him speak. Russell acquires Peano's publications in September and reads them all. He publishes *A Critical Exposition of the Philosophy of Leibniz* in October. Meanwhile, Russell reads volume 1 of Gottlob Frege's *Grundgesetze der Arithmetik* (1893). In December, he discovers what is now called Cantor's paradox of the greatest cardinal, which leads him to give a first formulation of a paradox of sets. Russell remains silent on the matter for over a year, except to Alfred North Whitehead. He completes a draft of *The Principles of Mathematics*.

1901 In June, Russell begins to work with Whitehead on "Finite and Infinite Cardinal Numbers," a paper that anticipates *Principia Mathematica* (1910–1913) by treating cardinal numbers within the logic of

relations. He publishes the important "Logic of Relations" in July and November.

1902 In January, Russell acknowledges that his marriage to Alys is unhappy. In May, he begins reading Alexius Meinong's *Über Annahmen* (1902). In June, his rereading Frege's *Begriffsscrift* (1879) and *Grundgesetze* shows him the significance of these texts. Later that month, he communicates the paradox he had earlier discovered, now called Russell's paradox, to Frege and Peano. He receives Frege's response in a matter of days. Russell informs Couturat of the paradox in September.

1903 In May, Russell's *The Principles of Mathematics* is published; it contains his first attempt to prevent contradictions by means of distinguishing entities into types. From June through December, he works on problems of meaning and denoting.

1904 In April, July, and August, Russell publishes "Meinong's Theory of Complexes and Assumptions." In July, he publishes "The Axiom of Infinity."

1905 In June, Russell reads "The Nature of Truth" to the Jowett Society. In July, he publishes "The Existential Import of Propositions." In October, he publishes his most famous essay, "On Denoting," followed in November by "On the Relation of Mathematics to Symbolic Logic." By this time, he has drafted "On Some Difficulties in the Theory of Transfinite Numbers and Order Types" and is experimenting with a method of preventing paradoxes that does not involve type-distinctions, inspired by the techniques described in "On Denoting."

1906 In March, "On Some Difficulties in the Theory of Transfinite Numbers and Order Types" is published, followed in September by "Les Paradoxes de la Logique," which is later published as "On *Insolubilia*." In these articles, Russell continues to experiment with a substitutional method of handling the contradictions.

1907 In May, Russell runs for office on the Women's Suffrage ticket in Wimbledon, a Tory district, creating publicity for the movement but losing. Later, he publishes "On the Nature of Truth," accepts a more complex, or ramified, theory of types, and considers the no-classes theory.

1908 In May, Russell publishes "Mathematical Logic as Based on the Theory of Types," written a year earlier. He is elected a fellow of the Royal Society. "Determinism and Morality," written in May 1905, is published in October. It is later reprinted as the fourth section of "Elements of Ethics" in *Philosophical Essa*ys (1910).

1909 In April, Russell publishes "Pragmatism," an essay reviewing John Dewey, William James, and F. C. S. Schiller. It is reprinted in 1910 in *Philosophical Essays*.

1910 In February and May, Russell publishes the first three sections of "Elements of Ethics." In May, he also publishes "The Theory of Logical Types." He receives a five-year lectureship at Trinity. *Philosophical Essays* appears in November. In December, with Whitehead, he publishes volume 1 of *Principia Mathematica*. He reviews Spinoza's *Ethics*.

1911 In March, Russell begins an intimate relationship with Ottoline Morrell. In the same month, he publishes "Analytic Realism" and reads "Knowledge by Acquaintance and Knowledge by Description" to the Aristotelian Society. It is published later in the year. In October, he reads "On the Relations of Universals and Particulars" to the Aristotelian Society and meets Ludwig Wittgenstein, who has come to study with him.

1912 *The Problems of Philosophy* is published in January. In April, volume 2 of *Principia Mathematica* is published, as is "The Philosophy of Bergson." Poincaré dies in July. In October, Russell is working on the paper "What Is Logic?" and in December on the nature of matter.

1913 Volume 3 of *Principia Mathematica* is published in April. In May, Russell begins work on *Theory of Knowledge* but abandons it in June after considering Wittgenstein's objections to it. In July, he publishes "On the Notion of Cause." In September, Russell meets Norbert Wiener and reads his dissertation. In the same month, he arranges for Wittgenstein's dictation of "Notes on Logic."

1914 Between March and May, Russell teaches two classes at Harvard University, one on logic, the other on epistemology. He also gives the Lowell lectures there, which are published in August as *Our Knowledge of the External World*. World War I begins. Russell throws himself into

antiwar, pacifist work. In November, he delivers "On Scientific Method in Philosophy" as the Herbert Spencer lecture at Oxford University.

1915 In January, Russell publishes "The Ethics of War." In February, he meets D. H. Lawrence. In May, he receives a renewal of his five-year lectureship at Trinity College. In July, he publishes "The Ultimate Constituents of Matter." In November, he publishes *Justice in War-Time*, rejecting his earlier moral objectivism for moral subjectivism.

1916 In April, Russell begins working for the No-Conscription Fellowship. In June, he is fined £110 for his antiwar speeches and writings. In July, he is dismissed from Trinity College for these antiwar efforts. *Principles of Social Reconstruction* is published in November.

1917 Russell's publications throughout the year mostly concern the war. From October to December, he delivers lectures in London on mathematical logic, which he later publishes as *Introduction to Mathematical Philosophy* (1919).

1918 In January, Cantor dies. From January till March, Russell delivers eight lectures in London on logical atomism; the first two are published in the *Monist* in October. In February, he is sentenced to six months in Brixton prison for referring in print to American use of police to break strikes. Russell enters prison in May. He begins to reject dualism for neutral monism, writing much of what is to become the *Analysis of Mind* (1921) as well working on *Introduction to Mathematical Philosophy*. He leaves prison in September.

1919 In January, April, and July, the remaining lectures on logical atomism are published in the *Monist*. In February, Russell writes "On Propositions: What They Are and How They Mean." From May to June, he delivers lectures on the analysis of mind. In November, Albert Einstein's general relativity theory is confirmed by experiment. For a week in December, Russell meets at The Hague with Wittgenstein, recently released as a prisoner of war. This is their first contact since 1914. In the same month, Trinity College awards Russell a new five-year lectureship, to commence in July 1920.

1920 Trinity College grants Russell a one-year leave of absence. From April through June, he travels through Russia, where he meets Emma Golman and interviews Vladimir Lenin. In September, he leaves

for China with Dora Black, arriving in October, the same month his essay "The Meaning of 'Meaning'" is published in *Mind*. Russell resigns his Trinity lectureship at the end of October. In November, *The Practice and Theory of Bolshevism* is published.

1921 Still in China in March, Russell falls ill with pneumonia and is reported dead by the Japanese press. The *Analysis of Mind* is published in June. In August, Russell arrives back in England. In September, he divorces Alys and marries Dora, who gives birth to his son John in November. Wittgenstein's *Tractatus Logico-Philosophicus*, with an introduction by Russell, is published in German in December.

1922 In July, Russell publishes a review of John Maynard Keynes's *Treatise on Probability*. In August, he publishes the essay "The Theory of Relativity." *The Problem of China* is published in September. In November, Russell runs unsuccessfully as the Labor Party candidate in Chelsea. Wittgenstein's *Tractatus* is published in English in December.

1923 In March, Russell finishes *The Prospects of Industrial Civilization*, written with Dora. "Vagueness" is published in June. The *ABC of Atoms* appears in September. In December, Dora gives birth to Russell's daughter Katharine Jane. Throughout the year, Russell works on appendices and a new introduction to *Principia Mathematica* that incorporate ideas suggested by Frank Ramsey and Wittgenstein.

1924 Russell publishes "Logical Atomism" in January, *Icarus, or the Future of Science* in February, and a number of papers on mathematics and physics throughout the year. In February, he completes the new introduction to *Principia Mathematica*.

1925 In March, volume 1 of the second edition of *Principia Mathematica* is published. *What I Believe* appears in the same month. Gottlob Frege dies in July. *On Education, Especially in Early Childhood* is two-thirds done by August. *The ABC of Relativity* is published in October.

1926 In January, Russell publishes "Perception." *On Education* comes out in February, "Psychology and Politics" in March, "Relativity and Religion" in May, a review of Ogden and Richard's *The Meaning of Meaning* in August, and "Behaviorism and Values" in December.

1927 In April, the pamphlet *Why I Am Not a Christian* is published, followed by *The Analysis of Matter* in July and *An Outline of Philosophy* in November. After *Analysis of Matter*, Russell does not publish another book of academic philosophy until 1940. Russell and Dora open the Beacon Hill School in September. Throughout October and November, Russell lectures in New York to raise money for the school.

1928 From January to March, Russell lectures on the philosophy of physics; he also runs the Beacon Hill School. In February, he publishes "Mr. F. P. Ramsey and Logical Paradoxes." At the same time, Dora is lecturing in the United States to raise money for the school. In September, *Sceptical Essays* is published.

1929 In February, Russell reviews Arthur Eddington's *Nature of the Physical World*. In June, Russell and Whitehead examine Wittgenstein for the PhD. In September, at the start of a new school year at Beacon Hill, Russell begins a two-month series of lectures in New York to raise money for the school. *Marriage and Morals* is published in October.

1930 Frank Ramsey dies in January at age 26. Russell's essay "Probability and Fact" is published in August. *The Conquest of Happiness* comes out in October. In December, Russell reviews James Jeans's *Mysterious Universe*.

1931 In March, Russell's older brother, Frank, dies, and Russell becomes the third Earl Russell. In July, he begins a weekly syndicated newspaper column for the Hearst newspaper chain. In September, he publishes *The Scientific Outlook* and an introduction to the second edition of the *Principles of Mathematics*. In October, he reviews Ramsey's *Foundations of Mathematics*. From October through December, he is in New York raising money for the Beacon Hill School.

1932 In January, Russell participates in the BBC broadcast "Has Science Changed Society?" Peano dies in April. In September, Russell's *Education and the Social Order* is published. In December, he and Dora agree to a legal separation.

1933 In April, Russell publishes a review of Eddington's *Expanding Universe*. In July, he begins living with Patricia ("Peter") Spence, his children's former governess at the Beacon Hill School.

1934 In October, Russell publishes *Freedom and Organization 1814-1914* and lectures on "The Revolt Against Reason" to the Fabian Society (reprinted as "The Ancestry of Fascism" in *In Praise of Idleness*).

1935 In July, Russell and Dora divorce, and he leaves the Beacon Hill School. In October, he publishes *In Praise of Idleness*. *Religion and Science* is published the same month, anticipating the emotivist ethics of A. J. Ayer as well as that of C. L. Stevenson. In November, he reads "The Limits of Empiricism" to the Cambridge University Moral Sciences Club.

1936 Russell and Patricia Spence marry in January. In March, Russell reviews A. J. Ayer's *Language, Truth, and Logic*. In April, he delivers "The Limits of Empiricism" to the Aristotelian Society. In May, he publishes "On Order in Time," in July "The Limits of Empiricism," and in October *Which Way to Peace?*

1937 In February, Russell delivers his maiden speech in the House of Lords. *The Amberley Papers: The Letters and Diaries of Bertrand Russell's Parents*, edited with Patricia, appears in print in March. Russell's son Conrad is born in April. In November, he reads "On Verification" to the Aristotelian Society.

1938 Russell reads "Propositional Attitudes" to the Oxford University Philosophical Society in February and "On the Relevance of Psychology to Logic" to the Aristotelian Society in July. "On Verification" is published in July. In September, he begins a one-year appointment at the University of Chicago and publishes *Power: A New Social Analysis*. While in Chicago, Russell engages Rudolf Carnap in extensive discussions about the nature of meaning and knowledge.

1939 In March, Russell receives a three-year appointment to teach at the University of California. On a lecture tour from March through May, he speaks on the imminence of war. In September, Germany invades Poland: for much of Europe, World War II begins.

1940 In February, Russell receives an appointment to the faculty of the City College of New York, to begin in January 1941. He resigns from his position in California. In April, the New York appointment is revoked on morals charges. From October to December, Russell

delivers the William James Lectures at Harvard University. In June, he publicly announces his support of the war against Germany. In August, he accepts a five-year lectureship appointment from the Barnes Foundation in Pennsylvania. *An Inquiry into Meaning and Truth* is published in December.

1941 In January, Russell begins lecturing on the history of Western philosophy at the Barnes Foundation. These lectures form the basis of his *History of Western Philosophy* (1945). Russell speaks on CBS radio with Mark Van Doren about Hegel's *Philosophy of History*.

1942 From January to April, CBS radio broadcasts several talks by Russell with Jacques Barzun, Mark Van Doren, Scott Buchanan, and others on various figures in the history of philosophy. In December, Russell is dismissed by the Barnes Foundation before the end of his contract.

1943 From July through December, Russell works in Bryn Mawr College's library on *History of Western Philosophy*. In November, having successfully sued the Barnes Foundation for breach of contract, he is awarded $20,000 in damages. In October, November, and December, he speaks on "Postulates of Scientific Inference" at Bryn Mawr, Wellesley College, and Princeton University. In December, while living in Princeton, New Jersey, he begins regular discussions with Albert Einstein.

1944 In January, Russell learns that he has been awarded a lectureship at Trinity College. He returns to England in June. In the fall, he begins lectures at Trinity on nondemonstrative inference; he gives these annually through 1949. "My Mental Development" and "Reply to Criticisms" are published in *The Philosophy of Bertrand Russell*.

1945 Russell begins speaking regularly on BBC radio on a wide variety of popular and political subjects. In October, *A History of Western Philosophy* is published in America. His essay "Logical Positivism" is also published in October.

1946 In June, on behalf of the British Council, Russell speaks in Switzerland on "Power." In November, *A History of Western Philosophy* is published in Britain.

1947 In January, Russell reviews the second edition of Ayer's *Language, Truth, and Logic*. From February to May, Russell delivers a number of talks for the BBC. In September and October, on behalf of the British Council, he speaks in Holland, Belgium, and France on the need for world government. Whitehead dies in December. Russell continues to give regular talks and interviews on BBC radio.

1948 In January, Russell and Fr. Frederick Copleston, SJ, take part in a BBC broadcast debate on the existence of God. In October, he publishes *Human Knowledge: Its Scope and Limits*. Also in October, while on a lecture tour in Norway, he survives the crash of a small plane into the ocean. Two days later, he continues his lecture tour. In the same month, he speaks in Berlin on behalf of the foreign office. In December, he gives the first of six Reith lectures (commemorating John Reith) on BBC radio.

1949 In January, Russell delivers the second of the Reith lectures on BBC radio; these lectures are published in May as *Authority and the Individual*. In April, Russell decides to separate from Patricia. In May, he publishes *Authority and the Individual*. He is awarded the Order of Merit in June. In September, he is elected a Life Fellow to Trinity College.

1950 Russell publishes the essay "Logical Positivism" in January. *Unpopular Essays* comes out in September, the same month in which Russell resumes a friendship with the American Edith Finch. In November, Russell delivers his Machette lecture at Columbia University. It is later published as *The Impact of Science on Society*. In December, he is awarded the Nobel Prize for Literature.

1951 In April, Wittgenstein dies. Russell publishes *The Impact of Science on Society* in May and *New Hopes for a Changing World* in September.

1952 In May, Russell celebrates his 80th birthday. In June, he and Patricia divorce. In July, he publishes *What Is Freedom?*, funded by the Information Research Department (IRD), a clandestine agency of the British government. The IRD later secretly funds the publication of *What Is Democracy?* (1953) as well. Russell marries Edith Finch in December.

1953 In February, Russell publishes "The Cult of Common Usage," a criticism of the school of ordinary language philosophy. He also

publishes *Satan in the Suburbs*, a collection of short stories. From September through October, Russell broadcasts several talks on different topics on BBC radio.

1954 In May, Russell publishes *Nightmares of Eminent Persons*, another collection of short stories. In July, he publishes *Human Society in Ethics and Politics*. In August, he reviews Ayer's *Philosophical Essays*. In December, he delivers the influential BBC broadcast "Man's Peril from the Hydrogen Bomb." It is reproduced the next year as "The Russell-Einstein Manifesto."

1955 In January, Russell speaks on John Stuart Mill to the British Academy. His talk is later reprinted as a pamphlet and in *Portraits from Memory*. In April, Einstein dies, having previously written Russell of his willingness to sign a document outlining the dangers of nuclear war. In July, "The Russell-Einstein Manifesto" is published, leading to the first Pugwash Conference on Science and World Affairs in Pugwash, Nova Scotia, in 1957.

1956 In March and April, Russell protests the conviction and imprisonment of Martin Sobell, an accomplice of Julius and Ethel Rosenberg. In August and throughout the year, Russell protests when French, British, and Israeli forces attack Egypt. In September, *Portraits from Memory* is published, followed by *Logic and Knowledge* in October. During this year and every year thereafter, Russell writes extensively on the threat of nuclear war.

1957 In April, Russell publishes "Logic and Ontology." In July, "Mr. Strawson on Referring" is published in reply to Strawson's 1950 essay "On Referring." In October, *Why I Am Not a Christian* appears in Britain. In November, Russell publishes "An Open Letter to Eisenhower and Khrushchev," to which Nikita Khrushchev and John Foster Dulles reply.

1958 In January, Russell reviews Gilbert Ryle's *Concept of Mind*. He founds, presides over, and addresses the Campaign for Nuclear Disarmament (CND), publishing their first pamphlet in February. In October, G. E. Moore dies; Russell writes an obituary for the *Times*.

1959 In January, Russell publishes *Common Sense and Nuclear War*. *My Philosophical Development* is published in May.

1960 In February, Russell debates Edward Teller on nuclear issues on Edward Murrow's CBS television show. Russell resigns from the Campaign for Nuclear Disarmament and forms the Committee of 100, over which he presides. *Act or Perish*, a leaflet written by Russell, is published by the Committee of 100 late in October.

1961 In September, Russell, who is 89 years old, is sentenced to two months in prison after being charged with incitement to breach of peace for participation in an antinuclear demonstration with other members of the Committee of 100. The sentence is reduced to one week in a prison hospital. In October, *Fact and Fiction* is published.

1962 In August, the Cuban ambassador to Great Britain tells Russell of the Cuban government's concerns about a possible U.S. invasion of Cuba. In October, President John F. Kennedy finds evidence of Soviet missiles in Cuba and begins a blockade of Cuba. Russell sends telegrams to Khrushchev and Kennedy urging conciliation. Khrushchev replies to Russell publicly, agreeing that the crisis should not be further escalated and offering to have a summit meeting with the United States.

1963 In January, Russell resigns as president of the Committee of 100. *Unarmed Victory*, his account of the Cuban Missile Crisis, is published in April. That month, Russell begins protesting American atrocities, including the use of napalm, in Vietnam. He forms the Bertrand Russell Peace Foundation in September.

1964 Russell writes "The Duty of a Philosopher in This Age." In August, the Tonkin Resolution authorizes U.S. involvement in the Vietnam War. Russell continues to write voluminously protesting the war in Vietnam and other Cold War threats to peace and safety.

1965 Russell publishes an addendum to his "Replies to Criticisms" in a new edition of *The Philosophy of Bertrand Russell*.

1966 Russell forms the International War Crimes Tribunal to investigate American military actions in Vietnam.

1967 In January, *War Crimes in Vietnam* is published. Volume 1 of *The Autobiography of Bertrand Russell* is published in March.

1968 Volume 2 of *The Autobiography of Bertrand Russell* is published in April. Russell sells his papers to McMaster University to raise money for the International War Crimes Tribunal.

1969 Volume 3 of *The Autobiography of Bertrand Russell* is published in May. *Dear Bertrand Russell*, selections of his correspondence with the general public from 1950 to 1968, is published in September.

1970 Russell dies at his home in Penrhyndeudraeth, Wales, on 2 February at the age of 97.

Introduction

In many respects, our modern conception of the philosopher is derived from pictures of Bertrand Russell, sitting white haired, determined, and frail among the youthful antiwar demonstrators of the 1960s. Had he limited his life work to writing against war and nuclear war in particular, Russell would be famous enough, as the originator of multiple organizations dedicated to a free and peaceful world. But Russell lived more—and not simply longer—than most other individuals. Metaphysician, logician, public intellectual, educator, agnostic, and freethinker, Russell was and remains a colossus. Perhaps no other single philosopher in the last 150 years can be said to have created so much and influenced so many. By the age of 25, he had discovered a contradiction—named for him—that shook mathematics to its core, thereby shaping investigations in logic and mathematics that gave rise, in the work of thinkers such as Kurt Gödel and Alfred Tarski, to the greatest logical discoveries of the 20th century. Russell's *Principia Mathematica*, written with Alfred North Whitehead, ranks as one of the greatest books on logic since Aristotle. Many scholars struggle to produce a single volume or at best two in their entire careers, but by the age of 40, Russell had published half a dozen books that are philosophical classics; in subsequent years, that number was to double, then double again, and again, and again.

If it is staggering to see Russell's impact on current and recent work in linguistics, philosophy of language, philosophy of mind, epistemology, and philosophy of science, it is unhinging to then turn around and discover his impact on our perceptions of nuclear war, the importance of peace, the problem of religion, marriage and morality, women's rights, and the education of children. Somehow, despite his prodigious output in the most abstract areas of philosophy, and even while carving out multiple paths of pure inquiry (often leaving them for others to pick

up and continue), Russell was thoroughly engaged in the world, a man of action as well as contemplation. Little and quick, not particularly handsome but charming through and through, Russell had an extraordinary personal life. In his many relationships, affairs, and friendships, it is impossible not to see his desire for human companionship and his deep interest in and regard for other people. Writing on topics that range as widely as the nature of logic and the nature of love, Russell produced works that have been translated into 48 different languages, and the translation continues apace. Today there is no country in the world that has not encountered Bertrand Russell, and many of us are still blinking in surprise.

RUSSELL'S LIFE

By Russell's own report, his early life was exceptionally secluded and quiet. This was largely the result of the death of his parents within a few years of Russell's birth on 18 May 1872. His mother, Kate, Lady Amberley, died of diphtheria in 1874. His father, John, Lord Amberley, succumbed to bronchitis in 1876. Russell and his brother Frank were then cared for by their grandparents, Lord John Russell, a former British prime minister, and Lady Frances Russell. But in 1878 their grandfather died, leaving the two boys to the care of their grandmother. Both sides of the family belonged to the British aristocracy, and Frank, as the older brother, was in line to receive the earldom upon maturity.

Russell's life with his grandmother at her home in Pembroke Lodge was rather predictably one of privilege, propriety, and religious austerity. Frank received a boarding school education and was mostly away from home, but because of his grandmother's disenchantment with her choice for Frank, Russell's childhood education took place in the isolation and quiet of home. If in making this decision her hope was to instill religiosity and prevent the growth of the stubborn, noncompliant, and idiosyncratic behavior already evident in Frank, Lady Russell was to fail utterly, and Bertrand Russell developed just the kind of free-thinking and irreligious character his father and mother had exhibited before their deaths, and which had so horrified his grandparents.

Educated at home by tutors, Russell was at times melancholy and self-absorbed, his opinions suppressed in front of his grandmother and

unchecked by any acquaintance with peers. But for all that, he appears to have been much like any other young man of his class and generation. Russell showed promise in mathematics, and in 1890 at the age of 18, he entered Trinity College, Cambridge University, to study mathematics. His mathematical education was rigorous in preparing for exams, but as he was to realize later, it contained significant gaps, and after three years in this study, Russell had had enough. His subsequent study in philosophy did not break with his previous work but appears instead to have given him the freedom to reflect philosophically on mathematics, beginning with issues in geometry. His tutors at this time included John McTaggart and James Ward, both of whom shaped his thinking, either by the influence of their own ideas—McTaggart, for example, was a British idealist, a neo-Hegelian—or by directing him to important literature, as Ward did when he directed Russell's attention to Gottlob Frege's work. Russell's work in this period had the stamp of neo-idealism and sought, for example, to show the existence of antinomies or contradictions within particular sciences, illustrating that the nature of ultimate reality must be apprehended not piecemeal, but as a whole.

Russell's plans to marry Alys Pearsall Smith, an American Quaker, displeased Lady Russell, but as Russell had reached his majority, she could not prevent it. Russell and Alys married in December 1894; he was 22. Russell had his own anxieties about marriage and children, and the marriage did not remain happy. By 1902, Russell had fallen out of love. But he had other interests to console him. Writing a dissertation published in 1897 as the *Foundations of Geometry*, Russell had become deeply interested in foundational issues in mathematics and logic. In his dissertation, Russell had embraced a form of idealism. He soon rejected idealism, however, on the grounds that it undermined the objective truth of mathematics. By 1900, he had left behind the remnants of his neo-idealist period, adopted realism with G. E. Moore, puzzled over Frege's writing on logicism, and heard Giuseppe Peano speak on the axiomatization of arithmetic.

Russell maintained that the most important event of his life was his visit in 1900 to the International Congress of Philosophers in Paris, where he was introduced to Peano and heard him speak. Returning home, Russell absorbed Peano's writings and was soon armed with a notation (Peano's) less punishing than Frege's that enabled him to precisely analyze the problems he had been grappling with for several years.

He soon began drafting a book outlining a reduction of mathematics not to Peano's arithmetic axioms but to axioms of logic. But in 1901, with work on the book underway, Russell's study of Georg Cantor's work in transfinite arithmetic and of Cantor's paradox of cardinals led him to the discovery of his own paradox of classes for logic and set theory.

The seriousness of the contradiction, known as Russell's paradox, stems from the fact that it arises from very natural assumptions about forming sets (when posed as a problem for set theory) or predicates (when posed as a problem for logic). The discovery that a contradiction lurked among the terms and truths he intended to use to define mathematics immediately created a great obstacle to this task. Russell conveyed his discovery first to Whitehead and then to Frege, only to see them react with shock.

It should be noted that despite all the excitement generated by his philosophical and logical work, Russell was not deaf to public affairs and had almost decided to study politics instead of philosophy. His first book, *German Social Democracy* (1896), concerned the German social democrats. A large part of his attraction to Alys appears to have come from their shared interest in women's suffrage and other issues of social reform. As a gentleman's son and the son and grandson of political men, Russell might have been expected to involve himself in politics and even aspire to be prime minister, as his grandfather had been. And indeed, the trajectory of his life was political and public as well as intellectual. Yet it was not by the conventional means of holding office that he was politically active, though he several times ran for office (and lost, his reformist views being unpopular during most of his life). Nor did Russell rise to public prominence through his political writings, though he was unflagging in their production, and they were always popular. Rather, he made his name by serious work in philosophy and logic, and only afterward, as a celebrated authority in these areas, did he come to be seen as a public intellectual.

His authority in philosophy and logic had become apparent by the early 1900s, and from then on Russell was in contact with such leading mathematical minds of his generation as Frege, Peano, and Henri Poincaré. Indeed, Frege's response to Russell's 1902 letter shows that he saw that the contradiction was of exceptional importance to mathematics and that it had, furthermore, destroyed the foundations of his own work, the *Grundgesetze*, on the eve of publication of its second volume.

But the contradiction was scarcely more kind to Russell, who completed *The Principles of Mathematics* knowing that he still needed to solve the paradox before he could continue his project. In the years following the discovery of the paradox, additional contradictions emerged, and Russell's work in the period from roughly 1902 to 1905 involved an agonizing attempt to constrain the paradoxes in a way compatible with his logicist task as well as with his conception of logic as a universal science. His almost desperate efforts in this period to eliminate the paradoxes that he and others had discovered in mathematics and logic stand in ironic contrast to his earlier, idealist celebration of contradictions as characterizing the nature of reality.

In these years after 1902, Russell's marriage with Alys had become a mere formality, endured with great distaste on his part and considerable personal pain on hers. He lived unhappily, chastely, and felt his work a punishment, as he saw no relief from the paradoxes that stood in the way of his main logicist project. Yet he had inherited a small fortune and had at least no financial worries; in that sense he was under fewer constraints than in later years, when—having given away most of his fortune—he supported himself by writing. But at this earlier time, he had no such anxiety and could dedicate himself to pure intellectual labor.

The fruit of that labor was his discovery in 1905 of a technique of rephrasing apparently denoting expressions, such as 'the present king of France,' in other terms that denoted no such entity. This was a decisive event for Russell, as it gave him the means of getting on without paradoxical notions by using other, less problematic terms instead. Apart from this discovery, Russell experimented with different solutions to the various paradoxes, settling in 1907 on the approach known as the ramified theory of types and orders. This theory is essential to the logicist program spelled out in *Principia Mathematica*. Working in collaboration with Whitehead, Russell produced the three volumes of the *Principia* in 1910, 1912, and 1913. A fourth was begun but never completed.

In 1911, on the eve of a visit to France, Russell visited Ottoline Morrell, and their relationship, hitherto no more than acquaintance, warmed into full-blown romance. By Russell's own account, his affair with Lady Ottoline liberated him from many of the repressed and anxious beliefs of his youth, anticipating the free thinker he was soon to publicly

become. Their relationship combined class familiarity—both belonged to the aristocracy—with intellectual compatibility, for though Lady Ottoline was no mathematician, she had a sensitive, inquiring mind. Cooling by degrees into friendship, their affair continued throughout the period in which Ludwig Wittgenstein worked with Russell, from 1911 to 1914.

Russell's friendship with Wittgenstein was in many ways as significant as his affair with Lady Ottoline, and the end was considerably more abrupt and traumatic. Wittgenstein—young, charismatic, aristocratic in temperament, and in pursuit of his own destiny—had come to Trinity College on Frege's suggestion to study logic with Russell, and he very soon impressed Russell with his character, intelligence, and potential. For a time, the feeling was mutual: Wittgenstein was passionate in his regard for Russell and rewarded him with exacting criticism. Yet the criticisms also show Wittgenstein to have been dismayed and disenchanted with what he perceived as Russell's logical inexactness and a kind of philosophical crudeness. Wittgenstein's own sensibilities and his views on philosophy, logic, and mathematics were emerging in a way highly unsympathetic to Russell's, and what began between them as disagreement became rather quickly a complete rupture over the nature and value of philosophy. Despite these differences, Russell listened to the younger man's objections to his work and, in the 1920s, radically revised his epistemological and logical theories in an attempt to respond to them.

Wittgenstein's path finally broke away from Russell's in 1914, first because of Wittgenstein's desire to retreat to Norway to study logic in solitude, and then because of the outbreak of World War I. They were not to meet again until 1919. In 1914, Russell published the Lowell lectures delivered in Boston in spring 1914 as *Our Knowledge of the External World*, but the onset of the war, plus the doubts about his work instilled by Wittgenstein's objections to it, led Russell to focus almost exclusively on politics for several years. Russell's conception of the fragility of civilization—the habits and emotions that stand between us and a return to brutishness—led him to become increasingly vocal against what was in Great Britain at its start a very popular war. In 1916, his pacifist views cost Russell his lectureship at Trinity College and severed his (already weakened) friendship with Whitehead.

In 1918, the British government, which viewed the United States as its ally, imprisoned Russell for six months in response to his hav-

ing referred in print to the use of police in the United States to break strikes. In prison, Russell began to sketch the new view of mind and knowledge that he published in 1921 as *Analysis of Mind*, and in which he shifted from his long-standing dualism of mind and matter to neutral monism—the theory that what we call mental reality and material reality are composed of the same neutral substance but governed by different laws.

In 1920, Russell traveled to Russia to see the revolution firsthand. Later in the year, he traveled to China with his new lover, the socialist and activist Dora Black. After his long-awaited divorce from Alys in September 1921, he married Dora in the same month. John, their first child, was born in November 1921, and Katharine, their second, in December 1923.

Russell's rethinking of logic occurred in the same period, as did his growing interest in Albert Einstein's relativity theory, which was then getting much attention. The middle and late 1920s therefore see the publication of the second, revised edition of *Principia Mathematica* as well as the publication of the *ABCs of Relativity* and the *Analysis of Matter*.

In 1927, Russell and Dora opened the Beacon Hill School in an attempt to put into practice a less inhibiting and destructive type of education than the repressive style current at the time. Russell's political views, while never sympathetic to communism, solidified against it in this period. By 1929, his opposition to Joseph Stalin's regime was public and pronounced. In his 1929 book *Marriage and Morals* as well as other work in the period, he expressed liberal views on marriage and sexuality. Among his unconventional views was that jealousy is worse for marriage than infidelity. Such beliefs, coupled to the fact of his having lived with Dora for some time without benefit of marriage, made Russell the object of censure in conservative circles. Nor was the air of scandal lifted to any degree by his frequent attacks on religion (especially Christianity), which he saw as opposed to human happiness.

When Russell became an earl after the death of his brother in 1931, he inherited his brother's debts along with the title. He also spent a great deal of money supporting Alfred North Whitehead's family at the behest of Whitehead's wife and without Whitehead's knowledge. From this point onward, his personal fortunes were small, and his prolific writing was often an attempt to support himself and his family.

In the early 1930s, Russell was having an affair with Patricia Spence, whose nickname was Peter. She had began working as a governess for Dora and Russell at the Beacon Hill School in 1930, and the affair—which took place even as Dora became pregnant by another man—resulted in his leaving both Dora and the school. Russell and Dora were divorced in 1935, and the experimental school continued under Dora until 1943. Russell married Patricia in 1936; their son, Conrad, was born in 1937. Britain entered World War II in 1939, but by this time Russell, with Patricia and Conrad, had moved to the United States in order for him to assume an appointment first at the University of Chicago in 1938, and then at the University of California, Los Angeles, in 1939. After a year in California, he received an invitation to teach at City College of New York. But he moved to New York City only to find the appointment revoked on morals charges, which were fed by public outrage at his book *Marriage and Morals*.

However, Russell received the patronage of the Barnes Foundation in Pennsylvania in the form of a five-year lectureship contract. The Barnes Foundation—an art museum that hosted lectures on various subjects—was the creation of Albert Barnes, an art collector with decided views. Barnes, who came from a working-class background and made a fortune with an antiseptic product, bridled at what he perceived as Russell's aristocratic snobbishness. He fired Russell in December 1942. Russell sued, won the case against Barnes the following year, and was awarded $20,000 from the foundation. This allowed him to finish his *History of Western Philosophy*, a book he completed with research assistance from Patricia, who was trained as a historian. A bestseller when it came out in 1945 in the United States and in 1946 in Great Britain, the book was based on the lectures Russell had given at the Barnes Foundation.

In 1944, Russell was awarded a lectureship at Trinity College, Cambridge. Prior to his return, he lived in Princeton, New Jersey. There, his conversations with Einstein laid the groundwork for their later efforts to stem the proliferation of nuclear weapons.

In the 1940s, Russell published numerous essays on science, religion, politics, history, logic, and linguistic philosophy, and he began to respond to invitations to reflect on his life, for he was now in his 70s. Russell's philosophical work in this period, such as *Inquiry into Meaning and Truth* (1940) and *Human Knowledge: Its Scope and Limits* (1948), shows the largely negative impact of logical positivism on his thought.

By the 1940s, both logical positivism and ordinary language philosophy had ascendancy in the philosophical world. The first was rooted in Wittgenstein's early work, the *Tractatus*, and the second in his later philosophy. Russell was conscious of being a great philosopher no longer in vogue. Yet from 1950 on, full 20 years before his death, Russell was less interested in abstract philosophical issues of meaning and mind than in pressing political matters, particularly what seemed the very real possibility of our complete destruction by means of nuclear war.

In 1949, Russell received the Order of Merit. He separated from Patricia the same year. In 1950, he received the Nobel Prize in Literature. In 1952, he and Patricia divorced, and Russell married Edith Finch, an American, later that year. If in some respects his relationship with Edith was the happiest and most successful of any of his many relationships, it may just be that Russell, who was 80 years old when he married the much younger Edith, was finally slowing down.

Slowing down is a relative thing, however, and Russell's fame in some quarters is founded almost exclusively on the considerable work he did in the 1950s and 1960s to limit or eliminate nuclear weapons and protest the war in Vietnam. In 1955, he and Einstein collaborated on the Russell-Einstein Manifesto, which lays out the dangers of nuclear war and expresses the need to eliminate all such weapons. In 1957, Russell initiated the first of many conferences by organizing the first Pugwash Conference. In 1958, he became the first president of the Campaign for Nuclear Disarmament, from which he stepped down in 1960 in order to initiate the Committee of 100, a more militant antinuclear protest group. In 1961, Russell was sentenced to several months in prison for participating in antinuclear campaigning, on the grounds of inciting public unrest. The sentence created a furor and was commuted to seven days in a prison hospital.

Russell's political concerns extended into Cold War politics. During the Cuban Missile Crisis, he was in communication with Nikita Khrushchev and John F. Kennedy. Khrushchev responded to Russell's letter publicly, using it as an occasion to urge caution during the crisis. Though it cannot be known whether Russell influenced Khrushchev to back down from positioning Soviet missiles in Cuba, the fact that he tried contributed to his being perceived as a public intellectual and political gadfly of the first order. In the early 1960s, the United States was being drawn into the war in Vietnam and was actively involved there

by 1964. In response, Russell, now in his 90s, created the International War Crimes Tribunal as a watchdog organization engaged in tracking and protesting the atrocities and war crimes committed by the United States in the conflict in Vietnam. In 1968, it was to raise money for the tribunal that Russell sold his papers to McMaster University, whose Bertrand Russell Research Centre now houses the bulk of Russell's exceedingly complex collection of correspondence, notes, audio tapes, papers, and books.

Russell's correspondence—some 34,000 letters—includes many to and from the leading men and women of several generations. These and his other writings stretch from the Victorian era of his youth to the agitations of the late 1960s, through two world wars and up to the Vietnam era, from the invention of the telephone to the creation of the H-bomb. A fervent walker, but as passionate a pipe smoker, Russell enjoyed good health for most of his life, and he lived to almost 98 years of age, physically active and mentally engaged to the very end, dying at home in the company of Edith, in Penrhyndeudraeth, Wales, on 2 February 1970.

CULTURAL BACKGROUND

Russell's thought and sensibilities are in many respects rooted in the late Victorian era of the 19th century. But indirectly, he was influenced by an earlier era as well, for he grew up in the company not of his parents' generation but of the generation before them. Raised by a grandmother who was born in 1792 and grew up in the aftermath of the French Revolution, he must have felt many of her assumptions and sensibilities. His parents and grandparents lived during the Industrial Revolution, seeing the proliferation of factories, railroads, and canals, and the benefits and costs arising from British colonization in India, Ceylon, Africa, and the West Indies. Only a few decades before Russell's birth, Karl Marx and Friedrich Engels published the *Communist Manifesto*. Moreover, the convulsions following Charles Darwin's inquiries into the origins of human and other species were by no means over during Russell's youth.

Russell grew up well aware that new ideas were emerging in abundance. As he came to adulthood, he saw how laws were slowly begin-

ning to respond to such social concerns as a woman's right to property and divorce, the right of the poor to a voice in Parliament, and the right of all children to an education. He wrote his first books on politics and philosophy right before and after the coronation of Edward VII in 1901, with the Victorian era as a background. His 20s and 30s therefore overlap with the Edwardian period, an era marked by its exuberant interest in literature, art, science, and philosophy. But the excitement was not limited to new British work: there was in Britain at the time a tremendous respect for German ideas, both past and present. This included work by such thinkers as Immanuel Kant, Georg Hegel, Sigmund Freud, and Max Weber. In Russell's own writings in this period, the exuberance and optimism of the era is apparent.

Following World War I and throughout the 1920s, Russell adjusted and rethought his youthful ambitions—and fought off bitterness—in ways that often matched the postwar spirit of the times. In addition to the pessimism following on the heels of the war, colonization was increasingly resulting in strife. Britain began to adjust to being a power among other powers and hence to the constant threat of a loss of balance of power. In this period, Russell worried about the destructiveness of war and longed for a world government, perhaps in part because he had acquired a progressive vision of society during the Edwardian period of his youth, the *belle epoche*, and was therefore acutely aware of what could be lost to a malignant superpower. He lived to see that danger come alive in the form of fascism and Nazism.

Russell's life in the 1930s and 1940s, indeed until its end in 1970, was one that responded to the changing political, social, scientific, and technological scene with the values of the culture he experienced in his youth and young adulthood. If we grant Russell the sensitivity to have understood from his guardian, his grandmother, the conditions, emotions, and beliefs of her earlier age, we must also grant to him on his deathbed a sense of history that is almost breathtaking in its scope: alive to the feelings and beliefs of those who walked on the earth shortly after the founding of the United States and the French Revolution, he was aware, at the end of his days, of the very real threat of the complete destruction, not simply of a civilized life, but any life at all. His moodiness over the prospect of nuclear war, which can seem overwrought to some readers, ought to be weighed against his extraordinary understanding of human history as well as his very great hopes for humanity.

RUSSELL'S THOUGHT

Russell's thought has a side that belongs to the public philosopher or public intellectual as well as a side that belongs to the professional philosopher. In his public philosophy, there is much unity of principle: Russell begins and ends his career a political progressive, concerned with the improvement of human life, the rights of women, the rights of children to a liberating education, and the rights of all men and women to a life free from war, and as free as possible from labor, one that encourages the development of dispassionate opinions, humility, and compassion.

Never a religious man, Russell is often blunt about the negative effects of religion, seeing it as a source of selfish self-absorption at best and of great misery at worst, which he thinks is in most cases. He sometimes permits himself to speak as though philosophy or contemplation is a kind of religion or as though there are secular ways of living that stand in for religion, but these remarks function merely to soften his message: that religions are a kind of superstition and that humans are better off without superstition.

Russell's stance on war is equally emphatic. From the first, Russell's reasoning about war is based on an attempt to calculate the damage of fighting over the damage of nonresistance. His views must be seen in the light of the very high degree of importance he gives to civilization, both in its material products and in its moral and intellectual ones. The latter include the sciences and mathematics, literature and the arts, democracy and other enlightened political practices, and such acquired values as the humane regard we have for one another, tolerance, the love of peace, and the expectation of justice. Long before the invention of the atom bomb, Russell concludes that the cost of war—the losses of life and property, but especially the inroads on civilized values—almost always outweighs any supposed gains a war might bring, even if the war is in self-defense or on matters of principle. He never varies from this view, but as the technology of war grows more and more dangerous, he grows more frantic in his concern for the loss of our civilized tendencies. Many of the themes in his work against war and in his stance on religion are integrated in his conception of education, and in general his social and political thought shows a great deal of unity, despite stretching over almost a century.

In short, in his social and political work, Russell is progressive, guided by science and the hope of human progress. He views human na-

ture as amenable to the tempering or civilizing tendencies of education, so long as education itself is civilized, and he deplores war—except in cases when, in the past, it served to spread civilization or in order to defend important principles, such as human freedom—because war incites us to antisocial acts and feelings that undermine civilization.

In his professional philosophy there is less unity, or rather, the unity is less apparent, and Russell's thought on logic, philosophy of logic, theory of knowledge, meaning, and metaphysics goes through several distinct stages. Though his very early, or juvenile, work belongs within the tradition of British idealism, this perspective is soon practically obliterated by technical, logical work overlaid with philosophical assumptions about the nature of mind and meaning that can be characterized as highly Platonist and realist. In his important post-idealist work, especially *The Principles of Mathematics* (1903), everything we can say or think is said to have *being*—to exist or subsist—and every word in a sentence is said to have *meaning* because it stands for an abstract or concrete entity. Propositions, which are objective complexes of meanings or things, have being; they are therefore true not because they represent or correspond to a fact, but because they exist in space and time, and they are false not because they fail to represent some fact, but because they subsist outside of space and time. Logic, which consists of such objective propositions, is therefore a science about things just as much as physics is, but more general. In this period, in fact until 1919, Russell is a dualist, treating mind and matter as essentially different kinds of substance, and his theory of knowledge is based on, or built around, the assumption that in thought or sensation, a mind or self confronts an entity—a color, a sound, a concept—by an act of mind called acquaintance or awareness.

Russell's technical logical work in the *Principles* consists of an attempt to show that mathematics is just an extension of logic, but his understanding of logic and of the indefinable terms of logic, such as the notion of a class, comes under intense pressure within the text as he attempts to address the contradictions emerging within his logical system. These antinomies arise in part because Russell conceives of logic as applicable to anything, including itself. In this universalist conception, a particular proposition may be about (its variables may range over) anything whatsoever, including the proposition itself. This reflexivity, which applies to properties and classes as well, makes it possible for

contradictions to emerge in his system, such as the class of all classes that are not members of themselves (Russell's paradox). In an appendix to the *Principles*, Russell attempts to address this and related paradoxes by withdrawing his assumption that a variable is unrestricted and takes all entities, classes, propositions, and so forth, as values. Instead, he suggests that variables range over certain types of entities, individuals, functions of individuals, functions of functions of individuals, and so on. Yet he is uncomfortable with a theory of types of variables, which is in tension with his fundamental conception of logic as universal, and a great deal of Russell's logical work in the years immediately following the *Principles* therefore consists in devising ways of protecting logic from inconsistency without adopting a theory of types.

He makes a discovery in 1905, in "On Denoting," that helps for a time in his pursuit of a type-free solution to contradictions. In that essay, he develops an analysis of descriptive phrases, like 'the king of France' in sentences like 'The king of France is bald,' in terms of quantified sentences no longer containing the original descriptive phrase, showing that the superficial form of a sentence may conceal its real logical form. Russell's Platonist theory of meaning is not softened but rather intensified by his 1905 theory of descriptions and the general doctrine of incomplete symbols developing out of it. For in this analysis, the assumption that every word in a sentence has meaning is given up, only to be reintroduced at a deeper level: in the logically correct expression of a proposition, every word must have some thing as its meaning and that thing is known by acquaintance.

The analysis just noted is a way of doing without putative entities, since it shows that we can say everything we need to say without reference to them: the phrases originally thought to have been referring ones are thus shown to be figures of speech, incomplete symbols, and not to correspond to entities after all. This makes it useful to Russell's struggle to eliminate paradoxes, which seem to arise from reference to things like classes, or relations, or propositional functions. In the period immediately following the publication of "On Denoting," Russell engages in a series of attempts to resolve the paradoxes obstructing his reduction of mathematics to logic by showing, in his substitutional theory, how sentences containing words for classes, relations, and propositional functions can be analyzed so that such phrases no longer occur.

In these attempts, which are ultimately unsuccessful for reasons that are contested, Russell nevertheless assumes that sentences denote propositions, that is, that propositions are entities, even if words for classes or functions or relations are incomplete symbols. Yet Russell knows that propositions as single entities are also amenable to paradoxes—the liar paradox is one example and there are others—and in 1906 he sometimes experiments with eliminating propositions—or at least some kinds of propositions. Using his analysis of descriptive phrases as a model, he eventually settles on a multiple relation theory of belief (or judgment) that no longer treats sentences as denoting objects but as incomplete phrases that are given meaning by a mind, its act of belief, and the various objects of that belief. This theory, which he adopts in 1910, engages a considerable amount of philosophical psychology, and Russell's work in general in this period presses into psychology, largely due to the impact of Alexius Meinong. Meanwhile, by 1908 he has once again embraced the distinctions among types of propositional functions and relations he sketched in *Principles*, though in a form made more complex by distinctions among propositional functions within one type. This is the ramified theory of types.

Russell continues, moreover, to experiment in other ways with eliminating entities by means of the theory of descriptions. In doing so, Russell's work in the 1910s—such as in *Our Knowledge of the External World* (1914)—comes to resemble empiricism much more than his work of 10 years earlier and more than his work of 10 years later. Indeed, Russell is often characterized as an empiricist just because of his interest in showing that knowledge derives from experience. Yet his empiricism is limited and held in check by several non-empiricist tendencies, such as his willingness to permit unverifiable principles as essential to scientific knowledge, in his acceptance of the extra-mental existence of universals, and in his tolerance for metaphysics.

Considering the role of experience in the foundations of knowledge, Russell is at first a dualist, but his dualist theory of knowledge and his realist theory of meaning come to an end due to internal pressures that break out especially over his theory of belief. The problems with this theory of belief cut across his dualism, realism, and his conception of logic. His young student Ludwig Wittgenstein brings this mass of problems to Russell's attention even as Russell is writing a book intended to lay out the theory of knowledge implicit in *Principia Mathematica*,

making his continuation of the book, called *Theory of Knowledge*, impossible. Russell admits in private correspondence that the event was decisive, and indeed, it does appear that Russell's subsequent work in professional philosophy is an attempt to respond to the issues Wittgenstein raised.

In the late 1910s to early 1920s, Russell lays down the pattern of his later work, which is characterized by reversing his opinion on logic—logic is a mere symbolism, open to interpretation, not a system of maximally general truths about reality—as well as by delving into language as a physical phenomenon and investigating its relation to the extra-linguistic world from a standpoint that is no longer dualist. Since Russell no longer believes there are two kinds of substance, mental and material, he can no longer explain knowledge and belief in terms of relations between minds and things. There are no minds, he says, and nothing material. Rather, there is a common stuff, called sensations, which, grouped one way, forms the series we call a perception (or the class of such series we call a mind), and, grouped another way, forms the class we call a momentary physical object (or the series of such classes that is the object enduring in time). Series (or classes) may cause other series (or classes) to occur, as when the series of sounds 'Car!' causes a series of movements that get us out of the way, and the existence of such causal relations plus the psychological laws of association explains what we mean by meaning.

Russell's work in the 1930s and 1940s is increasingly informed by behaviorism and by the physics of 20th-century relativity and quantum theory. At the same time, it defends the role of the metaphysician against the rejection of metaphysics by Wittgenstein and the logical positivists. To the last, Russell remains concerned with the nature and foundation of knowledge and with the nature of the connection between language and the world.

There is, then, an underlying unity in Russell's academic work despite the numerous small and large changes and stages that characterize it. Throughout his life, Russell, the academic philosopher, believes philosophy to have a subject matter of importance: the world. He could not think it concerned solely with how we use words, as in ordinary language philosophy, without philosophy thereby ceasing to be of value to him. What drives Russell in doing academic philosophy is not, for example, the wish to reorient our perspectives on the world so as to see

it anew, or the desire to transcend the world, or the desire to achieve calm acceptance of the world, or even the desire to change the world. What drives him is the desire to get to the most general truths that underlie and make possible all other truths. In this sense, his impulse is metaphysical first and last.

But this is, again, only one side of Russell's thought, for Russell is a citizen of the world as much as he is a pure philosopher. Indeed, Russell's success in balancing these two dimensions recalls Plato's famous question of the relation of the philosopher to the city, forcing us to give credit to the idea that the wise person is one of action as well as contemplation, thoroughly engaged both in life and in thought.

The Dictionary

– A –

ABSTRACTION, AXIOM OF. *See* COMPREHENSION, AXIOM OF.

ABSTRACTION, DEFINITION BY. Giuseppe Peano employs a method of abstraction to define the natural **numbers**, one that Bertrand Russell finds defective in his 1903 ***Principles of Mathematics*** and replaces with his own "logical" **definition** of numbers. Peano begins by taking '0,' 'number,' and 'successor of' as primitive **concepts**, deriving the rest of the numbers from this set with the aid of the five **Peano axioms** and general **logic**. The operations of addition and multiplication are then defined in terms of the primitives, axioms, and logic, and from this the **propositions** of arithmetic can be derived. Russell already has reason to find Peano's system inadequate, for Russell wants '0,' 'number,' and 'successor of' to be defined as well; in particular, he wants them defined in terms of logical concepts as a part of his **logicist** program of showing that pure **mathematics** is nothing but logic.

But he has a further reason for thinking Peano's definition of numbers defective. Peano is aware that there are an **infinite** number of series of entities (both numeric and nonnumeric) that will satisfy the axioms, so he defines the numbers by what he calls "abstraction" from all of these series—numbers are what have all and only those properties derivable from the five axioms. Russell is not happy with this definition, for it is still true that any of the infinite series that can be generated will satisfy the axioms, simply by defining the primitives in different ways. For example, the natural numbers 0, 1, 2, 3, . . . satisfy the axioms, but so will the even numbers 0, 2, 4, 6, . . . if

we let 'number' mean 'even number,' and so will the series of successively halved numbers 1, 1/2, 1/4, 1/8, . . . if we let '0' mean the number one and 'successor of' mean 'one-half,' and so will the series of numbers starting with 100, that is, 100, 101, 102, 103, . . . if we let '0' mean '100,' and so on. As a result, Russell complains, we can say (using the last case as an example) that 101 + 102 = 103.

Since there are an infinite number of series that satisfy the Peano axioms—indeed, even nonnumeric progressions will satisfy the axioms—this means, says Russell, that by 'the number two' one could mean the third entity in the series of any of those series, and since it is possible to define a series with the third element being anything at all, '2' could mean anything. But Russell thinks that the number two must be some definite thing and have a definite **meaning**, and his candidate for this is the **class** of all classes that are couples. Similarly, he believes that each of the natural numbers must have a definite meaning and so would define a number as the class of all classes that can be put in a one–one correspondence with one another. Otherwise, he believes, we could not use the numbers (as defined by Peano) to count things in the real world.

ACQUAINTANCE. The term 'acquaintance,' which appears in Russell's work as early as 1903, is simply his name for **consciousness** or awareness or thought. Like Franz Brentano and **Alexius Meinong**, Russell accepts the principle that thought—acquaintance—is characterized by **intentionality**, that it always has an object. He therefore conceives of acquaintance as a relation holding between a mind (or **subject of consciousness**) and, usually, extra-mental objects. For this reason, the doctrine of acquaintance is an important component in Russell's **mind/matter dualism**.

In Russell's very early work, the notion of acquaintance is more important to his conception of **meanings as entities** than to a full-blown theory of **knowledge**. He defends what he sometimes calls the principle of acquaintance, the doctrine that all **words** and phrases have as their meanings objects that are known by acquaintance or else are meaningless. Put another way, Russell argues that in order to be meaningful, words must mean something in our present experience. The theory of **descriptions** Russell presents in "On Denoting" (1905) only strengthens the place of this principle in his thought. For

we only know the meaning of a descriptive phrase like 'the author of Waverly,' Russell says, by being acquainted with the meanings of the words that make it up. Indeed, he views even ordinary proper names like 'George Washington' as truncated descriptions (e.g., 'the first president of the United States') that have meaning by virtue of the fact that the words in the descriptions either **denote** something in a person's present experience or else are associated with further descriptions, whose words denote something of which that person is immediately aware.

In this period, Russell's sympathetic reading of Alexius Meinong's psychological and phenomenological work leads him to turn increasingly toward descriptive psychology. In doing so, he begins to make clear what was already tacit in his treatment of acquaintance, namely that there are different kinds of acquaintance (such as conception and sensation) and correspondingly different kinds of objects of acquaintance (e.g., **universals** and **sense data**). These developments make their way into a developing theory of knowledge and **belief**. For example, in 1910 Russell abandons his earlier doctrine of **propositions as entities** for a **multiple relation theory** in which a mind, in judging, is severally acquainted with distinct entities, which it forges into a propositional **unity** by the **mental act** of believing.

In 1918, Russell adopts **neutral monism**, abandoning the relational and dualist conception underlying his doctrine of acquaintance. In light of these changes, he adopts a **causal theory of meaning**. *See also* ATTENTION; KNOWLEDGE OF OBJECTS *v* KNOWLEDGE OF TRUTHS.

ADMINISTRATOR'S FALLACY. Russell first introduced his concept of the administrator's fallacy in *The Prospects of Industrial Civilization* (1923); he elaborated on it in *Authority and the Individual* (1949). This fallacy, he says, occurs by viewing society as a systematic whole and finding it **good** if it is pleasant to observe from afar—as a well-ordered and well-organized whole—without considering whether that society brings a **good life** to the individuals who make it up. In 1923, Russell explains the administrator's fallacy as arising from Hegelian **idealism**, or holistic organicism, where an entity such as a state is taken to be more than the sum of its parts—the citizens—so that the good of the state is not the same as the sum of

the good of its citizens, and what is good for the state is not necessarily good for its citizens. However, Russell explains this fallacy differently in 1949, saying that it comes about by viewing society as an end in itself rather than as a means to **happiness** for its citizens (*PIC* 262–3, *AI* 73).

In *Human Society in Ethics and Politics* (1954), in a chapter written in 1945–1946, Russell explains the significance of the administrator's fallacy in the following way: "Modern science and technique have enhanced the powers of rulers, and have made it possible, as never before, to create whole societies on a plan conceived in some man's head. This possibility has led to an intoxication with love of system, and, in this intoxication, the elementary claims of the individual are forgotten. To find a way of doing justice to these claims is one of the major problems of our time" (*HSEP* 20). *See also* DEMOCRACY; INDIVIDUALISM; INDUSTRIALISM; SOCIALISM.

ADULTERY. *See* DIVORCE; JEALOUSY; MARRIAGE; SEXUAL ETHICS.

AFFECTION. Affection, says Russell in *The Conquest of* ***Happiness*** (1930), gives a person more zest in life than anything else. And zest, the quality of finding that the things in one's life are full of interest, is for Russell the principal element of a happy life.

Affection, the feeling of love, is either given or received but is a great source of happiness in either case. Receiving affection can be a source of security—self-confidence in life, Russell says, comes from being accustomed to receiving affection—and a sense of security encourages adventurousness, which is another source of zest and happiness. Giving affection, on the other hand, is a sign of zest for life in a person, a part of being able to find interest in the world outside oneself and preventing the excessive concern with self that can lead to indifference toward the things and people around us. Insecurity causes the sort of inward looking that inhibits our active interest in and enjoyment of life; thus, to give affection, we must feel a sense of security.

Most cases of affection for others, Russell says, involve both giving and receiving it; two people share a reciprocal interest in each

other, a reciprocal happiness—a situation in which two people seek and achieve a common **good**. This, he says, is one of the most important elements of real happiness. There is especially great value in **sexual** relations when there is no reticence or caution in giving and receiving affection. "Of all forms of caution," Russell says, "caution in love is perhaps most fatal to true happiness" (*CH* 124–9, 137–44). *See also* GOOD LIFE.

AGGRESSION. Wars, Russell thinks, are caused by human **impulses**, not by reason. In particular, there is an impulse of aggression that produces the **belief** in people that they belong to a group that is superior to other groups. This causes them to see only their own interests as important and view other groups as **good** or bad depending on whether or not they are useful to the advancement of the first group. This attitude, Russell thinks, is exemplified by the **imperialism** of the late 19th and early 20th century, with Europe as a whole having this attitude toward Asia and Africa during that period and before. There is also an impulse to resist aggression, he says, that leads people to view as wicked whatever groups they **fear** and to believe that it would be a great virtue to suppress the feared groups if possible. Russell finds this view exemplified by the ancient Israelites against the Philistines and the medieval European church against the Muslims.

Impulses either make for life or make for death, he argues, and both of the above are human impulses that make for death. These impulses were operative in all the countries engaged in World War I and were in fact the main cause of the war, which was not fought for any rational reason. Impulses that make for life, such as love, constructiveness, and joy in life, are those that help people to oppose war (*PSR* 15–8). Russell thinks that the only way to end war is by establishing a **world government**. Because aggressive, nationalistic impulses would not be in the interest of a world government, whereas impulses that make for life would, such a government, he believes, would want to direct children's **education** in such a way as to blunt aggressive impulses, direct them in nonwarlike ways, and help develop the impulses that make for life. *See also* WORLD CITIZENSHIP.

AGNOSTIC OR ATHEIST? Russell defines 'theist,' 'atheist,' and 'agnostic' according to common convention: a theist claims to know there is a **God**, an atheist claims to know there is no God, and an agnostic suspends judgment. Russell's claim is that while it is not impossible that there is a God, it is highly improbable—so improbable that it is not worth considering in practice. And this he calls 'agnosticism.' Thus, by saying that we "know" something, Russell means, in this instance, know it with **certainty**. He is not certain there is no God, but he thinks it highly unlikely. Since most people do not expect **knowledge** to be absolutely certain, most people would count as an atheist anyone who finds it highly improbable that there is a God. Russell recognizes this fact, for he also says that, in his sense of the term, an agnostic who holds that it is highly unlikely that there is a God is for all practical purposes an atheist. It is therefore probably fair to call Russell an atheist even though he calls himself an agnostic.

Russell describes his agnosticism as follows: He thinks the Bible is not divinely inspired and that its moral teachings are sometimes good and sometimes bad. He does not think that **Jesus** was a God, and he views Jesus' moral teachings as likewise sometimes good and sometimes bad. Russell does not believe in **immortality**, heaven or hell, virgin birth, or the doctrine of the Trinity. Life has no general purpose, he says, though individual human beings have purposes. Russell's agnosticism is such that, unlike Christians, he is not certain of what is **good** or evil and says he has no use for the word 'sin.' What is good and evil for him are pleasure and pain, respectively, or else what produce them. But since it is not always clear what actions will produce these things, it is not always clear which actions are good and which are evil. All **religions** have a certain amount of dogma, and since he opposes dogmas of all kinds, Russell thus opposes all religions, though if he had to choose one, it would be Buddhism, especially in its earlier forms, for it has the smallest element of persecution (*CPBR* 11:550–7). *See also* CHRISTIANITY.

AMBIGUOUS ASSERTION. In ***Principia Mathematica,* first edition** (1910–1913), in connection with his **theory of types**, Russell uses the notion of "ambiguous assertion" to refer to the fact that variables in **propositional functions** assert their **values** (which are

propositions) ambiguously; that is, the variables apply in an unspecified way to any of a large **class** of entities. However, Russell's use of the notion of ambiguous assertion is itself ambiguous, for he uses it in two different ways. In the first, which might be thought of as the technical or specialized sense, Russell uses propositional functions with unbound (what he calls *real*) variables to talk about all entities without restriction to their type. (*See* REAL AND APPARENT VARIABLES.) He calls this use ***asserting a propositional function*** but considers it a case of ambiguous assertion since the unbound variable applies to all entities without restriction to type. Indeed, in this use, the variables are doubly ambiguous: with regard to the entities to which they apply within a type as well as with regard to the type of the entity to which they apply.

The second, less specialized way in which Russell uses the notion of ambiguous assertion in *Principia* is in talking about general propositions. Though such propositions also contain variables, the variables occur bound to quantifier words like 'all,' as in 'for all *x*, if *x* is human, then *x* is mortal.' Russell sometimes refers to quantified propositions as making ambiguous assertions, but in such propositions the range of the variable is restricted to elements of a certain type and applies ambiguously only to them. (*See* RAMIFIED THEORY OF TYPES.) Thus, in 'for all *x*, if *x* is human, *x* is mortal' the variable '*x*,' which is restricted to ranging over individuals, applies ambiguously only to the objects of that type. In ***Principia Mathematica*, second edition** (1925–1927), Russell eliminates the notion of asserting a propositional function, that is, the special sense of ambiguous assertion. *See also* CIRCUMFLEX; IDENTIFICATION OF TYPE, AXIOM OF.

ANALYSIS, DIFFERENT SENSES OF. In ***The Principles of Mathematics*** (1903), Russell compares philosophical analysis to a kind of **mental** chemistry, since, as in chemical analysis, it involves resolving **complexes** into their simpler elements. But in philosophical as opposed to chemical analyses, the process of decomposing a complex is entirely intellectual, a matter of seeing with the mind's eye the simples involved in some complex **concept**. To have reached the end of such an intellectual analysis is to have reached the simple entities that cannot be further analyzed but must be immediately perceived.

Reaching the end of an analysis—that is, arriving at the mental **perception** of a simple entity, a concept—then provides the means for **definition**, in the philosophical sense, since the **meaning** of the term being analyzed is defined in terms of the simple entities grasped at the end of the process of analysis. This sense of analysis lies behind Russell's admission in the *Principles* that he has been unable to grasp the concept ***class*** which, he now sees, leads to contradictions (e.g., to **Russell's paradox**).

But there are other senses of analysis at work even in Russell's early writings and especially after his analysis of **descriptions** in "On Denoting" (1905). Thus Russell sometimes means by 'analysis' a process of devising new ways of conveying what a particular **word** or phrase means, thereby eliminating the need for the original word. Sometimes the result of this kind of analysis or **construction** is to show that there can be no successful analysis in the first sense with respect to a particular purported entity. It is not uncommon for Russell to employ both kinds of analysis in the same work. *See also* ABSTRACTION, DEFINITION BY; GRAMMAR AND ANALYSIS.

ANALYTIC *v* SYNTHETIC PROPOSITIONS. In general, the analytic/synthetic distinction concerns kinds of **propositions** and the sort of evidence bearing on the **truth** of a proposition. The truth of an analytic statement is already determined by the **meaning** of the terms it contains, but the truth of a true synthetic statement is not, depending instead on something in the nonlinguistic world. It is typically thought that this difference implies something about how we come to know the truth of statements. Typically, we are said to know the truth of analytic statements just by knowing the meaning of the **words** in it, while we are said to know the truth of true synthetic statements on the evidence of experience. 'All lawyers are attorneys' is thus analytic (and **knowledge** of it is **a priori**), while 'Some lawyers are honest' is synthetic (and known a posteriori).

In the history of philosophy, however, the notion of an analytic or a synthetic proposition varies. In **Immanuel Kant**'s work, for example, the distinction between analytic and synthetic is explicated in terms of whether in a sentence the meaning of a predicate is already contained in or part of the meaning of a subject term or adds new information to that meaning. For example, the meaning of the

predicate 'is an attorney' is contained in or part of the meaning of the word 'lawyer,' and the sentence 'all lawyers are attorneys' is therefore analytic and yields no more information about the nonlinguistic world than the **tautology** 'all lawyers are lawyers.' In contrast, since the predicate 'clever' is no essential part of the meaning of the word 'lawyer,' the sentence 'all lawyers are clever' is synthetic and offers information about the world. For Kant, we can determine whether a statement is or is not analytic using the principle of contradiction: if the negation of a statement is contradictory—as in 'some lawyers are not attorneys,' the original statement is analytic.

Gottlob Frege defined these concepts somewhat differently. For Frege, an analytic statement is one that is logically true or else true by **definition** and in virtue of logic, while a synthetic statement is one that is not analytic. In later writings, for example in **Rudolf Carnap**'s work, analyticity is described in terms of being true in virtue of form—that is, true by convention. The truth of 'all lawyers are attorneys' derives from the meaning we conventionally ascribe to the words 'lawyer' and 'attorney,' whereas the truth or falsity of 'all lawyers are honest' derives from facts about the behavior of attorneys. The notion of analyticity came under intense scrutiny in the work of W. V. Quine, whose writings deny the possibility of ultimately distinguishing between analytic and synthetic statements. While not going this far, in the 1930s, writing the second introduction to ***The Principles of Mathematics***, Russell says that as it appears impossible to define what it means for an expression to 'occur in' a proposition, it is impossible to define 'true in virtue of form' or analyticity. Russell has by this time accepted that the truths of logic are tautologies, or as he says here, analytic propositions. Russell's own conception of analyticity shifts throughout his career, focusing on Kant's definition of analyticity early in his career, and after 1912, under pressure from **Ludwig Wittgenstein**, on something resembling Frege's or Carnap's conception. *See also* MATHEMATICS, ANALYTIC *v* SYNTHETIC.

ANARCHISM. Russell defines anarchism as a political theory that favors an entirely free government, one that acts not just according to the will of the majority, but only according to the will of all who participate in it. Russell opposes anarchy both as a form of national

relations between people and also as a form of international relations between nations. **Wars** in general, Russell thinks, are essentially the result of the state of anarchy that exists between nations and in which international affairs are conducted; only a **world government**, which could end this state of international anarchy, could bring an end to war. Russell thus thinks that anarchy is far from the best way of managing international affairs. And while he does not believe that pure anarchy at the level of society could last very long, he asserts that it is the "ultimate ideal to which society should continually approximate." In other words, Russell always favored the maximum amount of liberty that society can tolerate (*PRF* xi, 33). *See also* WORLD CITIZENSHIP.

A PRIORI *v* A POSTERIORI KNOWLEDGE. Like all philosophical **concepts**, the nature of a priori and a posteriori **knowledge** is open to dispute. **Immanuel Kant** defines a priori **propositions** as those we know to be true independently of (logically prior to) experience; a posteriori propositions are those whose truth we know only through experience. (*See* ANALYTIC *v* SYNTHETIC PROPOSITIONS.) Kant, articulating a tenet of his **idealism**, further believes that the mind imposes **space and time** on experience as forms of intuition that shape the way we experience the world, so that propositions about these categories are a priori, since space and time, being the very conditions of any possible experience, must be independent of experience. Thus, for Kant, geometry contains a priori propositions: propositions about the forms of intuition that condition our experience of things as spatial.

In ***The Principles of Mathematics*** (1903), Russell does not reject Kant's general conception of the distinction between a priori and a posteriori knowledge, but he rejects Kant's idealism, that is, Kant's doctrine that the nature of thought determines what is a priori. If **human nature** could change, certain **truths** would no longer be a priori and in fact not even true, which Russell thinks is absurd. Kant's notion of a priori truth is conditional, that is, for Kant 2 + 2 = 4 only on condition that the mind always thinks it so. In Russell's view, in contrast, the truths of **mathematics** and logic are true unconditionally: 2 + 2 = 4 even if there are no intelligences or minds to think so. Still, for Russell at this time, as for Kant, mathematical

truths are synthetic, but for Russell this is because they are the most general truths about reality, and for Kant it is because they are just the categories in terms of which the mind experiences reality. Thus Russell's attack on Kant's notion of the a priori focuses on what he sees as Kant's **psychologism**, his tendency to confuse what is objectively true, even if no one thinks it, with what we are so psychologically constructed as to have to think. Russell opposes such psychologism. Closely related to this is the fact that Russell is a **realist** about the nature of truth.

Aside from the definition of a priori knowledge and questions concerning its relation to the structure of the mind, there is the question whether we need a priori knowledge, and if we do, how it is possible. In the ***Problems of Philosophy*** (1912), Russell argues that not all principles derive from experience by **induction**, since we understand certain general principles even when we have not experienced all the relevant cases and cannot ever do so. Unlike **David Hume**, however, this does not lead Russell to **skepticism**; rather, he assumes that knowledge is possible and infers the existence of a priori knowledge of general principles in logic, mathematics, and **ethics**. This point of view occurs throughout his career, appearing in such late work as *Human Knowledge* (1948). *See also* LOGICAL PROPOSITIONS; POINCARÉ, HENRI.

ARISTOCRACY AND PHILOSOPHY. According to Russell, the values of aristocracy arise from viewing each **aristocratic** male as a gentleman, that is, as a member of a society of equals who live on slave labor (in ancient times) or at least on the labor of those whose inferiority is unquestioned (in more recent times). Such gentlemen do not lead an active life but live upon the **work** of those who do. (To the extent that their lives are contemplative rather than active, this **definition** includes sages and saints.) An active life is thus looked down on by a gentleman, who leads a life of leisure and contemplates the work of others. Thus, at an athletic event, the spectator, not the athlete, is the superior person; in politics, it is the onlooker, not the politician. A contemplative life is thus seen as having greater value than an active one, and contemplative pastimes are held to be of greater value. The ideal of disinterested truth, as opposed to the belief of the impassioned partisan, is an aristocratic one. Further, it

is the aristocratic ideal of the contemplative life that led in ancient times to the creation of many of the arts and **sciences**. This ideal is one of the reasons a high value was placed in ancient Greece on the activity of philosophy and pure **mathematics** (*HWP* 34). *See also* CIVILIZATION.

ARISTOCRATIC VIRTUES. Russell thinks many though not all aristocratic virtues have great value and that it is important to try to preserve them in modern **industrial** and democratic societies. For example, he thinks that indifference to public opinion, an important intellectual virtue cultivated among aristocrats, is being lost in the modern democratic world, making it necessary for systems of **education** to place greater emphasis on **teaching** the dangers of uniformity (*CH* 108). However, while fearlessness or **courage** has historically been a virtue and a privilege of the warrior class, that is, of the **aristocracy**, it has also been a source of much cruelty, allowing the aristocracy to increase the burdens of the oppressed. Russell claims that only when courage is democratized will courageous people be humane. He thinks this can only occur under **socialism**, because aristocratic virtues can only arise under conditions of economic security and leisure. While it may be now technically possible for all to have sufficient economic security and leisure to develop aristocratic virtues such as courage, modern society as it is now organized under **capitalism** will not allow this to happen (*WNC* 80). *See also* CIVILIZATION; DEMOCRACY; DEMOCRACY AND CAPITALISM; FEAR.

ARISTOTLE (384–322 BCE). Russell acknowledges that Aristotle's philosophy was a great advance over his predecessors and that for two thousand years after his death there was no philosopher who could be considered his equal. However, he believes that toward the end of this period, Aristotle's authority was so great that it had become a barrier to **progress**, and thus every intellectual advance since the beginning of the 17th century had to begin by attacking some Aristotelian doctrine. This is true even for Charles Darwin's evolutionary theory in the 19th century and Russell's own work in modern mathematical logic in the early 20th century. (*See* GRAMMAR AND ANALYSIS.)

Aristotle was the teacher of Alexander the Great for four years, but it is not clear to Russell that either influenced the other. In particular, Russell points out, Aristotle seemed oblivious to the fact that Alexander was transforming the political reality of the entire ancient world, for Aristotle's political philosophy centered on the idea of the small independent city-state at the very moment that Alexander was ushering in an era of empires that made Aristotle's political doctrines obsolete and irrelevant (*HWP* 159–60). *See also* LOGIC, ARISTOTELIAN; TRADITIONAL PHILOSOPHY.

ASSERTING A PROPOSITIONAL FUNCTION. ***Principia Mathematica*, first edition** (1910–1913), includes among its primitives the idea of asserting a **propositional function**. In asserting a propositional function, we speak about all **types** of things without restriction; thus it is distinct from asserting a general **proposition**, which is only true of a restricted type or range of things. A related idea occurs in "Mathematical Logic as Based on the Theory of Types" (1908), where Russell distinguishes between asserting any **value** of a propositional function (i.e., any proposition), without type restriction, and asserting all the values of a propositional function within one type—that is, asserting a general proposition. This point turns on the distinction Russell draws between **real and apparent variables**. According to him, asserting any value employs the real variable, and asserting all values within a type employs the apparent variable.

The need for the notion of asserting a propositional function arises from a predicament caused by the type-theoretic solution to such contradictions as **Russell's paradox** and the **liar paradox**. That solution, the **ramified theory of types** of propositions and propositional functions, prohibits the formation of totalities that purport to include themselves, by viewing any such totalizing proposition or propositional function as on a higher level than what it collects or is about. (*See* VICIOUS CIRCLE PRINCIPLE.) Thus, instead of allowing general assertions to employ **unrestricted variables**, which range over everything, including the general assertion itself, variables are restricted to a certain range of objects, a range of significance. As a result, there appears to be no way of **talking about** the **theory of types** nor any way of formulating logical **laws** that

hold of propositions of any type. Assertion of a propositional function speaks to this need.

In ***Principia Mathematica,* second edition** (1925–1927), Russell rejects the notion of asserting a propositional function and denies the distinction between real and apparent variables. *See also* AMBIGUOUS ASSERTION; CIRCUMFLEX; IDENTIFICATION OF TYPE, AXIOM OF.

ASSERTION IN *THE PRINCIPLES OF MATHEMATICS*. In ***The Principles of Mathematics*** (1903), the notion of assertion is intended in a metaphysical or logical rather than a linguistic or psychological sense: it concerns something objective, not some feature of **language** or some **mental act**. An assertion is sometimes described as what remains of a **proposition** when the subject term is removed. At other times, it appears to be much the same as the **relating relation**—the relation (or "verb," as Russell says) that gives a proposition its **unity**. In some cases, it appears to be the true proposition itself, asserted rather than named.

What these various aspects of assertion all address is an entity occurring in a way that is different from its occurrence as the logical subject of a proposition. In the metaphysics and logic of *Principles*, every term (i.e., every entity, including propositions and **concepts**) is supposed to be able to occur as a logical subject in a proposition, that is, as something the proposition is about. Yet the quality of assertion—what it is that distinguishes an asserted proposition from a proposition occurring as a logical subject, or a relating relation from a relation—resists being made the logical subject of a proposition. It is, Russell says, lost in **analysis**.

For example, if the difference between the true proposition that Caesar died and the logical subject, the death of Caesar, was that true propositions are objects in **external relation** to the concept of **truth**, we should be able to reconstitute the proposition that Caesar died by adding the concept of truth to the death of Caesar, but we only get a more complicated logical subject, the true death of Caesar. Thus, the quality of assertion distinguishing a true, or asserted, proposition from a proposition occurring as a term, and between a relating relation and the relation as a term, eludes our grasp. For the same reasons, what characterizes truth—what distinguishes true

propositions from false propositions or nonpropositions—is also lost in analysis.

The notion of assertion is in tension with the claim in the *Principles* that every thing can be made a logical subject of a proposition. Difficulties with his **unrestricted** notion of a logical subject lie behind much of Russell's subsequent development of a **theory of types**. As Russell begins to restrict what can be a logical subject or eliminate entities that seemed to be logical subjects, the notion of assertion alters. In particular, once Russell eliminates propositions as entities in "On the Nature of Truth and Falsehood" (1910), the notions of assertion and denial enter into Russell's discussions no longer as metaphysical categories but as psychological states or mental acts. *See also* MULTIPLE RELATION THEORY OF JUDGMENT.

ASYMMETRICAL RELATIONS. A relation is symmetrical when changing the order of the terms relative to it yields an equivalent proposition, as 'equals' does when we compare 'a = b' to 'b = a.' For asymmetrical relations like 'less than,' this is not true, as is evident in comparing '1 < 2' and '2 < 1.' Within **mathematics**, asymmetrical relations are known as ordering relations and can be used to define mathematical series, for example the series 1 < 2, 2 < 3, and so on. Russell uses them this way in his own **logicist** work, counting them among the fundamental ideas in ***Principia Mathematica*, first edition** (1910–1913).

Asymmetrical relations also play important roles within Russell's metaphysics and **epistemology**. He uses them, first, in arguments against **monism**, which sees all sentences, even relational ones, as combinations of subjects and predicates, by arguing that we lose the element of order if we attempt to reduce such relations to properties of objects that are expressed by sentences of the subject-predicate form. (*See* EXTERNAL RELATIONS; GRAMMAR AND ANALYSIS.) Russell also describes **acquaintance** (or **knowledge of objects**) as an asymmetrical relation, and he explains the "direction" or **sense of a relation** in terms of them as well. Asymmetrical relations occur as well in his **construction** of **space and time** in *Our Knowledge of the External World* (1914).

In his 1912 dissertation, Russell's student **Norbert Wiener** proved that order could be represented by sets alone, thereby showing that a

theory of relations apart from a theory of sets is unnecessary. However, Russell continued to view relations as logically fundamental—and they are at least fundamental to him philosophically. *See also* BRADLEY, FRANCIS HERBERT; KNOWLEDGE OF THE EXTERNAL WORLD.

ATOMIC AND MOLECULAR PROPOSITIONS. Russell begins to use the labels 'atomic' and 'molecular' to describe propositions in his 1914 work *Our Knowledge of the External World*. He sometimes describes atomic propositions as those that contain no **logical constants**—that is, contain no words like 'not' and 'or'—and sometimes as those that contain only one **relation symbol**. The first description helps to distinguish atomic propositions like 'Amy loves Bob' or 'Bob loves Amy' from molecular propositions like 'Bob loves Amy and Amy loves Bob' that are formed from them. The second description highlights the difference between atomic propositions and statements **expressing** what are called **propositional attitudes**, such as 'Carl believes that Amy loves Bob.' The latter, he thinks, contain two verbs: 'believes' and 'loves.'

Since 'not' is a truth-functional term, we might expect Russell to classify 'it is not the case that Amy loves Bob' as a molecular proposition, and so he does in his technical work. For example, in ***Principia Mathematica,* second edition** (1925–1927), he defines negation along with other operators in terms of applications of the **Sheffer stroke**, a move that clearly classifies a negative proposition as molecular. But certain aspects of his more general philosophical views—such as his doctrine of **negative facts** and his theory of the **bipolarity of propositions**—leave the molecular status of negations less clear. Thus in "The Philosophy of Logical Atomism" (1918–1919), Russell appears uncertain as to how to fit **belief** propositions into the framework provided by the atomic/molecular distinction. In subsequent work, he accepts **Ludwig Wittgenstein**'s thesis of **extensionality** and excludes such propositions from the series of atomic and molecular propositions.

In late work like *Inquiry into Meaning and Truth* (1940), Russell discusses atomic propositions (as well as basic propositions, which are epistemologically rather than logically primitive) in the context of his notion of a **primary** language. *See also* FACTS, FORMS OF; LOGICAL ATOMISM.

ATOMICITY, THESIS OF. In the *Tractatus Logico-Philosophicus* (1922) and notes preceding it, **Ludwig Wittgenstein** rejects the use of names for **complexes**, asserting that statements containing names for complexes can be analyzed into statements about their parts and a **description** of the complexes. Reflection on this claim leads Russell in 1918 to think that statements of **belief** and other **propositional attitudes** need to be rewritten. Propositions like 'A believes that B is hot' appear to name or be about complexes—in this case, the proposition 'B is hot'—but according to the thesis of atomicity, a proposition cannot name (i.e., be about) another one except by quoting it. To rewrite such a proposition in this way is to employ semantic ascent, that is, to **talk about** the **symbols** rather than the thing symbolized. Yet in *An Inquiry into Meaning and Truth* (1940), Russell accepts only the weaker form of Wittgenstein's principle, that is, only in the case of statements containing complex names for complexes.

Both the strong and weak versions of the atomicity thesis imply that there is a difference between using and talking about a proposition. The necessity of making this distinction is presupposed by what Russell calls the more important, technical version of the thesis of atomicity: that the series of propositional forms includes only **atomic** propositions, molecular propositions formed from atomic ones by the use of **logical constants** like 'and,' and generalizations of molecular propositions. *See also* EXTENSIONALITY, THESIS OF; OBJECT LANGUAGE *v* META-LANGUAGE.

ATTENTION. In his work between 1900 and 1918, Russell argues that **consciousness** (or **acquaintance**) may dilate or contract, so that objects first perceived as indivisible wholes may subsequently be seen as **complexes**. The **mental act** by means of which we alternate between seeing data as complex or as simple is a species of acquaintance called 'attention.' Though mere acquaintance with an abstract or concrete object involves no special exertion, attention does, according to Russell, and this is why the apprehension of certain objects, notably abstract and logical ones, is more difficult. In his unpublished *Theory of Knowledge* (1913), Russell treats attention as that act wherein we become conscious of something as complex and grasp its complexity, a doctrine that makes attention very like a judgment about the complex.

In Russell's later work, such as *Inquiry into Meaning and Truth* (1940), the notion of attention persists in the concept of noticing, which is the means of acquiring preverbal **knowledge** of something in our present sensory experience. Russell uses the notion of attention, or noticing, in his discussion of how we know that we are using the right **words** to describe an experience (e.g., of heat), and what the relation is between words and things that make it right. Since he thinks we cannot notice what is not the case, his discussion of the role of noticing in connecting words to the world segues into a discussion of the necessarily partly verbal causes behind our use of sentences like 'I am not cold.' *See also* NEGATIVE FACTS AND PROPOSITIONS.

AXIOMATIC SET THEORY. What is sometimes called naïve set theory is attributed to **Georg Cantor** and involves the undefined notions of a *set* (or **class**) and a *member of a set*. Naïve set theory makes certain seemingly uncontroversial assumptions about sets or classes, such as assuming that each property corresponds to some set (the axiom of **comprehension**), an idea at work in **Gottlob Frege**'s *Grundgesetze der Arithmetik* (1893, 1903). Hence Cantor's discovery of the paradox of the greatest cardinal, **Cesare Burali-Forti**'s discovery of the paradox of ordinals, **Russell's paradox**, and other contradictions all show that such assumptions cannot be made and that naïve set theory requires examination and reformulation.

Mathematicians have made various attempts to rehabilitate set theory, laying down constraints on the notions of set and member by means of various defining axioms—expressed using first order logic—such as the axiom of extensionality (the identity of sets follows solely from the identity of their members) and the axiom of **infinity** (there is a set containing zero as an element and containing the successor of every element of the set). Different axiomatizations have defined different systems, for example the Zermelo-Fraenkel system and the Von Neumann-Bernays-Gödel system.

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BACON, FRANCIS (1561–1626). Russell points out that Francis Bacon was the first of the scientifically minded philosophers, emphasiz-

ing the importance of inductive as opposed to deductive reasoning, such as the inductive method of reasoning from a limited number of observations about some phenomenon to general truths about it. This occurs in the case of simple **induction**, as when we believe that all crows are carrion eaters if, after observing a few dozen crows carefully, we see that all of the observed crows are carrion eaters. Russell also credits Bacon with pioneering the attempt to logically systematize scientific procedure in order to describe more elaborate methods of inductive reasoning than that of simple induction. The hope was that this might strengthen our methods of reasoning in **science** and provide scientific **laws** with greater regularity, that is, with greater and greater degrees of generality applying to increasingly different kinds of situations, thereby increasing the organization of scientific laws.

Bacon objected to any teleological explanations in the sciences, and he insisted that everything could be explained in terms of efficient causes. He was hostile to **Aristotle** but admired Democritus. Bacon's philosophy, Russell concluded, is a practical one aimed at helping us master nature by the use of science; his view of science is thus also a practical one. Bacon's is a modern philosophy, Russell further claimed, for though he was religious and thought that reason could show the **existence** of **God**, Bacon thought that everything else in theology was revelation, and that philosophy and theology must be kept separate, with philosophy depending on reason and experience alone (*HWP* 544–5). *See also* EMPIRICISM, RUSSELL ON; HUME, DAVID.

BEACON HILL SCHOOL. Bertrand and Dora Russell (**Dora Black**) founded the Beacon Hill School in 1927 in Telegraph House at Beacon Hill in West Sussex. Telegraph House was owned by Russell's brother, Frank, and is described by Katharine Tait (Bertrand and Dora's daughter) as "200 acres of woods and valleys with deer and rabbits and stoats and weasels and huge yew trees we could jump into from higher trees and absolutely magnificent beeches for climbing."

The school was designed along the progressive principles of **education** that were then popular in England and elsewhere. The Russells, who had two school-age children, John and Kate, opened Beacon Hill both as an experiment in using education for social change

and out of despair over the options open to them in the English school system. The school began with 12 students (this includes the Russells' own two children) ranging in age from two to eight. It never had more than 25 students at a time, most of them younger than 12 years old, and the school never offered more than primary education (Gorham 40, 67).

"Democracy was the basic principle of my school," Dora wrote later, describing it as aiming to define "each child as a unique individual who belongs, not to the State, or even to his parents, but first of all to himself," aiming, that is, to create "harmonious adults at peace with themselves and others and so able to work creatively as individuals and, by mutual help, in the community at large" (Dora Russell, *The Tamarisk Tree* 2:211). With "no knowledge of any sort or kind being withheld from children," there was to be "complete frankness on anatomical and physiological facts of sex, marriage, parenthood and the bodily functions," all in an environment intended to promote social cooperation (*Beacon Hill School*). For Bertrand Russell especially, an aim of the school was to inculcate the "habit of forming opinions on evidence," so as to promote freedom from conventional wisdoms and hence independence from authority (*IPI* 236).

While individuality was stressed, the principles of the school did not include complete freedom for the children. However, only as much submission to authority was required as was necessary to inculcate a "good nature and general friendliness both to people and new ideas" (*IPI* 240). The students had a strike once for better and more food. For self-government, there was a council that included the teachers and all students over five years of age (and, sometime in the late 1930s, the staff, including the gardeners). Students were free not to attend classes, to determine when classes began and ended, and to choose their own projects, which they were, however, expected to finish. They even ran around the grounds naked at times. The Russells also believed in academic rigor, and they included conventional lectures on traditional subjects such as Shakespeare and French along with more radical approaches to teaching and learning and less traditional subjects.

The school was in a continual state of financial distress and was supported in part by lecture tours in the **United States** by both Bertrand and Dora (at alternate times). Students' recollections of

the school are generally positive, though Russell's children report that they suffered both from the awkwardness of their own position among the other students and from a kind of estrangement from their parents once a school emerged in what had been their home.

Bertrand Russell ceased to have any active role in the school in 1932 after his breakup with Dora. After their separation and divorce, Dora continued to run the school for another 11 years, until 1943. In 1934, at Russell's insistence, Dora moved the school out of Telegraph House, and it was located in four other buildings before it closed; the last was Carn Voel, a house belonging to Dora, a few miles from Land's End in Cornwall.

BEHAVIORISM. Behaviorism is a school of psychology dating from the early years of the 20th century and originating in the work of the American psychologist **John B. Watson**. There are many kinds of behaviorism. Some make claims about the methods of psychology, for example that psychology should consist of descriptions of external behavior, not internal states, and that **words** for **mental acts**, entities, or states should be rephrased in terms of behavior. Others make causal claims, for instance that so-called mental events are nothing but observable behavior and that the causes of human behavior are just other external events. All varieties of behaviorism reject the use of **introspection** as a scientific method; **knowledge** is to be based on external observation and cannot be based on any observations about an organism's internal mental events.

Russell's interest in behaviorism developed at the same time as, but in tension with, his turn toward **neutral monism**. If **belief** is fundamentally a mental phenomenon, then it stands in the way of his accepting neutral monism, which denies the distinction between mental and material substance that is characteristic of the **mind/matter dualism** he is moving away from. In his 1918 lectures (published as "The Philosophy of Logical Atomism"), Russell therefore suggests reducing a belief (e.g., that something or other occurs or will occur) to behavior, that is, explaining it in terms of actions taken under specific circumstances. As an example, Russell describes catching a train. If you believe a train will arrive at the station at 6:00 p.m., and you arrive at the station at 5:59, you will start to run in order to catch the train. Your belief is seen in your behavior. By the time Russell

fully adopts neutral monism a few months later, he has become critical of the behaviorists' analysis of belief, accounting for it instead in terms of word- or **image-propositions** and the feelings we have toward them.

In *An Outline of Philosophy* (1927), Russell further criticizes behaviorism for failing to apply its principles to itself. When behaviorists observe animals in learning situations, the behaviorists are not thinking of themselves as animals, but as objective recorders of events. By omitting the facts that they are organisms and that they are observing, they present their observations as objective when they are actually fallible and subjective. Even more damning, in doing so, behaviorists accept **private** experiences—their own—as parts of their reports, contrary to their supposed rejection of private experiences in knowledge. Russell makes clear that he does not agree with this view in any case, but believes instead that there is knowledge of the self that can only be gained by introspection. However, he also believes that there is much to be gained by developing behaviorism as fully as possible (*OP* 70, 102). *See also* LOGICAL ATOMISM; MEANING, CAUSAL THEORY OF; SCIENCE AND PHILOSOPHY; SUBJECT OF CONSCIOUSNESS *or* SELF.

BEING. *See* EXISTENCE AND SUBSISTENCE.

BELIEF. 'Belief' can mean the content or proposition that is true or **false**; it can also refer to the psychological act of believing that content. Russell is interested in both senses of the **word**, which begin to figure prominently in his work in and after 1906 as a means of replacing his earlier doctrine that **propositions** are objects to which minds are directly related in acts of believing or judging. Specifically, on what is called the **multiple relation theory**, a belief is a **fact** composed of a **subject of consciousness** and various objects and relations known by **acquaintance** and collected together by the act of believing. Thus, when Othello believes that Desdemona loves Cassio, there is a fact composed of the entities Othello, Desdemona, Cassio, and *loves*, held together as a fact by Othello's act of belief.

This conception of belief presupposes that mind and **matter** are radically different substances, and that minds directly relate to objects by means of **mental acts** like acquaintance. In 1918, Russell

denies these doctrines, turning away from **mind/matter dualism** and toward **neutral monism**. Hereafter, the content of belief cannot be constituted from objects to which the mind stands in some relation. On the contrary, the content of belief consists of images (or words), that is, in **image-propositions** that "mean" some fact, and believing is explained in terms of feelings toward that content.

Though his emphasis on images places him outside behaviorist psychology, Russell's work on belief in this period and in later years is still highly influenced by **behaviorism**. For example, belief, in **humans** as in other animals, may be an instinctive state, as in a response to stimuli, or a learned, conditioned reflex, but it involves action—which in humans may be verbal or not—on the basis of something not present to the senses. In *Human Knowledge* (1948), Russell writes, "If a thirsty animal persistently runs down into a valley, I should be inclined to say that it 'believes' there is water there, and in such a case there would be non-verbal belief in something that is as yet outside the animal's experience" (*HK* 114). *See also* INSTINCT *v* HABIT; WATSON, JOHN B.

BENTHAM, JEREMY (1748–1832). Jeremy Bentham was the founder of British utilitarianism, the philosophy that defines morality in terms of the overall **happiness** an action produces, so that the right thing to do in any case is the action that produces the greatest happiness for the group. For Bentham, happiness is pleasure or the absence of pain, and if two acts produce equal pleasure for a person, one is as **good** as another for that person, and both are better than whatever act produces less pleasure. As Bentham expressed this idea, "quantity of pleasure being equal, pushpin [a children's game] is as good as poetry." This view, for Bentham, is supposed to be the same as the idea that each person should pursue his or her own enlightened self-interest. As Russell sees it, the obvious problem is that if each person pursues his or her own pleasure or self-interest, how can we obtain legislators who will pursue the pleasure and interests of humanity in general?

Russell thinks that utilitarians, who were leaders of British radicalism and called philosophical radicals, were less significant philosophically than they were politically. There is nothing original in Bentham's utilitarianism, he thinks, for it had been advocated

by Hutcheson as early as 1725. "Bentham's merit," Russell says, "consisted not in the doctrine but in his vigorous application of it to various practical problems." This included many proposed reforms of the English criminal code, such as abolition of capital punishment, prison reform, and the prevention of cruelty to animals, among others. Bentham's ideals, says Russell, were equality and security, not liberty. Unlike **John Stuart Mill**, another utilitarian, and unlike Russell himself, Bentham was not convinced that liberty was necessary for happiness (*HWP* 773–8, *FO* 88). *See also* ETHICS.

BERGSON, HENRI (1859–1941). Russell writes that Henri Bergson, the leading French philosopher in the first two decades of the 20th century, was a major influence on **William James**, George Bernard Shaw, Georges Sorel, and **Alfred North Whitehead**, among others. Russell refers to Bergson's philosophy as "evolutionism," a category in which he also lumps William James, Herbert Spencer, and Friedrich Nietzsche. Philosophies of evolution, Russell says, view the evolution from single-celled organisms to humans as indicating a principle of development or **progress** toward a **good** in the universe. But for Bergson, this ideal toward which the universe tends cannot be determined, as it changes with every new stage of evolution. Bergson's philosophy is, in this way, a "creative" evolutionism.

Russell points out that there is no scientific evidence for any of these views of progress. Bergson says that there are two ways of knowing something, by the intellect or by intuition, and that intuition gives us true and infallible **knowledge**, while the intellect, which is a wholly practical faculty developed in the struggle for **existence**, can only deal with what has happened in the past and so is misleading. Russell says, however, that intuitions are feelings or **instincts** and are wildly fallible without correction by the intellect. Bergson's embrace of intuition, Russell thinks, makes his philosophy a type of mysticism that can neither be proved nor disproved (*OKEW* 14, 21–41). *See also* SCIENCE AND PHILOSOPHY.

BIPOLARITY OF PROPOSITIONS. In his "Notes on Logic" (written in 1914) and in the *Tractatus Logico-Philosophicus* (1922), **Ludwig Wittgenstein** suggests that we imagine a **proposition** as having two poles, representing the two ways in which it may stand to the

facts. His point is that for a proposition to have sense, it must be possible for it to be both true and **false**, though not at the same time. (*See* SENSE *v* REFERENCE.) As he sometimes puts it, for a proposition to be significant, reality must stand to it in one of two ways: either in the way that makes the proposition true or the way that makes it false. What is always true (or always false) or what is nonsense fails to divide reality in this way and is therefore not a proposition with sense, that is, not an empirical proposition.

There is another aspect to this thesis. In conceiving of (empirical) propositions as essentially bipolar, Wittgenstein is also denying that negating (or negating the negation of) a proposition adds something to the proposition's content. This point is connected with his belief that **logical constants** (e.g., symbols like 'not') do not represent. According to him, though a positive proposition (e.g., 'it is raining') appears to be different from the corresponding negation (e.g., 'it is not raining'), there is really only one proposition involved, which is differently oriented to the facts. A proposition asserted or denied is like a weathervane, which is not materially altered though it points east one day, west the next. Unlike a weathervane, however, it is we who decide to assert or deny a proposition, thereby changing its orientation to reality.

Notes by Russell written in 1913 show him working through both senses of Wittgenstein's bipolarity doctrine. In "The Philosophy of Logical Atomism" (1918–1919), Russell adopts the view that a proposition stands to the positive or **negative facts** either in a way that makes it true or in a way that makes it false. In "On Propositions: What They Are and How They Mean" (1919) and in subsequent discussion of his **theory of truth**, Russell is careful to explain that what determines the objective reference of a proposition is not merely a fact but the direction of the proposition toward or away from the fact. In this period, Russell's fascination with the bipolarity doctrine is linked to his new conviction that what makes a sentence true or false—a fact—cannot be named but only asserted, an issue of **inexpressibility** that he attempts to articulate in terms of a theory of **symbols**.

Though differing from Wittgenstein on several points, the **logical positivists** later appropriated many of his ideas on propositions into their own **verificationist** theories of meaning and truth. *See also* EMPIRICISM, RUSSELL ON.

BIRTH CONTROL. During Russell's lifetime, there were **laws** against providing information about sexual matters, including information on birth control methods. Russell claims that originally the practice of restricting sexual **knowledge** was to keep women in ignorance of such matters so that men could dominate them. (*See* WOMEN'S RIGHTS.) The practice gradually spread to keeping all young people in ignorance of matters concerning sex. It ceased to be a matter of domination and became one of irrational taboo instead. Russell argues that such ignorance is undesirable. The undesirability of ignorance on sexual matters can be seen in the prohibition on **teaching** people about the use of condoms to avoid venereal diseases. Russell thinks it is obviously desirable to help people prevent these diseases and immoral not to. Thus, laws against the dissemination of such information are, he believes, immoral.

Obscenity laws in 1929 (when Russell published ***Marriage and Morals***, his most famous work on **sexual ethics**) allowed printed texts to discuss sexual matters such as birth control as long as the topic was discussed in technical medical terms. This had the effect of providing some sexual information to the educated classes while withholding it from the uneducated. Hence, these laws discriminated against the lower, uneducated classes. Allowing a greater dissemination of knowledge of birth control as well as access to birth control products would also have the effect of diminishing unwanted pregnancies, which Russell also thinks would be a positive **good**, as unwanted pregnancies often lead to abortions, which were dangerous and painful (and at the time illegal).

Russell was a strong advocate of **world government** as the best way to end or at least severely reduce **war**, and he believed that one source of instability between nations was a population imbalance, as when an increasing population created expansionist pressures within a nation. The only way to control this cause of war, Russell thought, would be to have an international authority that would insist on birth control propaganda for any nation with a population that was growing too fast. *See also* BLACK, DORA; EDUCATION.

BLACK, DORA (1894–1986). Bertrand Russell's second wife, Dora Winifred Black, was a graduate of Girton College, Cambridge Uni-

versity, with distinction in modern languages. She was the author of *Hypatia: Women and Knowledge* (1925), *The Right to Be Happy* (1927), and *In Defense of Children* (1932). With Russell, she wrote *The Prospects of Industrial Civilization* (1923). An atheist, a leftist, and an ardent supporter of **women's rights**, including the right to **birth control**, she believed that **marriage** is a contract entered into, if at all, for raising children and ought not to require **sexual** fidelity. Her marriage with Bertrand Russell was the first of her two marriages and his second of four. They had two children together: John in 1921 and Katharine in 1923. With Griffin Barry, Dora had a daughter Harriet in 1930 and a son Roderick in 1932.

Though Dora and Bertrand met in 1916, their relationship did not begin until 1919. They visited **Russia** in 1920, traveling separately then, but traveled together in China from August 1920 to August 1921. While in China, both gave lectures. On their return to England, Dora was six months pregnant with what was for both of them a first child. They married shortly thereafter at Russell's insistence, despite Dora's reluctance, given her belief that marriage is an institution for the subjection of women.

In 1927, they started the **Beacon Hill School**, which they then ran together. Russell later said that his affections for Dora began to cool that year, when she embarked on an affair with John Randall, followed immediately by a much longer affair with journalist Griffin Barry. Though Russell shared Dora's criticisms of fidelity, his own commitment to their relationship appears to have collapsed under the combined weight of Dora's relationship with Barry and his own growing involvement with **Patricia Spence**, an employee at the school. Dora became Countess Russell in 1931 when Russell became Earl Russell on the death of his older brother, Frank. Dora and Russell agreed to a legal separation on 31 December 1932 and were granted a **divorce** in July 1935.

After their separation, Dora continued to run the school until 1943. Active in the peace movement, in the late 1950s she—along with others, including Russell—helped form the Campaign for Nuclear Disarmament (CND). She continued to write, publishing *The Religion of the Machine Age* (1982) and her three-volume autobiography *The Tamarisk Tree* (1975–1985). *See also* EDUCATION.

BOREDOM. For Russell, boredom is typically a thwarted desire for **excitement**. With the coming of agriculture, he says, life became dull except for aristocrats, who remained in the hunting stage. (*See* ARISTOCRATIC VIRTUES.) Even our modern age, which has a reputation for boredom, is much less boring than in earlier agricultural times. Russell claims that while a desire to escape boredom is natural, a certain amount of boredom is inescapable and necessary in life. In fact, he believes that a certain amount of boredom is necessary for a happy life, not only because a life of pure excitement is exhausting and dulls one's ability to enjoy the pleasures of life, but also because no great achievements are possible without a great deal of persistent work involving much boredom and the denial of many pleasures. He therefore believes that in order to lead a happy life, children need to be taught to endure a certain amount of boredom. If one has a constructive purpose, he says, much boredom is endurable when it is necessary to achieve that purpose. Russell also believes that one must have a quiet life to have a happy life; only in a quiet atmosphere can one live in true joy (*CH* 48–56). *See also* GOOD LIFE; HAPPINESS.

BRADLEY, FRANCIS HERBERT (1846–1924). A British philosopher and exponent of British **idealism**, F. H. (Francis Herbert) Bradley taught at Oxford and was influential both at Oxford and Cambridge. He is most famous for *Appearance and Reality* (1893). Bradley defines what is ultimately real as what is wholly unconditioned or independent of other things for its **existence**. Since much of what we experience exists on condition of other things or in relation to other things, it follows that the sorts of things we normally think are real fall short of genuine reality and are mere appearance. For Bradley, what is real must be complete and self-sufficient, and as both relations and what is in a relation imply incompleteness, internal relations (those expressing an essential property of the relata) as well as **external relations** (those not essentially part of the nature of the relata) must be unreal.

This rejection of relations implies the rejection of the plurality of things, and Bradley's work is therefore a species of **monism**. What prevents us from apprehending this, he believes, is the tendency to confuse the limited reality of things in our experience—and the truths

based on that limited perspective—with the unconditioned reality of the whole, the Absolute or One. Hence Bradley is unsympathetic to the activity of **analysis**, for in breaking wholes into parts, it disguises rather than reveals the nature of reality.

Early in his career, Russell was familiar with Bradley's work and sympathetic to some aspects of Bradley's views, but he became critical of Bradley's views in turning from British idealism to **realism**. *See also* ASYMMETRICAL RELATIONS; GRAMMAR AND ANALYSIS.

BUNDLE THEORY OF OBJECTS. In the 1940 *Inquiry into Meaning and Truth*, Russell defends a conception of objects as bundles of co-existing properties in place of the conception of a substance as an unknowable 'something' underlying an object's properties, these properties being all we know of an object. It is our tendency to treat sentences like 'this is red' as consisting in a subject and a predicate that has made the substance-property conception of an object seem natural and inevitable, he thinks. (*See* GRAMMAR AND ANALYSIS.) As a corrective, he suggests that such a sentence be understood as asserting 'redness is here,' that it be understood as containing 'redness' as a name rather than a predicate.

Russell's bundle theory has implications for the identity and diversity of objects. For instance, on the bundle theory—unlike the substance-property theory—it is not possible for there to be two substances with all their properties in common, since a substance is defined by the sum of its properties. Thus, an Eiffel tower in New York would be identical with the Eiffel tower in Paris, assuming their properties to be the same. It follows that spatial and temporal relations (like 'to the left of' and 'is earlier than') do not imply diversity, a conclusion opposed to Russell's 1911 view that **particulars** are diversified by their location or place, not their properties, and one that he admits creates difficulties in the **construction** of **space and time**. *See also* EMPIRICISM, RUSSELL ON; HUME, DAVID; UNIVERSALS.

BURALI-FORTI, CESARE (1861–1931). Cesare Burali-Forti, an Italian mathematician and associate of **Giuseppe Peano**, discovered a paradox of set theory in 1897 that concerns ordinal **numbers**

(numbers that show position, like first, second, third, etc.). It is in essence a "set of all sets" paradox, and is usually referred to as the Burali-Forti paradox or the paradox of the ordinals. The paradox arises from the **definition** of a particular ordinal number (or what he calls an order type) that corresponds both to the whole series of ordinals as well as to just a segment of it. In brief, each ordinal number is defined as the set of all the preceding ordinals, except zero, which is defined as the empty set. Thus, 'first' is defined as {0}, 'second' as {0, 1}, 'third' as {0, 1, 2}, and so on. Consider now the set S of all ordinals. S thus defines an ordinal S and contains all ordinals < S. But since S is the set of all ordinals, it therefore belongs to itself and thus gives rise to a new ordinal S + 1, which is both greater than the number defined by S and not greater than it, because it too is a member of S. **Georg Cantor** developed a similar paradox for set theory concerning cardinal numbers rather than ordinals, which Russell discovered independently of Cantor in 1900.

In the later division of contradictions into **semantic versus logical paradoxes**, Burali-Forti's and Cantor's paradoxes are classed as logical paradoxes, as is **Russell's paradox**, but neither Burali-Forti's nor Cantor's paradoxes are as disconcerting as Russell's, which involves no numerical concepts at all and arises simply from the natural assumption (expressed in the axiom of **comprehension**) that any predicate defines a set or **class**. *See also* AXIOMATIC SET THEORY.

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CANTOR, GEORG (1845–1918). A German mathematician, Georg Cantor is the originator of set theory and transfinite arithmetic, the study of different sizes of **infinite** sets (or **classes**) of **numbers**. In 1874, Cantor showed that while the set of rational numbers 1, 1/2, 2, 3/2, 1/3, 2/3, . . . is infinite and countable—that is, its members can be correlated 1 to 1 with those of a subset of itself, such as the series of natural numbers 1, 2, 3, . . .—the set of real numbers is infinite in a way that is uncountable (i.e., nondenumerable). Since sets in 1–1 correlation are the same size and have the same cardinality, his proof established the **existence** of higher infinites: sets with transfinite

cardinality. In what is known as Cantor's theorem, he further showed that for any set S there is a power set S* greater than S (namely, the set of all the subsets of S), which has its own power set, and so on, from which it follows that there is no largest set and no greatest cardinal, either finite or transfinite. Indeed, as he subsequently pointed out, applying the power set to the set of all sets is paradoxical: as a power set of that set, its cardinality is greater, but as a member of the set of all sets, its cardinality is not greater.

Cantor's response to the paradox named after him (which implies a paradox of ordinals) and his awareness of **Cesare Burali-Forti**'s discovery of a related paradox of ordinals led him to consider a collection a set only on condition that it is limited in size—a move that anticipated later developments in **axiomatic set theory** to rehabilitate set theory by means of axioms that constrain the notion of a set.

Aware of Cantor's proof that there is no greatest cardinal, and reasoning in a similar way about the concept *largest possible class*, Russell discovered a paradox in the notion of a class of all classes that are not their own members. The discovery of **Russell's paradox** dealt a serious blow to the **logicist** project, championed by **Gottlob Frege** and Russell, of showing that **mathematics** is properly an extension of logic, that is, of set (class) theory. It dealt an equally serious blow to foundational studies of mathematics. Much of Russell's subsequent work in these areas focuses on mechanisms for avoiding these and other paradoxes. Though he briefly considers something like Cantor's limitation of size approach, his work ultimately combines the elimination of classes as entities—the so-called **no-classes theory**—with the **ramified theory of types**, reaching maturity in the ***Principia Mathematica*, first edition** (1910–1913). *See also* THEORY OF TYPES AND ORDERS, DEVELOPMENT OF THE; ZIGZAG THEORY.

CAPITALISM, DANGERS OF. A democratic socialist most of his life, Russell is typically disparaging of capitalism, particularly the moral and intellectual failures of capitalist leaders who encourage **war** because they stand to profit from it, for example, by the sale of armaments or by aggressive **colonization** of other lands. He views such greed as a threat to human **progress**, denouncing capitalist and imperialist nations for their willingness to risk the loss of **civilization**

for their own individual gain. In the early and middle 1920s, Russell anticipates a backlash to capitalist greed in the form of an extended class war. He particularly fears the length of the anticipated hostilities (a prediction borne out in the Cold War), which would undermine industry and **education** and thereby speed the emotional and moral decay of all concerned parties. *See also* DEMOCRACY AND CAPITALISM; IMPERIALISM; INDUSTRIALISM.

CARNAP, RUDOLF (1891–1970). A German philosopher and member of the Vienna Circle, Rudolf Carnap fled Nazism to become a U.S. citizen in 1941. Carnap's work falls within the philosophy of **science**, paying special attention to the logical **analysis** of **language**, both syntax and semantics. A student of physics from 1910 to 1914, he worked in radio research during World War I. After the war, he studied logic under **Gottlob Frege** before writing a dissertation with the neo-Kantian Bruno Bauch in which he gives a neo-Kantian interpretation of **space**. However, his philosophy soon took a positivistic turn, and his brand of **logical positivism** is apparent in early work such as *Pseudoproblems of Philosophy* (1928) and *The Logical Structure of the World* (1928). The first shows the impact of **Ludwig Wittgenstein**'s contention in the *Tractatus Logico-Philosophicus* (1922) that purportedly genuine philosophical problems arise from the misuse of language. The second shows the influence on him of Russell's attempt in texts like *Our Knowledge of the External World* (1914) to construct **concepts** and **propositions** of science in terms of **sense data**—that is, in terms of our immediate experience. In the 1930s, Carnap was further influenced by the work of Alfred Tarski.

In *The Logical Syntax of Language* (1934), Carnap objects to the negative theses of Wittgenstein and others (e.g., Wittgenstein's rejection of a sign for identity), arguing that the business of logicians is to arrive at conventions, not to lay down proscriptions. This "principle of tolerance" is evident in his attitude toward laying out a formal language. For example, Language I, in *Logical Syntax*, which is based on the formal language in ***Principia Mathematica,*** **first edition** (1910–1913), differs in using symbols of position in place of names of objects, as well as in its treatment of logical operators and universality. These changes give Language I certain advantages—for example, it is constructive and finite and therefore satisfies certain

conditions of intuitionism—but it is not the only possible language. In general, Carnap believes that we arrive at the rules of a language only with some such end in view and not in the belief that we are uncovering the "correct" language. This perspective turns attention toward the logical connections between sentences of the language and away from their relation to the extra-linguistic **facts**, since statements about these rules do not express truths about the nature of language but merely pragmatic truths, given a set of linguistic conventions.

In *Logical Syntax*, Carnap further argues that if we lay down such rules, in order to discuss our system we must state our method and give syntactical rather than philosophical arguments. His point here is derived from his contention that philosophy must be replaced by what he calls the logic of science. Philosophy, he argues, typically contains both object questions and logical questions, but some branches of philosophy (e.g., metaphysics and **ethics**) deal with spurious objects, and the questions concerning them are pseudo-questions, while other branches of philosophy (e.g., the study of nature, or of humankind, or of language) deal with entities also considered by the sciences. But even in these latter cases, object questions (e.g., questions about numbers, properties, space and time, the relation of the physical and psychical, etc.), when they belong to philosophy and not a scientific discipline, are really disguised logical questions referring to sentences, **words**, and other syntactical items. Hence the logic of science—what remains of philosophy—consists of syntax. In taking this position, Carnap disagrees with Wittgenstein, who believed syntax to be inexpressible and did not identify it with the logic of science.

Russell's late work, especially *An Inquiry into Meaning and Truth* (1940) and *Human Knowledge* (1948), opposes Carnap's constraint of philosophy to the form of sentences of a science and instead brings issues of the nature of experience and its relation to language and psychology into philosophy. Russell's psychological account of logical words like 'not' and 'or' in terms of feelings of rejection and choice also stands opposed to Carnap's physicalist contention that the language of physics suffices for psychology. Though Russell never adopts Wittgenstein's position that syntactical issues, like the form of sentences, can be shown but not said, he does articulate views on **inexpressibility** that owe a great deal to Wittgenstein,

for example in his theory that sentences like 'relations are not attributes' sin against the **theory of types**. *See also* LOGICALLY PERFECT LANGUAGE; MINIMUM VOCABULARY; OBJECT LANGUAGE *v* META-LANGUAGE.

CAUSALITY. Russell asserts early in his career that the more a **science** matures and uses **mathematics**, the less it uses the notion of causality. For daily life and scientific disciplines in their infancy, such as the social sciences, causal **laws** are used that say that for two events that invariably follow one another, the first is probably the cause of the second, which is **David Hume**'s view of causality. In contrast, a mature science (such as physics) replaces simple causal laws with mathematical laws, in particular with differential equations expressing mathematical relations between the many factors of some system. Since mathematical laws do not express any temporal relations (the future is related to the past in exactly the same way that the past is related to the future), make no mention of causality, and involve many factors influencing an outcome and not just one singled out as the cause, they are not, strictly speaking, causal laws. They do, however, function similarly, stating that for some set of initial conditions of a system, states of the system at other times can be inferred with some probability of occurrence (*ML* 132–44).

In the 1940s and later, Russell does speak of the complex relations expressed by differential equations as a type of causal law, but he denies that such causal laws of mathematical physics have the simple form of 'A causes B' used in primitive learning situations and the social sciences. In *Human Knowledge* (1948), Russell provides greater detail for this view, stating five postulates or assumptions he thinks are necessary for the complex causal inferences of physics expressed by differential equations: (1) events frequently occur with similar events occurring nearby in **space**-time; (2) series of events frequently occur where, from one or more members of the series, something can be inferred about other members of it; (3) when there is a causal connection between two events that are not contiguous, there must be mediate links in a causal line, with the intermediate events being contiguous to the next; (4) structurally similar things ranged around a center probably have a common cause. Russell also includes an **inductive** clause to the effect that (5) when every case of

B has A as a causal antecedent, it is likely that when we observe B, we may infer a cause A.

The first four postulates say that we know the structure of the physical world though not its qualities; they make the inferences of mathematical physics likely. But, according to Russell, we assume more **knowledge** than the merely structural when we believe we know other people's minds; in these cases, we believe that what we know are their intrinsic qualities. If certain thoughts or feelings cause us to behave in certain ways, it likely that when others behave in those ways, what is causing their behavior are thoughts or feelings similar to ours. For this, an argument by analogy is needed, a simple inductive inference, and the fifth postulate says that such inferences are often likely to be true (*HK* 506–15). *See also* KNOWLEDGE OF THE EXTERNAL WORLD.

CAUSAL THEORY OF MEANING. *See* MEANING, CAUSAL THEORY OF.

CERTAINTY AND SELF-EVIDENCE. In *Problems of Philosophy* (1912), Russell defines self-evident principles to include those whose truth is incapable of **proof** as well as those that can be demonstrated but whose truth is as evident as the truth of those used to demonstrate them. For this reason, he concedes he is using 'self-evidence' in two ways, one absolute, the other not. Though in both cases self-evidence (or certainty) is a subjective or psychological property of the believer, there is a difference, since the latter case allows there to be shading from what is evidently true to what is less so. For example, though the truth of '2 + 2 = 4' may be as evident to you as the truth of the indemonstrable logical axioms from which it is derived (according to his **logicism**), the truth of some more complicated equation derived in similar fashion may be much less evident, perhaps depending on circumstances.

There is no similar amenability to degrees or variations in self-evidence in the case of an indemonstrable principle, though the obviousness of its truth is still a psychological property. Because the self-evidence of the truth of indemonstrable principles is psychological, we can later decide we were mistaken about whether a principle is self-evident or even true. In the first volume of ***Principia Mathematica*, first edition** (1910–1913), Russell says that the principles

of deductive logic (presumably self-evident) are open to revision if we later find that some of their consequences are questionable. He also says that we possess certainty of the truth of these principles by **induction**, by the fact that no false propositions follow from them but many true ones do.

Russell points out in the *Principles*, seemingly paradoxically, that the **particular** instances of general truths are usually more self-evident than the general principle they instantiate. The truth that this red rose in front of you cannot be nonred is more self-evident than the truth of the principle of contradiction, that a thing cannot both have and not have some property (*PP* 112). In saying this, Russell moves toward what he thinks is the second source of self-evidence, the conviction of our senses. General principles require to be understood before the self-evidence of their truth can be acknowledged, but what we see or touch (i.e., know by **acquaintance**) is believed on its own account without delay. As Russell says elsewhere, what such experience purports to give is primitive **knowledge** (*OKEW* 75). He admits that a report based on our present sensations is never infallible since a person may err in making a judgment on the basis of **perception**, due to faulty **memory** or some other reason. Moreover, the evidence for empirical **beliefs** may be removed from present sensation in various ways, for example as the evidence for historical beliefs is removed from us in time. Thus, just as the truth of mathematical theorems may be experienced as more or less self-evident, the truth we attach to an empirical belief may also be experienced as more or less certain.

There are, then, different sources of self-evidence or certainty in the indemonstrable sense as well as different ways that truths derived from them are open to degrees of self-evidence. Knowledge consists, however, in these self-evident, certain beliefs and the propositions derived from them. Thus, Russell thinks that the existence of reports of immediate experience, combined with the existence of general principles, justifies qualified confidence in the edifice of knowledge generally.

As late as *Human Knowledge* (1948), Russell presents knowledge as deriving certainty at two points: from basic propositions (i.e., reports of percepts) and from general abstract principles that are not inferred from experience. Yet other developments amplify the uncertainty he already believes characterizes knowledge. For example, in the 1920s,

Russell comes to view our knowledge of the application of a **word** (e.g., 'blue') as pervasively uncertain, a doctrine related to his theory that meaning is characterized through and through by **vagueness**.

CHOICE, AXIOM OF. In **axiomatic set theory**, the axiom of choice governs the selection of members of sets (or **classes**) so as to form a new set. Forming a new set is unproblematic when the number of sets is finite. With an infinite number of sets, forming a new set is unproblematic if there is some rule for selecting members, as in Russell's example of choosing the left shoe from an infinite set of sets of shoes, where left and right shoes differ. Ernst Zermelo introduced the axiom of choice in 1904 to address infinite sets when no rule or principle selects a member from each set. The axiom asserts that for any infinite set of sets, there exists a choice-function, that is, a way of choosing one member each. Using Russell's example, it allows us to choose one sock from each of a supposed infinite number of pairs (sets) of indistinguishable socks. In *Introduction to Mathematical Philosophy* (1919), Russell defends the axiom (and the multiplicative axiom following from it) as a convenience important but not indispensable to various **proofs**. The principle is no longer considered problematic, but the original consternation over it highlights debates between different schools of thought about the nature of **mathematics**. *See also* POINCARÉ, HENRI.

CHRISTIANITY. Russell believes the **existence** of **religions**, including Christianity, is caused by **fear**, and he typically claims that religions have done little **good** and much evil. In *Has Religion Made Useful Contributions to Civilization?* (1929), Russell says that other than fixing the calendar, he knows of no good coming from the Christian church. However, in other writings, he gives the Christian church credit for a variety of important achievements. The church, for example, developed a strong organization under Roman rule, which survived when Rome did not, thereby preserving much that was important in the Greek, Jewish, and Roman civilizations (*IPI* 111). Then, in the decline of European civilization in the sixth century and after, the church preserved whatever survived of these ancient cultures and created a solid framework out of which the later revival of learning and arts was made possible (*HWP* 335).

As for harms the church has done, Russell claims that the Christian church has been the principal opponent of moral **progress** in the Western world. Organized Christian churches have, he says, opposed every improvement in the criminal **law**, such as the gradual reduction of capital punishment, every attempt to reduce the number of **wars** around the world, every improvement in the treatment of those with skin darker than that of Europeans, every reduction of slavery in the world, and every movement for economic justice. Russell thinks that the worst aspect of the Christian church is its attitude toward **sex**. In every instance, it urges people toward less rather than more sexual pleasure and thus toward less **happiness**. More generally, Russell thinks that the Christian conception of **sin** does a great deal of harm and provides an outlet for people's sadism in so far as they try to limit the happiness of others. Russell further claims that intolerance is one of Christianity's oddest features and that Christianity is responsible for spreading a great deal of intolerance throughout the world. This intolerance, Russell claims, springs from conviction in one's righteousness in practicing the true faith, coupled to the idea that it is wicked to tolerate any other religion.

Russell therefore finds the Christian church to be both morally and intellectually injurious to civilization. Its morality is not conducive to human happiness, and because it expounds an unchanging truth (that is, a dogma), it is necessarily the opponent of all intellectual and moral progress. Christianity, he concludes, is an obstacle to the present improvement of morality and ought to be abolished. As an example, Russell points to the fact that syphilis can be easily prevented by the use of condoms but that the churches of his time (as many today) object to the dissemination of this **knowledge**, believing it good that sinners should be punished with a venereal disease, so good, he says, that they believe it should be extended to the wives and children of the sinners. In general, he says, the church's constant attempts to restrict sexual knowledge cause people to behave less wisely rather than more wisely in their sexual lives.

Russell finds that the doctrines of the church require a great deal of **ethical** perversion in order to be accepted, for how else to diagnose a religion that says there is a **God** who is good and all powerful, yet who created the world foreseeing all its pain and misery, and who is therefore responsible for that suffering? To insist, as Christians

do, that this suffering purifies us of our sins and is good cannot be anything but a perversion of ethical values, he concludes. As to why Christianity should be so perverse and contrary to human happiness, Russell argues that its doctrines come from an age when people were crueler to each other than they are today; it therefore perpetuates inhumanities people would otherwise outgrow (*WNC* 24–47).

CIRCULAR DEFINITIONS. In *A Critical Exposition of the Philosophy of Leibniz* (1900), Russell argues that only **complex** ideas can be defined verbally, by analyzing them into their constituents. Since we define ideas in terms of other ideas, he adds that we become caught in a **vicious circle**, in unacceptable circular reasoning, if we do not allow some terms to be indefinable. He notes that some of the terms that cannot be verbally defined can be defined ostensively, by repeating a **word** in the presence of the thing it **denotes**, but that there are other terms—such as those for properties like *red* or **relations** like *greater than*—that cannot be ostensively defined, and when not verbally definable, these terms are not definable at all.

Some analysts deny that it is vicious (i.e., illogical, useless, or unintelligible) to define terms circularly and think that doing so can at least sometimes be useful and intelligible (and also logical, for the circular argument '*p* implies *p*' is a valid logical inference). For example, we define the use of 'and'—in an expression '*p* and *q*' where '*p*' and '*q*' are declarative sentences—by saying: '*p* and *q*' is true whenever '*p*' is true and '*q*' is true. In doing so, we use the word 'and' to define itself, and yet it has given us new information on how to use the term. *See also* NUMBER, DEFINITION OF.

CIRCUMFLEX. In ***Principia Mathematica*, first edition** (1910–1913), Russell says that 'ϕx' ambiguously denotes any of a range of propositional **values** of a **propositional function**, while '$\phi\hat{x}$'—which contains a circumflex over the individual variable '*x*'—unambiguously denotes a propositional function, thereby allowing us to talk about it rather than its propositional values. Russell sometimes seems to lose sight of this distinction, as when he says that 'ϕx' is a propositional function and contains a variable, rather than that ϕx ambiguously denotes a propositional value of the function '$\phi\hat{x}$.' This way of speaking suggests that besides the **propositions** ambiguously denoted and the

predicate unambiguously denoted, there are entities—propositional functions—that are ambiguous. This issue is related to the question in the debate over the **ontology of *Principia Mathematica*** whether propositional functions in the *Principia* are intended to be part of the **language** or what it is about. It is a matter of interpretation whether Russell's apparent indifference to the distinction between notation and what it is about shows carelessness or confusion or is part of Russell's conception of **logic**. *See also* AMBIGUOUS ASSERTION; OBJECT LANGUAGE *v* META-LANGUAGE.

CIVILIZATION. Many of Russell's social, political, and educational ideas turn on his conception of civilization and its value. His conception has both a moral dimension and a material one. Considered morally, civilization is characterized by hatred of **war**, kindness to **women**, intellectual curiosity, habits of reason, and love of freedom. These qualities are a relatively thin veneer covering over a primitive, barbaric psychology of **impulses** and instinct, and keeping them in check. Our primitive and barbaric tendencies include collective thinking, hatred of outsiders, and an impulse to dominate. (*See* HERD INSTINCT AND THE INDIVIDUAL.) Since our civilized habits are learned, they can therefore be unlearned—hence Russell's lifelong interest in **education**, which he views as the way we **teach** children the moral habits of civilization. (*See* BEACON HILL SCHOOL.) Material civilization concerns the material conditions in which we live: our arts, architecture, medicine, and so forth. Many of these are products of **science** and technology. Russell values science and technology because they permit us a degree of freedom from **matter** and because, in so doing, they play a role in deterring that threat to civilization called war.

Since our habits and attitudes shift with changes in those conditions, and vice versa, the two aspects of civilization are interrelated, and any attempt to preserve and encourage civilization, or to protect it from destruction, must take both our inner and outer conditions into account. But the most important consideration seems to be internal. It is our repressed barbaric emotional and moral states that pose the greatest threat to civilization, in both the moral and material sense. According to Russell, these tendencies tend to be especially prominent in those who hold **power**, and since he believes that we decay

mentally and morally as our power increases, it follows that those with the greatest influence and power are often those whose passions are the least civilized. That this fact is not always immediately apparent is due to the tendency of the people (and nations) that are most governed by primitive impulses to disguise themselves as civilized and to paint as primitive and barbaric people who have in fact more civilized impulses. This is the case in the confrontation between West and East, for the Western love of money and conquest protects itself by depicting as heathen and primitive the Eastern preference for pleasure and **knowledge**. (*See* COLONIZATION, WARS OF.)

Though Russell values non-Western civilization, what is most important to him is what is civilized in Western culture. Indeed, in World War I, Russell emphasized nonresistance precisely because he believed Europe's gifts to humanity were too precious to risk. In general, his lifelong preoccupation with the dangers of war flow from consciousness of its devastating moral and material effects—its capacity to roll back civilization and reduce humanity to a state of moral and physical barbarism. *See also* HUMAN NATURE; IMPERIALISM.

CLASS AS ONE *v* CLASS AS MANY. In the metaphysical doctrines of ***The Principles of Mathematics*** (1903), whatever can be an object of thought or be counted as one has being and is called a 'term.' Moreover, every term is able to be a logical subject of a **proposition**. Thus, according to Russell, propositions, **relations**, classes, things, **concepts**, chimera, and so on are all terms. This highly **realist** perspective is related to Russell's logical doctrine of the **unrestricted variable**, for just as Russell wishes to say that every term can be a logical subject in a proposition, he also wishes to maintain that the variable is unrestricted, that it ranges not over a particular type of entity—he has only just begun to consider a **theory of types** of entities—but over any term whatsoever. In the *Principles*, these doctrines conflict with certain aspects of Russell's theory of classes, which he sees is also in need of revision in light of **Russell's paradox**, the set of all the sets that are not members of themselves.

Thus Russell notes that a class can be defined either by **extension**, that is, by listing its members, or by intension, by defining a concept that uniquely **denotes** a class. He distinguishes, further, between a

class as many (as an aggregate or collection) and as one (as a whole composed of its terms). A class as one can be the single logical subject of a proposition (as in 'the navy is a branch of the military'), but a class as many cannot. Yet we can make assertions about the class as many, as in 'A and B are two,' and so Russell admits that it is possible for a logical subject to be a plurality. This means that he cannot maintain, as he had wished to do, that anything that can be the subject of a proposition is a term, that is, an entity, something that can be counted as one. It follows that the word 'term' is actually not inclusive enough. At the same time, because it is not a single entity—not a term—it follows that the class as many cannot be a member of itself.

In the appendices to the *Principles*, Russell says that a propositional function is sure to uniquely define only the class as many. He leaves open the possibility that in some cases they also define the class as one, as an object, though the paradox shows that there may be a predicate or property for which there corresponds no class as an entity, no class as one. Though for convenience we may continue to refer to *one* class, a class is actually a plurality, he says, and the meaning of 'one' is therefore different from its normal meaning. Thus, statements ostensibly about a class as one are really about a multiplicity, a class as many. Hence a theory of classes is more extensional than he had believed. *See also* COMPREHENSION, AXIOM OF; NO-CLASSES THEORY.

COLONIZATION, WARS OF. In his 1915 essay "The Ethics of War" (reprinted the same year in *Justice in War-Time*), Russell distinguishes between **justifiable** and unjustifiable **wars** and claims that at least some past wars of colonization were justified. By 'war of colonization,' Russell means a war intended to replace the population of a territory by the invading population of an invading race. Wars of colonization are justified for him when a civilized population replaces an uncivilized one and in this way extends the portion of the world that is civilized. Justified wars of colonization have occurred in both ancient and modern times. Such wars, he says, include those against the American Indians and Maoris. Wars that do not aim at complete occupation of a country by a conquering race but only at securing governmental and trading advantages he calls wars of pres-

tige rather than wars of colonization. Wars of prestige, for Russell, are never justified. In Russell's sense of the term, the wars of British **imperialism** may or may not have been wars of colonization, while the wars against American aborigines were, and the Boer War and British suppression of independence probably were not.

In order for wars of colonization to be laudable, he believes that "there should be a very great and undeniable difference" between the **civilizations** of the two groups. Despite his emphasis on Europe, Russell recognizes the value of non-Western civilizations and is especially protective of Chinese civilization, which he views in some respects as superior to his own. Russell views such wars as leading to "the survival of the fittest," with the result—the spread of civilization—an advantage that made such wars worth fighting. In particular, such wars are justified by the fact that the spread of civilization has led to an increase in the overall **happiness** of humanity.

Yet Russell holds this position on colonization only for wars that have already occurred. This is in part because he believes Europeans are suited to be productive only in temperate zones, and either they or Asians, to whom Europeans are not clearly superior, already occupy all of the temperate zones. In any case, he adds, Europeans are not strong enough to expel Asians from these regions. Russell is therefore intolerant of contemporary expansions and in fact of British imperialism itself. Indeed "it is what nations have added to civilization that make us permanently honor them, not what they have acquired through conquest and domination." He sees warfare now as actually threatening to diminish the habits, values, and products of civilization. In the present, he believes, it is by means of choosing peace and nonresistance over war that civilization advances (*JWT* 19–37). *See also* ETHICS; PACIFISM.

COMPLEXES AND SIMPLES. In Russell's work, the terms 'simple' and 'complex' refer, typically, to kinds of objects. In ***Principia Mathematica*, first edition** (1910–1913), he gives "any such object as '*a* in the relation *R* to *b*' or '*a* having the quality *q*'" as examples of complexes, saying further that a complex is "anything which occurs in the universe and is not simple" (*PM* 44). From such discussions, the categories of simple and complex would appear to be mutually exclusive, but in *Theory of Knowledge* (1913), complexity

and simplicity appear to be functions of **acquaintance**, for there Russell says we may alternate between seeing things as simple and seeing them as complex by an act of **attention**.

In this period, Russell therefore does not yet draw the sharp distinction between complexes and **facts** that he does in the 1918 lectures published as the *Philosophy of Logical Atomism*, and they are treated as interchangeable. This point is connected with Russell's early theories of **belief** and **truth**. Russell argues that we can shift from perceiving a complex object *as* complex, for example the shining sun, to making a judgment about the complexity, for example that the sun is shining. The judgments of **perception** that arise in this way possess **certainty**, he thinks, in part because there is no sharp distinction between what we perceive, a complex, and the fact that makes the corresponding judgment true. He thinks that the fact corresponding to such a judgment is available to perception as a complex and can be named.

Largely due to **Ludwig Wittgenstein**'s influence, in Russell's 1918 and post-1918 work, there is no longer any attempt to name what makes a judgment true. **Assertions** that a complex thing exists hereafter reduce to assertions of the fact that their constituents are related in a certain way. Russell continues to employ the notion of complexity, since facts involve it by containing one or more **particulars** and at least one **universal**, typically a relation—but now facts are not things, complex or otherwise. Of course, Russell now also rejects this way of **talking about** facts and things, referring instead to the difference between sentences and names. *See also* ATOMICITY, THESIS OF; INEXPRESSIBILITY OF FACTS; NONEXISTENT COMPLEXES.

COMPREHENSION, AXIOM OF. It is natural to assume that properties correspond to sets—namely, that for any property there is a set (which may be the empty set) of things that possess that property. The axiom of comprehension captures this intuition, asserting that any **propositional function** x containing a free variable determines a set whose members are **values** for the variable, that is, things for which the property is true. But the discovery of contradictions like **Russell's paradox** showed that it is impossible to make this assumption, since the paradox provides a propositional function to which no

set or **class** can possibly correspond. The attempts by Russell and others to eliminate this paradox and related ones can be generally described as subjecting the comprehension axiom to limiting conditions, most famously by the **theory of types**. Moreover, the systems of **axiomatic set theory** arising as a result of the discovery of the paradoxes no longer contain the comprehension axiom. *See also* CANTOR, GEORG; RAMIFIED THEORY OF TYPES; SUBSTITUTIONAL THEORY; ZIGZAG THEORY.

CONCEPTS *v* OBJECTS. Gottlob Frege's analysis of **concepts** (functions) distinguishes predications about objects (e.g., 'this is red') from predications about concepts (e.g., 'red is a color'), and so on. The principle generating this stratification is the notion that concepts are essentially predicative and cannot occur as objects. As Frege acknowledges, this is a doctrine that defies exact expression, for we cannot say 'a concept is not an object' without seemingly treating it as an object by making it the subject term in a sentence. Frege believes that by observing their role in judgments, we can grasp even if we cannot express the difference between concepts and objects. Thus he shows little distress over this problem of **inexpressibility**, aside from making an apology to the reader for having to misspeak to make his point.

In contrast, for Russell in ***The Principles of Mathematics*** (1903), this is a serious flaw: to say 'a concept is not an object' is self-contradictory and paradoxical, since the concept is an object in the sentence in question. The difference between concepts occurring as such and occurring as terms is merely a matter of their **external relations** and not an intrinsic or essential difference in entities. Frege's doctrine of concepts and objects therefore conflicts with Russell's view that a concept can occur either predicatively or as a subject term. Yet, as he discovers, to allow concepts a dual role, as he wishes to do, opens the way to such contradictions as **Russell's paradox**, since it becomes possible for a predicate to be predicated of itself (for a function to take itself as an argument).

Faced with paradoxes on either side, Russell chooses to risk the paradox he initially sees as arising from Frege's distinction between concepts and objects in order to avoid the more serious contradictions arising from assuming that concepts have a dual role. He concludes,

in *Principles*, that the injurious cases of a function applying to itself will never arise if a **propositional function** has no **existence** apart from the role it plays in the propositions in which it occurs (*POM* 88). So, for Russell as for Frege, propositional functions cannot be treated as objects. (*See* NO-CLASSES THEORY; SUBSTITUTIONAL THEORY.) Russell sees that his view of the inseparable function involves him in the same kind of contradiction that he believes Frege exposes himself to in asserting that a concept is not an object. For if propositional functions are not objects, how can he be meaningfully **talking about** them? Though the fact that the doctrine is necessary to avoid more serious paradoxes, such as Russell's paradox, outweighs this consideration, the general problem of attempting to say what cannot be said remains a theme in his subsequent development of a **theory of types**—one that **Ludwig Wittgenstein** later dwells on as well. *See also* RAMIFIED THEORY OF TYPES.

CONSCIOUSNESS. Franz Brentano and his student **Alexius Meinong** describe consciousness as consisting both of a **mental act**, which always has an object toward which it is directed (intended), and a mental content, which is about that object. For example, when we think of our neighbor's dog, this is an act of consciousness that produces the thought whose content is about that dog and whose object is the dog. In a similar way, we might believe that our neighbor's dog is barking, perceive it to be barking, desire it to bark, and so on.

Russell's early work adopts a similar theory of **intentionality**, though he rejects the notion of content. Where Brentano and Meinong say consciousness consists of an act directed toward an object, Russell similarly says consciousness consists of **acquaintance** with an object. By 1921, in *The Analysis of Mind*, Russell has abandoned this view of acquaintance, eliminating the act—as well as the **subject of consciousness** or mind—and introducing the notion of content. He can see no reason to suppose the **existence** of an act of consciousness or thought (**belief** or **perception** or desire) distinct from the contents of consciousness, since all we really experience is the content of a thought, never any supposed act. Similarly, he argues, the subject or self is a fiction suggested by sentences like 'I think so-and-so' that seem to imply the existence of something, the 'I,' engaged in thinking, perceiving, believing, and so forth. But we only experience a

stream of contents of consciousness, never a subject or self. Without subjects or mental acts, the idea of consciousness in the sense of something essentially mental and immaterial disappears.

Following **William James**, Russell argues that there are only **neutral** contents that are neither mental nor material. (Though Russell learned of this view from James, it was first formulated by the German physicist and psychologist **Ernst Mach**.) For Russell, as for James, neutral stuff has neither the indestructibility we attribute to **matter** nor the reference to objects we attribute to mind and consciousness. Nevertheless, the different ways in which **classes** or series of neutral stuff arrange themselves give rise to what we call "mental" and "material." Consciousness of a sensation consists of a sensation accompanied by an **image** of that sensation plus a belief that the image is a sign of the sensation. In more complex cases, consciousness involves an element of expectation: for example, from sensations resembling a physical object, we expect it to provide certain other sensations, such as hardness, continuity in **space and time**, and so on. In this case, consciousness of an object consists in having a sensation accompanied by associated images (different aspects of what we would call the same object) along with a belief in the present existence of an object to which the images and sensations are referred. *See also* MIND/MATTER DUALISM; 'THIS,' 'HERE,' 'NOW.'

CONSTRUCTION *v* INFERENCE. The naïve point of view holds that we infer from our sensations to the **existence** of an object causing those sensations. Russell shares this point of view about a great many entities until 1914, when he begins to favor construction over inference. Giving credit to **Alfred North Whitehead** for the impetus behind this use of the method of construction, in *Our Knowledge of the External World* (1914), "The Relation of Sense-Data to Physics" (1914), "On Scientific Method in Philosophy" (1914), and "The Ultimate Constituents of Matter" (1915), Russell applies his techniques of construction to such previously inferred entities as spatial points, temporal moments, and material particles.

In these texts, Russell shows how to use the **language** of logic to logically construct matter, or material objects, in terms of **classes** of sense data. The constructions can be shown to have all the properties

supposed to belong to the objects of which they are constructions. Note that a construction does not actually disprove the existence of the entity in question; it merely eliminates any reason to make a theoretical commitment to its existence. Thus, to create a construction of an object with all the properties of the object is to show that it is unnecessary to assume the existence of the object, and by Occam's razor—the principle not to multiply entities unnecessarily—we should no longer include it in the list of things we say exist (*PBR* 698–9). For this reason, Russell equates his maxim—to substitute constructions for inferences wherever possible—with Occam's razor.

Russell does not immediately eliminate all inference to supposed entities when he begins to adopt the method of construction over inference; for example, it is not until the early and middle 1920s that he replaces inference to the existence of a **subject of consciousness** with a logical construction. Moreover, the method of constructions does not wholly eliminate the need for inferred entities, since in a construction, Russell needs to assume the existence of unperceived sense data, which are inferred. Yet the method eliminates the need to assume entities other than sense data, which, for Russell, are known by **acquaintance**, unlike physical objects.

In general, Russell's later efforts to analyze the nature of our **knowledge of the external world** (e.g., in his 1927 *Analysis of Matter*) differ in detail but do not shift away from the use of constructions. The method of construction predates all of these considerations from 1914 to 1927, however, and appears early on in the **Frege**-Russell definition of **number** in terms of classes. Instead of assuming the existence of numbers, the definition shows that every theorem that refers to numbers remains true when reformulated as a statement about classes. This procedure focuses on a crucial property, such as *equinumerosity*, and, using the language of logic, it constructs structures, for example classes of equinumerous classes, that exhibit the property. For this reason, the method of construction is sometimes identified with definition by **abstraction**, though what Russell means by definition by abstraction is somewhat different from what **Giuseppe Peano** means when he uses the term.

To define numbers in terms of similar classes seems to some to differ from defining purported entities, such as matter or mind, in terms of classes of sense data, since in defining numbers it is clear what proper-

ties must be preserved, and in defining bodies or minds it is arguably not clear. Yet Russell has several reasons for extending the method of construction to these cases. For one, his work around 1914 blends metaphysical **realism** with an **empiricist** theory that grounds **knowledge** on the present testimony of our senses: the method of replacing inferences with constructions therefore enables him to avoid inference and hence lessen the threat of **skepticism**, which feeds on questioning the legitimacy of inference beyond present experience. More generally, since inferences from sensations to objects causing them are uncertain, eliminating inferences to objects in favor of constructions from present sensations, which are **certain**, increases the certainty of our **beliefs**. *See also* SCIENCE AND PHILOSOPHY; SPACE AND TIME.

CONTENT. *See* MENTAL ACTS AND CONTENTS.

COPERNICUS, NICOLAUS (1473–1543). In *A History of Western Philosophy* (1945), Russell repeats the common view that in dethroning Earth from its position at the center of the universe, the Copernican heliocentric theory made it hard for people to assign to humanity the cosmic significance claimed for it by Christian theology (*HWP* 526–9). Yet this view is open to objection: there is no evidence that the Catholic church opposed Copernicanism because moving Earth from the center of the universe made humans less significant. In fact, the first people known to assert this were the French Enlightenment philosophers, most prominently Voltaire, who championed the Copernican revolution and opposed the church. Being an Enlightenment philosopher himself, Russell repeats the story without question. Only later did theologians adopt it as a reason for opposing Copernicanism, but before Voltaire there is no evidence that theologians did. *See also* CHRISTIANITY.

COURAGE. Russell claims that while society encourages physical morality of men, especially in **war**, it does not expect any other sort of courage from them, and it expects no courage of any sort from women. In fact, if a woman is courageous, he says, she must conceal it if she wants to be liked by most men. And Russell claims that a man who has courage of any other sort than physical courage is also not ordinarily well liked. For example, people generally view indifference to public

opinion as a challenge, and they try their best to punish whoever defies their authority. (*See* HERD INSTINCT AND THE INDIVIDUAL.) Russell protests that public morality should be just the opposite in these cases, and that every sort of courage, in both men and women, should be admired and thought a virtue as much as physical courage in men at war already is.

Can courage be produced in people just by public opinion demanding it in them? Russell argues that it can, and that this is proven by the fact that physical courage is common among men. Of course, as with all values for Russell, this would have the utilitarian virtue of creating more **happiness** among people because there would be less **fear**, and with less fear, less cruelty and fatigue among people, both of which he says are caused by fear (*CH* 64–5).

In the past, due to the importance of courage in war, there was training in military courage for men. But at that time, courage was supposed to be the prerogative of the aristocracy, who were the warriors in society. But when such courage is the prerogative of the aristocracy, it is used to oppress others, and is thus a form of cruelty. Courage must thus be democratized, Russell says, for when it is a common virtue in a democratic culture, it cannot be used to oppress people but will be used for humane purposes instead.

Russell believes that great strides have been made in this democratic direction. The suffragists showed as much courage as the bravest men, he says, in their struggle to win the vote. And because wars have come to be fought by ordinary citizens rather than by the aristocracy, physical courage has become greatly democratized. But in addition to courage in fighting, we should **teach** courage in facing poverty and especially in facing derision and the hostility of one's own group. And in general, we should teach the courage to think calmly in the face of danger rather than panicking. A proper **education** can help give a person these qualities, Russell thinks (*WNC* 80–81). *See also* ARISTOCRATIC VIRTUES; DEMOCRACY.

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DEFINITION, PHILOSOPHICAL AND MATHEMATICAL. In "Axioms of Geometry" (1899) and in ***The Principles of Mathemat-***

ics (1903), Russell—objecting to **Henri Poincaré**'s procedure of definition—distinguishes definition as it occurs in **mathematics** from the sense in which it occurs in philosophy. The mathematical definition of a term (e.g., 'straight line') consists of giving a relation to some concept unique to an object or set of objects. But in philosophy, he says, we wish to locate the entity meant by a term, that is, its meaning. (*See* MEANINGS AS ENTITIES.) A meaning in this sense cannot consist in a term's relation to other terms but must be an entity, either **complex** or simple. Where terms denote complexes, Russell thinks, philosophical definition consists in listing the simples composing the complex; it thus presupposes the process of decomposition that Russell thinks is characteristic of philosophical analysis. But when a term denotes a simple entity, it cannot be defined—the term is philosophically indefinable. Such terms may be related to other terms, and mathematical definitions may therefore exist where philosophical ones fail. But from the philosophical point of view, such mathematical definitions of a philosophical indefinable are mere theorems, as they do not define the term in the philosophical sense.

This conception of the nature of philosophical definition and the **existence** of philosophically indefinable terms leads Russell to characterize philosophy as, in the end, a matter of insight, of direct mental apprehension of simples, a kind of immediate **acquaintance** like the experience of the taste of pineapple, which the philosopher must then endeavor to create in the minds of the audience. *See also* NUMBER, THE DEFINITION OF.

DEMOCRACY. By 'democracy' Russell means a form of government where a fairly large percentage of the population has a share of political **power** as citizens and where government is in the hands of a majority rather than a minority of its citizens (*P* 197). Throughout his life, Russell advocates democratic governments as necessary for the **happiness** of people, while believing that there are some limitations to democracy.

It is impractical, he thinks, to give every citizen an equal vote in every decision; some decisions must be made quickly. Thus, an executive branch to the government is needed. The executive branch is not only necessary but desirable, because governments need years of

independence of action to bring about important economic changes. Russell denies that such a fact makes authoritarian governments necessary: economic change, he thinks, can also be achieved democratically, for democracy is only the occasional exercise of popular will and need not be exercised more regularly than that. Yet Russell accepts that some decisions require expert **knowledge**, necessitating a judicial authority on these occasions, which is another limitation on democracy. For these reasons, Russell thinks it is neither possible nor desirable to give executive or judicial power directly to the electorate. Thus, by 'democracy,' Russell primarily means representative democracy, where legislatures and executives are chosen by majority votes and the judiciary is appointed by the legislature or else by the executive with legislative approval (*P* 198–9).

More important to Russell even than democracy is liberty, and he views democracy as the most successful way of protecting the liberty of individuals against the state. For this reason alone, he advocates democracy. Yet he believes that democracies have a tendency to tyrannize minorities and demand that individuals conform to majority values. He deplores both tendencies and argues that **education** ought to **teach** tolerance of and a desire to understand those different from us. This ideal of promoting only the common interests can never be completely achieved, but there are periods, he thinks, when it is approached as an ideal, and these are periods of **progress** for the group.

Russell further believes that devolution is the main way minorities can be protected from the "tyranny of the majority" and is therefore essential for good democratic government. By this, he means that a hierarchy of governmental units must be established where each unit is given only enough power to carry out those functions that it can carry out and that cannot be carried out by more local units of democratic government, so that all functions are carried out by the lowest level of government capable of carrying them out (*UE* 121, *PI* 31). It must be noted, however, that much of 20th-century American history seems to indicate that progressive reform is often achieved by the federal power over state and municipal governments and not by devolution of federal power to state and local governments. Rather, state and local governments have often been less progressive than the federal government.

Russell acknowledges that democracy requires that no one should have special privileges, but he emphasizes that this is not the same as assuming that all people should be alike. The latter view is detrimental to excellence and a well-functioning community. Each community needs many different kinds of tasks performed, and each task requires its own particular kind of character and aptitude to be done well (*IMT* 18). *See also* DEMOCRACY AND CAPITALISM; INDIVIDUALISM.

DEMOCRACY AND CAPITALISM. It is a maxim for Russell that **power** left unchecked and in the hands of a few leads to unhappiness for the many. "All history," Russell says, "shows that . . . minorities cannot be trusted to care for the interests of majorities" (*P* 287). Russell thus thinks that **democracy** is necessary for a majority to be happy. Following **John Stuart Mill**, Russell thinks that the best way of maximizing **happiness** in any group is to have as much liberty as practically possible. Democracy, he thinks, is the best way of ensuring that the people of any state can create and defend their liberty. But since democracy does not rule out the real possibility of a majority oppressing a minority and requiring individuals to conform to the majority's standards, other political structures are required as well, such as checks and balances and constitutional guarantees of liberties.

Russell argues that certain economic conditions are likewise required to protect liberty and thus protect the happiness of the people of a state (*P* 286). While democracy was spreading in the 19th century, another form of power, the large economic corporation of modern capitalism, was likewise being created and spreading. This capitalistic form of concentrated economic power could make decisions affecting ordinary people's lives without the political government being able to control it. In order to control this new form of power, so that all power is democratic, Russell reasons that economic power must belong to the state. In other words, modern democracies must be socialistic rather than capitalistic in order for ordinary people to have an effective democracy that can in turn protect their liberties and thus happiness. For this reason, Russell in general espouses democratic **socialism**.

But it must be emphasized that socialism for him must always be democratic. Russell's chief criticism of **Marxism** is that while it espouses a kind of socialism where the state takes control of economic power, it does not equally demand that the state be democratic, so that under Marxism the people still do not control their own lives but are subject to the whims of a minority (*P* 197–8).

DEMOS, RAPHAEL. *See* NEGATIVE FACTS AND PROPOSITIONS.

DENOTING CONCEPTS. In ***The Principles of Mathematics*** (1903), Russell conceives of **meanings as entities**, arguing that all **words** have entities corresponding to them, and that just as words combine to form sentences, so do their meanings combine to form **propositions** (i.e., mind-independent **complexes**), which are the entities that are the meanings of sentences.

In the ideal case, a proposition is about the things or meanings it contains. The proposition meant by the sentence 'the cat is on the mat' consists of and is about the cat, the mat, and the **concept** or **universal** *is on*. However, the situation is more complex when these constituent entities include denoting concepts, either indefinite ones like *a man* or definite ones like *the last man*. The word 'human' denotes an extra-mental concept *human*, but the concept *human* denotes the set of humans: Adam, Benjamin, Cain, and so on. As a result, when a denoting phrase occurs in a sentence, a denoting concept occurs in the corresponding proposition. However, the proposition is not about the denoting concept but about the entities falling under the concept. Thus the proposition corresponding to the sentence 'all humans are mortal' contains the concept *human* but is not about the concept per se—it is not attributing mortality to a concept—but is about individual humans. As a result, it is difficult to see how we can ever **talk about** the concept itself (as in the sentence '*human* is a concept'), for when we attempt to do so, what we denote is not what we mean.

In unpublished work from the period immediately following the publication of *Principles*, Russell struggles to explain the connection of meaning and denoting, which he insists is a logical and not a merely psychological or linguistic connection. In "On Denoting" (1905), Russell shows how to analyze denoting phrases in terms that

do away with the phrase in question. Though he does not identify the meaning/denoting problem as his motive for eliminating denoting concepts, it has sometimes been construed that way. *See also* DESCRIPTIONS, THEORY OF; SENSE *v* REFERENCE.

DESCRIPTIONS, THEORY OF. A phrase of the form 'a so-and-so' is an indefinite description, while one of the form 'the so-and-so' is a definite description. In either case, a description consists of several **words** whose fixed meanings we naturally expect to determine the meaning of the description as a whole. But for the early Russell, this assumption raises a number of difficulties, given his belief that the words in sentences—like 'cup' and 'blue' in 'This cup is blue'—have as their meanings the entities themselves, that is, the cup and *blueness*, and that the combination of these entities constitutes a **complex**—in this case, the cup's blueness—that is the sentence's meaning. Given this theory of **meanings as entities**, it is difficult for Russell to explain how a sentence like 'the golden mountain is beautiful' can be meaningful, since no golden mountain exists with which to form a propositional meaning for the sentence. Moreover, a sentence like 'I met a person,' which contains the indefinite description 'a person,' cannot have meaning in the same way that 'I met Jones' does, because 'Jones' refers to a definite individual, while 'a person' cannot be said to refer to any particular object.

In his 1905 essay "On Denoting," considered one of the most important philosophical papers of the 20th century, Russell proposes a theory to account for this and other problems concerning descriptions. To be sure, when he first proposes the theory of descriptions, Russell, like **Alexius Meinong**, accepts the distinction between **existence and subsistence**, so that nonexistent entities like the golden mountain nevertheless subsist, or have being, and in this way are constituents in the sentence's meaning. But there are difficulties in assuming that phrases **denoting** nonexistent things refer to a subsisting object, for it seems to follow that the object both does and does not have being.

It is not possible to get around this difficulty by saying that in such cases the phrase refers to a concept, not a thing, and that the concept, not the thing, is a constituent of the complex, that is, of the sentence's meaning. Or rather, such a view has its own difficulties. Russell sees

that denoting words (e.g., 'person') may mean a denoting concept (e.g., *person*) or the individuals (Adam, Eve, Cain, Abel, etc.) falling under the concept. And when such words occur in sentences, the corresponding proposition contains the concept but is about the individuals falling under the concept. As a result, it is hard to see how 'I met a person' could ever mean or be about the concept rather than what falls under it. Russell's notes in this period show his struggle to explain the relation between denoting concepts and what falls under them. Besides this, he still faces the problem of finding a referent for indefinite descriptions like 'a man.'

The cases above show that Russell's theory of meanings as entities is confronted by a number of serious difficulties. The theory of descriptions presented in "On Denoting" allows him to reaffirm that doctrine of meaning while avoiding the problems just noted. In "On Denoting," Russell uses logic to clarify the sentences for which these problems occur and which, he argues, are metaphysical confusions that arise from a superficial analysis and understanding of **grammar**. Specifically, he shows that sentences containing definite descriptions like 'the present king of France' and indefinite descriptions like 'a person' can be analyzed into sentences that no longer contain those descriptions. In so doing, he shows that the original sentences need not be taken to denote the entities seemingly denoted by the descriptions. These entities, having been "defined away," may now be considered a special kind of fiction: a logical fiction.

Russell's view is that definite and indefinite descriptions are "incomplete symbols," symbols without any meaning of their own but meaningful only within a proposition. He therefore does not define them with his theory of descriptions but instead defines the meanings of the sentences in which they occur, thereby showing that the sentences are meaningful without it being necessary to postulate the existence of objects supposedly denoted by the description. Under a proper analysis of such sentences, the descriptions no longer occur.

For example, Russell rephrases a simple sentence such as 'the present king of France exists,' in which the definite description 'the present king of France' occurs, as 'there exists an x such that x is the king of France, and, for all y, if y is the king of France, then $x = y$' or, more simply, 'there is only one king of France.' In modern logical notation (adopted to avoid Russell's cumbersome notation in

"On Denoting"), the sentence is '$(\exists x)[Kx \& (\forall y)(Ky \rightarrow y = x)]$.' The phrase '$(\forall y)(Ky \rightarrow y = x)$' is added because Russell takes definite descriptions to be about unique individuals, and '$(\forall y)(Ky \rightarrow y = x)$' stipulates that exactly one individual having the property 'K' exists.

Sentences of the form 'the *F* is *G*,' such as 'the present king of France is bald,' are rewritten as 'there exists exactly one thing that is the king of France and that thing is bald,' or in symbols: $(\exists x)[Kx \& (\forall y)(Ky \rightarrow y = x) \& Bx]$. In a similar manner, a sentence such as 'a person exists' that contains the indefinite description 'a person' is rewritten as 'there exists an *x* such that *x* is human' and appears in symbols as $(\exists x)Hx$. Similarly, 'I met a person' is rewritten as 'there exists an individual such that I met *x* and *x* is human,' or symbolically '$(\exists x)(Mx \& Hx)$.'

Russell explains that we can deny the assertion that 'the present king of France is bald' in either of two ways: by denying that there is such a person (*external negation*), which is done by negating the entire expression, or by asserting that there is one, but he is not bald (*internal negation*), which is done by negating the predicate conjoined to the description. Though it is clear enough in English why the different placements of negation should be called, respectively, external and internal, it is even more apparent in symbolism. The first sort of denial, '$\sim(\exists x)[Kx \& (\forall y)(Ky \rightarrow y = x) \& Bx]$,' places the negation sign '~' in front of and therefore outside the scope of the existential quantifier. The second, '$(\exists x)[Kx \& (\forall y)(Ky \rightarrow y = x) \& \sim Bx]$,' places the negation sign inside the scope of that quantifier.

The theory of descriptions Russell espouses in "On Denoting" is a specific example of what soon becomes a general doctrine of incomplete symbols. After "On Denoting," Russell extends the technique to a host of other cases to show that certain assertions (e.g., assertions about **classes**, **propositions**, bodies, minds, etc.) can be shown to be meaningful or even true when rewritten in such a way that they no longer contain certain so-called denoting phrases and therefore no longer seem to assert the existence of problematic or questionable objects. For example, Russell's early attempt to resolve logical paradoxes by eliminating **propositional functions**, classes, and **relations**—his **substitutional theory**—is an extension of the doctrine of incomplete symbols. So, too, is his elimination of propositions as single entities in favor of a **multiple relation of judgment**. *See*

also CONSTRUCTION *v* INFERENCE; NO-CLASSES THEORY; SENSE *v* REFERENCE.

DESTINY *or* FATE *or* NECESSITY. Russell claims that destiny (also called fate or necessity by the Greeks) is a central concept in all ancient Greek thought. He points out that in Homer's writings, fate has more **power** than the **gods** do over people's lives; even the Homeric gods are subject to fate. For the ancient Greeks, fate thus induced more of a **religious** feeling than did the Homeric gods, who resembled men and women endowed with **immortality**, were not moral exemplars, and were indifferent to humans.

Russell suggests that the idea of fate gave rise in Greek **science** to the idea of natural **law** and to the necessary **causal** connections such laws express (*HWP* 11). For **Zeno**, the words 'destiny,' 'God,' 'mind,' and 'Zeus' mean one and the same thing. Destiny, for example, is the power that moves **matter** whose other names are 'providence' and 'nature' (*HWP* 25). The idea of destiny or fate also means that everything has its appointed place and function, so that where there is an overstepping of bounds, as in displays of hubris (pride), destiny restores that order, and hubris is punished. Russell claims that this outlook on life can be found in Heraclitus, Empedocles, and Parmenides in addition to Homer, Zeno, and the Stoics. He also claims that it underlies Plato's conception that justice exists when everyone in a society is in his or her own proper place (*HWP* 114–5).

Russell points out that Zeno and the later Stoics seemed to have believed in divination and astrology as a result of this view of fate. After all, they thought, if there is destiny or providence, divination must be possible. Astrology came to Greece from the East with the victories of Alexander and spread rapidly throughout the Hellenistic world. It "fell upon the Hellenistic mind as a new disease falls upon some remote island people," says Gilbert Murray. "The majority of even the best philosophers," says Russell, "fell in with the belief in astrology," firmly establishing the idea of fate or destiny that came with it. It was used, he says, to argue against the idea of fortune also prevalent in the ancient world (*HWP* 226–7). Russell points out that the writings of Augustine, Aquinas, and other **Christians** later denounce astrology as wicked, for if our lives are ruled by fate, we cannot be responsible for our **sins**, and that is contrary to the teach-

ings of the church (*HWP* 357, 459). *See also* DETERMINISM AND FREE WILL.

DETERMINISM AND FREE WILL. Determinism, as defined by Russell, is the view that a complete determination of the future from **knowledge** of the past is theoretically possible if we know enough about the past and about **causal** laws. Moreover, the question of whether or not, and how far, human actions are determined by causal laws is an entirely empirical one, Russell claims. We can observe that the great majority of our actions have causes, but does this mean that all of them do? Yes, Russell answers. Since the unknown cases are probably all like the known cases, it is also probable, based on the same evidence, that all human actions have causes. The idea that there are wholly uncaused acts of human volition, Russell says, is unwarranted.

However, Russell argues that the sense in which humans do have free will is that we can choose as we please among alternative actions. Our actions are caused by our own desires and not by forces causing us to act against our desires. This view of free will is not inconsistent with the view that all actions are caused, for it does not require that there are no causal connections between what we wish to choose and our past history. The view that we have free will is thus true in this important sense, according to Russell, and at the same time, so is determinism. The two views, he says, are compatible (*OKEW* 231–9). *See also* DESTINY *OR* FATE *OR* NECESSITY.

DIALECTICAL MATERIALISM. *See* MARX AND MARXISM.

DIVORCE. In ***Marriage and Morals*** (1929) and other writings, Russell views **marriage** primarily as a relation undertaken to have and raise children and not primarily as a **sexual** partnership. Concerning divorce, he first distinguishes between **laws** and customs about divorce and believes that these laws should be more lenient, while at the same time, the customs should discourage divorce. If there are no children, the request for divorce by either party should be sufficient to dissolve the marriage. If there are children, mutual consent should be sufficient to dissolve the marriage. Custom, however, should encourage couples to continue a marriage as long as their children are not yet adults (*MM* 223–39).

What is most controversial in Russell's views is that adultery should not be grounds for divorce and should be tolerated in a marriage. It is probably this view that got him barred from teaching logic at the City College of New York in 1940. By the end of his life, after considerable marital experience of his own, he could no longer declare that adultery should be tolerated in marriage and thought that the method of easy divorces as practiced in the **United States** was the method for best promoting **happiness** when marriages go awry (*ABR* 2:238). *See also* JEALOUSY.

DUALISM. *See* ACQUAINTANCE; MIND/MATTER DUALISM.

– E –

EDUCATION. Russell wrote extensively on education. His experiences operating **Beacon Hill School** for children and as a university lecturer inform much of his writings on the subject. Aside from numerous articles, some of his works on education are *On Education, Education and the Social Order,* and chapters of *Principles of Social Reconstruction* and *Roads to Freedom.*

Russell's interest in education received a sharp stimulus during World War I, when millions of Europeans rushed off to war for no good reason. People, he saw, have a passion for war, even an **instinct** or **impulse** for it. But many of these passions are due to habit—upbringing and education—and can in turn be changed by education. And even those that are due to basic, innate **human nature**, including our instincts, can often be redirected through education. One of the paths to world peace thus lies in education reform. Many of Russell's experiments in education at Beacon Hill School and reforms urged in his writings were aimed at producing the sort of person who would not be susceptible to patriotic appeals and incitement to hatred of others but would be able to resist conventional wisdom and **herd** emotions by forming **beliefs** based on evidence and living with uncertainty where evidence does not exist.

In his essay "Education and Discipline" (*IPI* 235–45), Russell gives a good summation of his educational views. He asserts that a good theory of education must have two things: a conception of the

ends of life and a **science** of psychological dynamics. The purpose of education, he thinks, is the advancement of **civilization**, which he thinks requires teaching **sympathy or benevolence** and independence of thought and action. These ends are consistent with the view that Russell wants education to promote peace and **world government**, for these are the ends he thinks one must seek to advance civilization. For this, Russell says, one must have a certain amount of general information, technical skill in one's profession, and the habit of forming opinions on the basis of evidence. Additionally, one must learn to be kind and impartial and have a certain amount of self-control. He also thinks children can and should be taught to have a certain zest or joy of life. (*See* AFFECTION.) Socially, he says, they must have a respect for **law** and justice, purposes that do not involve permanent harm to any part of the human race, and a political philosophy that successfully adapts means to ends.

Given this purpose of education, it is then the business of psychology to say how it can be effectively realized. A major concern for Russell is human freedom, which he thinks is essential for independent thought as well as for **happiness** in general. He is thus concerned to know what degree of freedom is likely to be most effective in realizing the purposes of education. He does not think that children should be completely free, for then, he says, like completely free adults, they will not be moral. "The belief that liberty will insure moral perfection," he says, "is a relic of Rousseauism, and would not survive a study of animals and babies" (*IPI* 237). For Russell, the cooperation necessary to live in communities does not result from spontaneous impulses. Thus, education must do more than simply provide an environment for spontaneous development. Children cannot acquire good mental and moral habits entirely by themselves.

However, Russell does believe that a great degree of freedom is desirable in education, though his arguments for this are derived not from natural human goodness, but from the effects of authority, both on those who suffer it and those who exercise it. Those subject to authority either become submissive or rebellious, and neither is desirable, he says. Submissive people lose initiative, and rebels cannot be just, nor are they often wise in their rebellions. What we need to encourage is neither submission nor rebellion, but good nature and

general friendliness to people and ideas. These qualities, Russell says, are due to freedom.

To grow into friendly adults, children must feel that their environment is a friendly one. For this, the educator must have sympathy with the children's important desires rather than attempt to merely use the children for an end of his or her own, such as to produce patriots, **Christians**, or advocates of a particular political party's platform. One must convince children that it is worth their while to know what is being taught so that they will cooperate willingly. They will learn twice as fast in this case. All these are good reasons for giving children a great degree of freedom in education, but there are limits to this freedom. Children must also learn consideration for others—not just manners, but a willingness to share and do necessary work and not to bully or tyrannize others. And this moral training can only be taught through an exercise of authority by the teacher.

Finally, Russell claims that it is impossible for an overworked teacher to preserve an instinctive liking for children. He therefore thinks that teaching should not be anyone's whole profession; his view is that one should teach children no more than two hours a day, with the rest of the day being spent away from the students (*IPI* 235–45). *See also* TEACHING VIRTUES.

EGOCENTRIC PARTICULARS. *See* 'THIS,' 'HERE,' 'NOW.'

EINSTEIN, ALBERT. *See* RUSSELL-EINSTEIN MANIFESTO.

EMPIRICISM, RUSSELL ON. Empiricism is a school of thought represented in Great Britain in the writings of John Locke, George Berkeley, and **David Hume**. It is the view that **knowledge** is entirely derived from sense-experience, or more exactly, from sensation and **introspection**, and that ideas are built up out of sensations and introspected experiences according to psychological **laws** of the association of ideas. Claims that purport to go beyond what can be experienced are rejected by empiricists as falsely metaphysical and meaningless. Likewise, empiricists reject the **realist** assertion of the extra-mental reality of **universals**, seeing these as produced by a psychological ability to abstract general ideas from the experience of **particular** instances.

Empiricists hold that what we experience are not things but our ideas or sensations caused by things, and it follows from their **epistemology** that knowledge is representational, and that a **proposition**, by consisting of ideas, is a mental representation of what is real. If what we know are our own ideas, it is not clear how there can be **knowledge of the external world**, that is, the world outside the mind, or whether anything exists apart from and corresponding to our ideas. As a result, despite its emphasis on sense-experience, empiricism gives rise to various forms of **idealism**, the doctrine that what are ultimately real are not things, but ideas.

In ***The Principles of Mathematics*** (1903), Russell opposes empiricism largely on metaphysical grounds. For example, he rejects **Ernst Mach**'s view that propositions about the universe being other than it is can have no meaning, since no other universe exists. Such a view unduly confines propositions to what is in **existence**, according to Russell; in his nonempiricist conception, propositions are complex objects that either exist and are true or subsist and are false. This doctrine does justice, he thinks, to the fact that what we know are things, not our ideas of them; hence it allows for direct, nonrepresentational knowledge of the world. Russell's insistence on the reality of universals is also nonempiricist.

In *A History of Western Philosophy* (1945), Russell is sympathetic to the empiricist contention that all human knowledge is uncertain, inexact, and partial. Yet he views the claim that all knowledge is derived from experience as inadequate to a theory of knowledge, even if less so than any other philosophy. Against empiricism, he thinks it necessary for the very possibility of objective knowledge to permit knowledge to rest in part on nonempirical, unverifiable propositions. (*See* VERIFICATION AND REFUTATION.) For instance, principles of **inductive** inference cannot be justified inductively from experience—such an argument would be **circular**—so they must be accepted without justification. Empiricism itself must thus rest on nonempirical propositions, so the chief inadequacy of empiricism, he says, is that it is self-refuting. Since empiricism must thus accept one principle without empirical justification, a critic may wonder on what grounds other nonempirical principles are excluded. Russell is therefore willing to accept induction as involving a nonempirical logical principle, since without it, **science** is impossible.

Despite his discontent with it, Russell's work is in many ways congenial to empiricism, or to that part of it that consists in establishing that knowledge derives from direct experience according to certain logical rules. In works like *Our Knowledge of the External World* (1914), "The Relation of Sense-Data to Physics" (1914), *Analysis of Matter* (1927), and *Human Knowledge: Its Scope and Limits* (1948), Russell attempts to ground knowledge in experience of sense data by employing a technique of logical **construction** that defines suppositious entities in terms of those sense data. And in the 1930s and 1940s, his study of how certain extra-linguistic experiences give rise to linguistic ones (e.g., how the sight of butter causes someone to assert 'this is butter') is compatible with empiricism as a claim about the basis of knowledge.

Though Russell's middle and late work is therefore empiricist in regard to method and in holding that experience is the ultimate basis of knowledge, he remains a realist with respect to universals and a rationalist in his belief that some general propositions must be known independently of experience. Moreover, in the 1940s, even as Russell defends the study of **language** as an empirical phenomenon, he is increasingly hostile toward **Rudolf Carnap**'s work and **logical positivism**, in part for dismissing talk about the world as metaphysical nonsense, not a subject of legitimate philosophical study. In this regard, even Russell's late work is unabashed in making the kind of metaphysical utterances antithetic to empiricism and logical positivism. *See also* VERIFICATIONIST THEORY OF MEANING.

EPIMENIDES' PARADOX. *See* LIAR PARADOX.

EPISTEMOLOGY, PSYCHOLOGY, AND LOGIC. In "Meinong's Theory of Complexes and Assumptions" (1904), Russell objects to what he sees as the tendency within **idealism** to equate **epistemology** (i.e., theory of **knowledge**) with logic, the study of **propositions as entities**, by wrongly identifying states of knowing with the objects of those states—for example, identifying judging with what is judged, the proposition. (*See* KANT, IMMANUEL.) If we distinguish a proposition from our knowledge of a proposition, it becomes clear that the study of propositions, which falls within logic, does not involve the study of knowledge.

Epistemology is also distinct from and more inclusive than psychology, according to Russell. In studying knowledge, we need to look at psychological phenomena like **belief**, but since 'knowledge' refers not merely to belief but to true belief, the study of knowledge involves investigation into the distinction between **truth** and **falsehood**, thereby passing outside the domain of psychology.

In 1913, under **Ludwig Wittgenstein**'s influence, Russell begins to conceive of the relation of epistemology to logic and psychology in a new way. Thus in *Theory of Knowledge* (1913), Russell admits that beliefs must be of a different logical form from any of the **facts** he has hitherto examined. Since he thinks that logic is the study of forms, he rejects his earlier view, deciding that logic cannot be completely separated from epistemology or psychology. This general conclusion underlies his pursuit of the epistemological, logical, and psychological dimensions of the theory of **symbols** in the late 1910s and early 1920s. *See also* COMPLEXES AND SIMPLES; MEINONG, ALEXIUS; MULTIPLE RELATION THEORY OF JUDGMENT; PROPOSITIONAL ATTITUDES.

ERROR. *See* FALSE BELIEF.

ETHICS. Ethics, or moral philosophy, can be divided into three main branches: meta-ethics, normative ethics, and applied ethics. Normative ethics is the discipline of saying what the general principles of ethics are, and what, in general, the **good** is. These general principles of normative ethics can then be applied to specific problems—such as whether we should allow capital punishment or abortion or affirmative action—and this is called applied ethics. The study of the general principles of normative ethics, with the aim of justifying or refuting them, or of saying what, exactly, they mean, is meta-ethics.

Russell is famous for insisting that ethics is not a part of philosophy. However, this does not really express his views. For Russell, meta-ethics is a part of philosophy, since its claims can be true or false. Applied ethics is just a matter of finding the best means to achieve these ends, and this, says Russell, is **science**, for it is either true or false that a certain strategy is the best means to some particular end. Since the sort of philosophy Russell practices is "scientific" philosophy, the parts of ethics that are a part of science can as well

be considered a part of his view of philosophy. It is only normative ethics, the statement of what is the good or right thing to do, that Russell thinks is not a part of philosophy, and he holds this view only after 1914.

Earlier in his philosophical career, from 1903 to 1913, Russell had followed his friend **G. E. Moore** in believing that while good and bad are indefinable **concepts**, things are nevertheless objectively good or bad, and that a person just intuitively knows which are good and which are bad. This view is expressed in Russell's 1910 essay "The Elements of Ethics" and elsewhere. But by 1914, Russell has come to doubt Moore's view that values such as good and bad are objective. Instead, Russell believes that they are subjective, so that "the good" is whatever we desire. An example of that view can be found in Russell's 1915 essay "The Ethics of War." At this point, he no longer thinks that normative ethics is a part of philosophy, since by this view our values are based on feelings and not thoughts. From 1914 to at least 1935, Russell is a subjectivist in ethics.

In 1935 (*RAS*) and again in 1944 (*PBR*), Russell expresses an emotive theory of ethics, thus anticipating by one year the emotivism of A. J. Ayer and by two years that of Charles L. Stevenson. Subjectivism understands the statement 'X is good' to mean 'I desire X,' which is a statement about one's psychological state and so may be true or false. Emotivists, on the other hand, understand 'X is good' to mean something like 'Hooray for X!' This is an "optative" expression, that is, an expression of one's emotions, and like imperatives (e.g., "Close the door!"), optatives are neither true nor false. But in 1954 (*HSEP*), Russell returns to his former subjectivism, specifically to the subjectivism of his 1927 *Outline of Philosophy*.

In his subjectivism of 1927 and 1954, Russell argues that certain moral principles *objectively* follow from the view that all ethical statements about what is good are subjective. Certain objective moral truths logically follow from the philosophical fact that ethical judgments like 'X is good' are expressions of subjective desire. For if 'the good' is whatever you desire, you experience more good by satisfying more desires. But people desire ends that conflict, and even within a person there may be conflicting desires. In the case of conflict within a person, satisfying some desires will lead to others not being satisfied. As a result, people come in time to desire a harmoni-

ous life with fairly consistent permanent desires, since more of them are likely to be satisfied than when they conflict. Since self-control is necessary to achieve the harmony among our desires that leads to the satisfaction of the greatest number of them, that is, to the good, it is an objective fact that self-control is a virtue. Since **intelligence** is also necessary for this, it is also objectively a virtue. Though intellectual curiosity is not necessary for a harmonious life, Russell says, it harmonizes with other desires better than most, and for this reason it is objectively a virtue. In the case of conflicting desires *between* people, achieving harmonious desires will similarly allow more desires to be satisfied between them, so it is an objective moral fact that a society structured to promote harmonious desires among people and discourage conflicting ones is preferable, since more good will be created for each person this way.

Note that Russell's view is a kind of consequentialism: it expresses a moral philosophy that claims that the right thing to do is whatever produces the best consequences. A consequentialist who says that the best consequences are those that make the most people happy is called a utilitarian, and though Russell is not quite a utilitarian, he is very nearly one. From 1914, he believes that those consequences are best that satisfy the most people's desires, be it for happiness, intellectual knowledge without happiness, or what have you. Even in his objectivist period before 1914, Russell was a consequentialist, though at that time he took "the good" to be objective, not subjective.

How can harmony among people's desires be accomplished? Russell offers a number of ways. First, authority, when it is impartial, will always have an interest in reducing the number of conflicts in society, and since **democracy** produces the most impartial government over other forms of government, it is an objective moral fact, for him, that democracy is preferable to other political systems. Russell thus has one supreme, and objective, moral principle, which is to "act so as to produce harmonious rather than discordant desires." Aside from structuring social institutions so that there is as little conflict between individuals as possible, he advocates educating individuals so that their desires are in harmony with each other and with their neighbors' desires. It is by seeking love rather than hate that we achieve a harmonious society, he thinks. Russell also believes that the desire for **power**, which exists in most people, should by the

pursuit of knowledge be directed at power over things rather than people. Thus, desire for knowledge should be encouraged, in part because we can acquire knowledge without taking it away from others, and of course because the more knowledge we have, the better we can satisfy our desires. For Russell, "The **good life** is one inspired by love and guided by **knowledge**" (*OP* 183–8). *See also* AFFECTION; BENTHAM, JEREMY; PUBLIC PHILOSOPHY.

EUGENICS. Eugenics is the selective breeding of all or a part of the **human** race in order to biologically improve it. Conservatives tend to attribute most of the characteristics of a grown person to genetic inheritance, while reformers attribute it mostly to **education**. Thus conservatives are more likely than reformers to favor eugenics as one of the few ways the human race can be improved. In ***Marriage and Morals*** (1929), Russell says that he does not agree with either of these extreme positions. For example, he does not believe that it is possible to determine what part of **mental** capacity is due to heredity and what part due to education, because only studies involving large numbers of identical twins could determine the question and they had not yet been done. Thus, Russell points out, the arguments used to exclude southern Europeans and Slavs from the **United States** by the 1922 U.S. immigration restrictions, which were based on the assumption that they were genetically inclined to have lower IQs than northern and western Europeans, must be fallacious and the **beliefs** based on them unwarranted.

More recent studies, such as Betty Hart's *Meaningful Differences in the Everyday Experience of Young American Children* (1995), indicate that children's linguistic ability strongly correlates with the degree to which parents talk to them before the age of two, and this in turn strongly correlates with their IQ in later life. However, most past **intelligence** studies of identical twins have used twins that were separated sometime within the first year or two of life, because twins separated at birth are rare. Thus, Russell's point is still valid today.

Russell's own view is that almost anyone can be ruined by a bad education and in fact almost everyone is. On the other hand, he speculates that only those with natural aptitude can achieve various sorts of excellence such as musical or intellectual excellence. He also assumes what he admits is the more dubious assumption that intel-

ligent people are more desirable than their opposite. Given these two points, eugenics has some justification for its general view. Russell points out, however, that to this valid biological justification eugenicists add many quite dubious sociological theories. For example, he caricaturizes them as holding that, since poverty is inherited and wealth equated with virtue, the rich should be induced to breed more than the poor until everyone is rich and virtuous.

While rejecting most of the dubious sociological theories of eugenicists, Russell accepts the eugenics claim that people with extremely low IQs are that way due to genetic inheritance, and that preventing them from reproducing would benefit the human race. He states that mental deficiency of this sort is the only characteristic definitely known to be inherited, a view he believes is warranted by studies, so that eugenics laws calling for the sterilization of people should be made only regarding this characteristic. Eugenics programs to promote the reproduction of superior people are not yet practicable, Russell says, though it should not be thought that eugenics practices, if carried out scientifically in the future, could have no or little effect on the human race. Since all domestic animal breeds have been greatly improved by scientific breeding, it is certain that humans could be changed in any desired way. It is just that it is difficult to determine what is desirable in human biology.

In his 1929 discussion of eugenics, Russell claims that the aboriginal races of North America, Australia, and New Zealand, along with Africans, are inferior to Europeans and Asians. Shortly thereafter, he begins claiming that there are no known intellectual differences between these groups, and in a letter to the *New York Times* 5 May 1963, he publicly retracts this claim, declaring it to be false and expressing his regret for the original statement (*MM* 254–73).

EVIL. *See* GOOD AND EVIL.

EXCITEMENT. In *The Conquest of Happiness* (1930), Russell, like **John Stuart Mill** before him, says that people can have too much excitement in their lives. Mill held that people's lives contain two kinds of **happiness**, tranquility and excitement, and that in their lives they go back and forth between the two in a natural rhythm. After too much tranquility, people begin to get bored and seek out excitement,

but after enough excitement, they need peace and quiet and seek tranquility. Only lazy people, he thinks, do not seek excitement after much tranquility, while in others the need for excitement is like a disease, and they never know the happiness that comes with tranquility and peace. Many men, for example, volunteer to go to **war**, but some, when they finish a tour of duty, immediately volunteer for another and then another, over and over, dreading peacetime when they can no longer live such an exciting life.

Unlike Mill, Russell does not consider excitement to be a form of pleasure. Moreover, he thinks that a certain amount of **boredom** must be endured in life in order for anyone to achieve worthwhile things and find true happiness. Russell agrees that some excitement is necessary or boredom will ensue, but too much excitement dulls the senses and reduces one's enjoyment in the pleasures of life (*CH* 48–56). However, in other works, such as *Authority and the Individual* (1949) and *The Principles of Social Reconstruction* (1916), Russell acknowledges that **humans** have basic **impulses** that seem to demand excitement of some kind, such as adventure or competition, if a person is to be entirely happy. These impulses, though, often lead to cruelty, so Russell thinks they must be tempered by **education** and channeled into productive or at least harmless activities (*AI* 1–24). *See also* TEACHING VIRTUES.

EXISTENCE AND SUBSISTENCE. In *Introduction to Mathematical Logic* (1919), Russell denies that we can meaningfully say that 'Socrates exists' (or 'God exists') or, in general, that a named entity exists. Appearances to the contrary, the word 'existence' makes sense only when it applies to predicates, that is, to **propositional functions**, and not when we attach it to names. What 'existence' means, he says, is that a propositional function, such as 'x is a man,' is sometimes true, that there are arguments (entities like Bertrand Russell and **Gottlob Frege**) that satisfy the function in the sense that their names, upon replacing the variable 'x,' yield true propositions. We can therefore meaningfully say that 'x is a man' is sometimes true—there exist arguments (entities) that satisfy 'x is a man'—but we misspeak if we say that 'Socrates' is sometimes true, since it makes no sense to say that there exist arguments (entities) that satisfy 'Socrates.'

In Russell's analysis, which is similar to Frege's, existence is expressed symbolically by means of attaching the existential quantifier '$\exists x$' ('there is an x') to a propositional function 'ϕx.' In taking this view, which is now standard, Russell gives technical expression to **Immanuel Kant**'s dictum that existence is not a predicate. (That is, not a predicate of individuals, since in the Frege-Russell analysis, quantifiers are predicates of predicates.) Russell explains the notions of necessity and impossibility similarly, that is, in terms of propositional functions that are always true (satisfied by all arguments) or are never true (satisfied by none).

In Russell's early metaphysical work like ***The Principles of Mathematics***, existence and subsistence are two possible states of being of an entity. An object exists if there is an **external relation** between it and a point or points in **space and time**; if there are no such external relations, it does not exist but nevertheless subsists and still has being. Since Russell views a proposition as an entity in this period, it follows that a proposition may either exist (when it is true) or subsist (when it is false). By 1906, Russell has begun to reconsider this **theory of truth**, and he eventually denies that **propositions** are objective single entities. Russell thereafter relinquishes the idea of possible or subsisting **particulars**, confining the notion of subsistence to **universals**. *See also* DESCRIPTIONS, THEORY OF; MONISM.

EXPRESSING AND INDICATING. In 1918, while in Brixton prison for antiwar activity and writing up the notes that will become the *Analysis of Mind*, Russell develops a distinction between what a **proposition** *expresses* and what it *asserts* (or *denies*). What a proposition expresses is its propositional content, which Russell explains as an **image-proposition**, a **complex** of images. What a proposition asserts (or denies) is the objective **fact** that accounts for its **truth** or falsity. (*See* VERIFICATION AND REFUTATION.) In the case of a positive proposition, we express a positive image-proposition. In the case of a negative proposition, we express a positive image-proposition toward which we experience a psychological state of disbelief. And what we assert, if our disbelief is true, is a **negative fact**.

In *An Inquiry into Meaning and Truth* (1940), Russell employs a similar distinction: sentences *express* a **belief** or disbelief and, if

true, *indicate* a fact that makes the sentence true. For example, the true sentence 'this is not blue' expresses disbelief in 'this is blue' and indicates an objective positive fact, namely, some color differing from blue. In his late work, Russell argues that the distinction between expressing and indicating is more crucial to the solution of various puzzles posed by statements of belief than the distinction between use and mention presupposed by the theses of **extensionality** and **atomicity** he had earlier adopted from **Ludwig Wittgenstein**. *See* NONEXISTENT COMPLEXES; PRIMARY *v* SECONDARY LANGUAGE.

EXTENSIONAL *v* INTENSIONAL FUNCTIONS. To view functions or predicates *extensionally* is to treat their meanings as given by the objects to which they apply. Viewed extensionally, the meaning of '*x* is a creature with a heart' is its *extension*, the set of entities—Lassie, Trigger, and so on—whose names could replace the variable '*x*' to yield a true proposition. Some functions have the same extensions; they are called *formally equivalent*. In the example just given, since animals with hearts invariably have kidneys, the functions '*x* is a creature with a heart' and '*x* is a creature with a kidney' have the same things in their extensions and are formally equivalent.

Sentences are called *extensional* if their truth is determined entirely by their extensions. A sign that a sentence is extensional is that we can replace one of the functions in the sentence with a formally equivalent one without changing the truth-value of the whole. Thus 'any creature with a heart is warm blooded' is an extensional sentence (i.e., in Russell's jargon, an extensional function of a function), since its truth-value remains the same when we rewrite it as 'any creature with a kidney is warm blooded'.

But functions and sentences composed of them need not be viewed extensionally; they may also be interpreted intensionally. When functions are viewed *intensionally*, their meaning is assumed to depend on some property or **propositional function** rather than on the set of objects in their extensions. On an intensional approach, functions may differ in meaning even though they have the same extensions and are formally equivalent. As a result, the truth-value of an *intensional* sentence does not depend on the extensions of the functions

contained in it but on the properties (propositional functions) these functions are assumed to denote. A sign of this is that the substitution of formally equivalent functions may result in a sentence with a different truth-value. For example, 'James believes that any creature with a heart is warm blooded' may be true, while the sentence 'James believes that any creature with a kidney is warm blooded' may be false.

***Principia Mathematica*, first edition** (1910–1913), allows functions to differ in meaning even when they are extensionally equivalent and apply to the same things; it therefore appears to accept properties (propositional functions) as contributing to meaning over and above sets or extensions. Russell understands that intensional sentences, for example statements of **belief**, are not of direct importance to **mathematics**, but because he thinks they belong to logic, broadly conceived, he is at pains to include them in his logical system and to articulate the **ramified theory of types** in such a way that it avoids those paradoxes to which his inclusive system is prone.

Russell's intensional view of logic came under fire, particularly by **Frank P. Ramsey**, whose extensional view of logic excludes many of the paradoxes Russell struggles to solve, namely, the **semantic** ones such as the **liar paradox**, which turn on intensional meanings, though it must still address what Ramsey views as purely logical contradictions. In the late 1910s and early 1920s, influenced by Ramsey and **Ludwig Wittgenstein**, Russell accepts the **thesis of extensionality**, and in the ***Principia Mathematica*, second edition** (1925–1927), he reinterprets his system of logic so that it may be read as straightforwardly extensional, that is, as containing no intensional functions. *See also* REDUCIBILITY, AXIOM OF.

EXTENSIONALITY, THESIS OF. The thesis of extensionality—originating in 1913 in **Ludwig Wittgenstein**'s notes—limits the ways **propositions** can occur in other propositions. In the *Tractatus Logico-Philosophicus* (1922), a work based on those notes, Wittgenstein asserts that propositions can occur in other propositions only as the components of truth-functional operations producing other, more complex propositions, or in generalizations of such truth-functional molecular propositions.

What he means concerns how propositions are formed in predicate logic. One way is to apply operations like conjunction and negation—represented by words like 'and' and 'not'—to other **atomic and molecular propositions**. Thus the molecular proposition 'Trigger is a creature with a heart and is warm blooded' emerges from conjoining two atomic ones: 'Trigger is a creature with a heart' and 'Trigger is warm blooded.' Wittgenstein's thesis allows a proposition to occur in another one as a component of a molecular proposition. Another way propositions are formed in predicate logic is to apply a predicate to another predicate and generalize, as in 'any creature with a heart is warm blooded,' which combines the predicate '*x* is a creature with a heart' with the predicate '*x* is warm blooded' into 'if *x* is a creature with a heart then *x* is warm blooded' and asserts it for all *x*. Wittgenstein's thesis also says that a proposition can occur in another by means of a generalization. This is because he thinks that a general proposition like 'any creature with a heart is warm blooded' just is the conjunction of a series of sentences, in this case, the sentences 'if Trigger is a creature with a heart, then he is warm blooded' and 'if Lassie is a creature with a heart, then she is warm blooded,' and so on.

According to this thesis, then, all functions of propositions are truth functions or generalizations of truth functions, giving rise to a series of forms of propositions. (A proposition is called *truth-functional* when its truth is a function of the truth-value of its component propositions and the truth-functional operator, such as the word 'and' or 'not,' applied to it.) Though sentences like 'Adam believes that Mary loves him' appear to be cases where a proposition ('Mary loves Adam') occurs in another one ('Adam believes that . . . '), based on this thesis, such contexts are not in fact functions of propositions and do not belong in the series of forms of propositions. Indeed, Wittgenstein thinks **epistemological** terms like 'believes' and 'knows' and **semantic** terms like 'is about' are irrelevant to logic.

The thesis is one of extensionality for the following reasons. A predicate like '*x* is a creature with a heart' is true for certain objects, which are its ***extension***, for example Trigger, Lassie, George W. Bush, and so on. The use of the names of these objects in place of the variable '*x*' in the predicate gives rise to a set of true propositions, for example to the set {'Trigger is a creature with a heart,' 'Lassie

is a creature with a heart,' etc.}. The same is the case for predicates like 'x is warm blooded' as well as for 'if *x* is a creature with a heart, then *x* is warm blooded.' Hence, the **truth** of sentences (or functions of functions, as Russell says in *Principia*) like 'any creature with a heart is warm blooded' is determined by the extensions of the predicates contained in it (and by the meanings of the logical operators involved).

Combined with Wittgenstein's thesis of **atomicity**, that the simplest (i.e., atomic) propositions contain nothing but names for the constituents of the fact corresponding to them (if true), the fact that the series of propositions is entirely extensional means that there are no truths that we could not in theory deduce if we knew the totality of simple (i.e., atomic) **facts** and that they were the totality. Russell seems willing to adopt both theses in ***Principia Mathematica*, second edition** (1925–1927). In this edition, he presents functions of functions as purely extensional, thereby reinterpreting his **ramified theory of types**, which admitted nonextensional distinctions of predicates into orders.

In later work, such as *An Inquiry into Meaning and Truth* (1940), Russell notes that if these theses are true, it is necessary to identify whether propositions occur in the **object language or meta-language**. But he is now less sanguine about the thesis of extensionality and the related thesis of atomicity, saying that the distinction of object language and meta-language is insufficient to explain certain kinds of sentences. He therefore denies that the thesis of extensionality is true as generally as Wittgenstein and **Rudolf Carnap** believe it to be. *See also* ONTOLOGY OF *PRINCIPIA MATHEMATICA*; *PRINCIPIA MATHEMATICA*, FIRST EDITION.

EXTERNAL RELATIONS. As Russell says in *The Philosophy of Leibniz* (1900), preoccupation with sentences of subject-predicate form (e.g., 'Andrew is fair') to the exclusion of relational sentences (e.g., 'Andrew is to the left of Beth') has led philosophers to an analogous view of what exists, that is, to a doctrine of substances (things) and their properties. (*See* GRAMMAR AND ANALYSIS.) Emphasis on the subject-predicate form of propositions has also encouraged philosophers to view the **relations** a thing stands in as properties of the thing, i.e., as "internal" to it. Since relations are

thought to hold between or among things while properties are thought to inhere in them, the reduction of relations to properties paves the way for **monism**, the doctrine that—appearances to the contrary—no plurality of substances exists, and all is one. It therefore discourages the pluralistic or atomistic view, shared by common sense, that reality contains a plurality of substances or things.

In Russell's work, the doctrine of external relations amounts to a rejection of monism and an adoption of a kind of pluralism or atomism. In ***The Principles of Mathematics*** (1903) and subsequent work Russell attacks monism and defends atomism by arguing that a certain **class** of relations—**asymmetrical relations**—cannot be reduced to properties after all but are irreducibly relational. Since he further argues that relations must belong to the extra-mental world, his doctrine of external relations also amounts to a form of metaphysical Platonism or **realism** in opposition to **idealism**, i.e., the tendency to treat relations as emerging in and through judging and therefore in some sense mental. *See also* BUNDLE THEORY OF OBJECTS; LEIBNIZ, GOTTFRIED W.; LOGICAL ATOMISM; SENSE OF A RELATION; TRADITIONAL PHILOSOPHY.

– F –

FACTS, FORMS OF. In "The Philosophy of Logical Atomism" (1918–1919), Russell introduces different forms of facts in the context of asking what is necessary to verify or falsify particular kinds of propositions, namely, **atomic and molecular** ones, general ones, and those that involve terms for **belief**, **knowledge**, doubt, or other **propositional attitudes**. (*See* VERIFICATION AND REFUTATION.)

Atomic propositions like 'Andrew is kind' are true if they correspond to atomic facts, which consist of **particulars** and either a property or a **relation**. Since whatever fact verifies (falsifies) an atomic proposition falsifies (verifies) the negation of that proposition, Russell argues that there must be **negative facts**, not merely positive ones, since otherwise nothing would verify a true negative proposition and falsify its opposite, the corresponding positive atomic proposition. Since the negation of an atomic proposition is

a molecular proposition, we might expect a negative fact to be a molecular fact, but Russell denies the **existence** of molecular facts. There is, he says, no need to assume their existence, since we can account for the **truth** of molecular propositions like 'Andrew is kind and he is young' in terms of the atomic facts (if any) corresponding to 'Andrew is kind' and 'Andrew is young.'

We must, however, assume the existence of general facts, Russell argues, since no set of atomic facts can verify the truth of a general proposition like 'everything fair is good' unless we also know that they are all the facts, and as this is a general proposition, it follows that what makes a general proposition true is ultimately a general fact. Finally, we must assume the existence of facts about beliefs, of facts corresponding to propositions like 'Andrew believes that Beth loves him.' He admits that his **multiple relation theory** of belief (or judgment) has failed in its attempt to explain belief, and that a **behaviorist** analysis of propositions of the form 'Andrew believes that Beth loves him' might eliminate the need to assume them. Nevertheless, Russell is persuaded (probably by reflection on **Ludwig Wittgenstein**'s earlier remarks to him) that a belief is a new form of fact that falls outside the series of atomic and general facts. (*See* EXTENSIONALITY, THESIS OF.)

In the 1920s, **Frank P. Ramsey** criticized Russell's attempt to classify facts and the types of entities—**universals** and particulars—that make them up. According to Ramsey, notions like 'atomic fact' are analogous to 'spoken word': they index **language** rather than reality. Hence, in his view, Russell's **realist** approach confuses categories about language with categories of things in the world. *See also* BIPOLARITY OF PROPOSITIONS; COMPLEXES AND SIMPLES; FALSE BELIEF.

FALSE BELIEF. In unpublished notes called "Paradox of the Liar" (written September 1906), Russell, who at the time views **propositions as entities**, experiments with eliminating **negative** as well as **false** propositions, which he sees as especially vulnerable to the liar paradox (the paradox expressed by 'this statement is false') and other contradictions. For a brief time, he tries to avoid assuming the **existence** of false and negative propositions by explaining them in terms of psychological states of disbelief toward positive propositions.

This view raises difficulties, however, which he had already noticed in **Alexius Meinong**'s work. For example, he thinks it is impossible to use disbelief to explain when objective reality corresponds to a true conditional sentence composed of false component sentences, such as 'if unicorns are cloven hoofed, then unicorns are beautiful creatures.'

Despite these and related worries, Russell continues to attempt to eliminate all propositions, and in 1910 (in "On the Nature of Truth and Falsehood") he embraces a **multiple relation theory** of judgment (or **belief**) according to which a mind or **subject of consciousness**, in believing, is related to the objects constituting its belief, which are united together with the subject in a fact of belief. According to this theory, a belief, like James's belief that Andrew is older than Beth, is false if it fails to arrange its objects as they are in fact arranged, for example when Beth is older than Andrew.

But the theory has many flaws, and in "The Philosophy of Logical Atomism" (1918–1919), Russell admits that it cannot account for false belief. As he points out, Othello, in (falsely) believing that Desdemona loves Cassio, does not impose a **relation** on Desdemona, that is, Othello's belief does not make her love Cassio, for if it did, then his belief would be true. Yet if this is not how the relation *loves* operates in the belief, then it is difficult to see how the belief can make **sense**, for if relation occurs as a term, and not as **relating** terms, the **unity** of the proposition is lost to a jumble of entities, and there will be nothing that Othello can be said to believe.

Soon after these lectures, Russell loses faith in his long-standing **mind/matter dualism** and the related doctrine of acquaintance, adopting **neutral monism**. Instead of resorting to objects to explain the content of a belief, he employs a **causal theory of meaning**, explaining content in terms of ideas or **images**, in part so as to be able to explain what corresponds to a false belief. *See also* MENTAL ACTS AND CONTENTS; NONEXISTENT COMPLEXES.

FASCISM. In the 1930s, it was common for people to say that communism or fascism were the only two practical alternatives in politics, and that whoever did not support one effectively supported the other. Russell, however, opposes both, preferring democratic **socialism**. Concerning communism, he approves of its goals, but dislikes its

means to those goals; with fascism, he dislikes its goals as much as its means. Fascism is fundamentally antidemocratic, he claims, because it is anti-utilitarian: it does not seek the greatest **happiness** for the greatest number. Rather, it is elitist, believing that one group of people is superior to all others and that their interests alone deserve consideration, while others should be forced to serve the interests of the elite few. The greatest evil of fascism, according to Russell, is its identification of only a portion of humanity as important.

Fascism arose in 20th-century Europe, Russell claims, by appealing to a middle class threatened by the rise of **industrialism** and **democracy** as well as by the masses' assertion of their rights and interests, and it was threatened by the rise of socialism and communism. When struggling to become established, European fascism attempted to appeal to a broader base than just the middle and upper classes by aggressively espousing nationalism and **capitalism** in opposition to socialism, which rejected both. Like socialism, it embraced the idea of economic planning, but only in the interests of the upper and middle classes, not those of the workers. Indeed, it aimed at pursuing the interests of the privileged classes by increasing oppression of those not among the elite.

Fascism is not, however, an ordered set of **beliefs**, according to Russell—it has no philosophy. Rather, it is an emotional protest of those threatened by the times, and it is irrational, for it cannot achieve its supporters' desires. If it were to succeed, says Russell, it would produce widespread misery, amplifying the already ill effects of capitalism by its disregard for the interests and rights of working people. But its economic nationalism, which makes **war** inevitable, will prevent it from succeeding except briefly, he predicts, for that war will sweep away fascism along with almost everything else that was in existence at its outbreak.

Russell further objects to fascism because, like communism, it is the attempt of a minority to mold a population forcibly according to a conceived plan, without regard to **laws** governing **human nature**, for people have spontaneous **impulses** and require spontaneous growth in order to be whole and experience happiness. Fascism instead produces monsters, people who are either rebellious and cruel or acquiescent and listless. The leaders themselves must be ruthless in order to carry out a plan that requires force. Since government will then be

in the hands of ruthless people, whatever **good** may have existed in the original plan is lost.

Russell was a "conditional **pacifist**," one who opposed war except when he thought it necessary. Thus, he opposed World War I, for in his opinion it was about nothing important, but supported World War II, for he thought that fascism had to be stopped from taking hold in Europe (*IPI* 125–38). *See also* ADMINISTRATOR'S FALLACY; POWER.

FEAR. Fear, in its harmful forms, says Russell, is a matter of there being some danger that we are unwilling to face. Because of the undesirable effects of fear—such as fatigue and loss of joy in life—freedom from fear, Russell says, is one of the most important goals we can have. But fears tend to grow worse if they are not looked at. The thing to do, he says, is to consider the worst thing that could happen if what is feared actually occurs, and give reasons for thinking that if this did happen it would not be a disaster. After having considered this possibility for a while, one should then to say to oneself with great conviction, "Well, if that happened, it would not really matter very much." This, he predicts, will cause the anxiety to lessen considerably, and if repeated a few times, it will cause one's fears or worries to disappear entirely, to be replaced by what Russell calls a "kind of exhilaration" (*CH* 63). A person who has in this way learned not to fear will feel less fatigue and will enjoy life more, he adds. Another reason Russell gives for thinking about fears rather than avoiding thinking about them is that doing so makes them familiar, the familiarity blunts their terrors, the whole subject eventually comes to be viewed with **boredom**, and due to lack of interest the person eventually stops thinking about them.

According to Russell, among the most harmful fears are those—like the fear of death and more generally of the unknown—that underlie and motivate most religious beliefs, those that lead to cruelty toward others, and a fear of public opinion, which by keeping people from thinking independently, or from thinking at all, stunts personal growth. Russell believes that many fears are acquired through **education**, and perhaps unrealistically, he believes that all unreasonable fears and panicked emotions can be eliminated by education (*CH* 63–4). *See also* COURAGE; HERD INSTINCT AND THE INDIVIDUAL; RELIGION.

FINCH, EDITH (1900–1978). A teacher, writer, and editor, Edith Finch, Russell's fourth and last wife, was born and raised in New York City. She met Russell in 1925 but did not begin a relationship with him until 1950. They married in 1952, when Edith was 52 and Russell 80, and they remained married until Russell's death in 1970. It appears to have been a happy marriage for both, and according to Russell's own accounts, the only marriage in which he was truly happy.

Educated at Bryn Mawr College and St. Hilda's College, Oxford, Finch taught English literature at Bryn Mawr and wrote the biographies *Wilfrid Scawen Blunt, 1840–1942* (1938) and *Carey Thomas of Bryn Mawr* (1947); Blunt was a poet and Carey was a president of Bryn Mawr. As well as **teaching**, publishing two biographies, and working as a freelance editor in New York, she assisted Russell in writing *Unarmed Victory* (1963), cared for Russell in the frailty of his final years, and was responsible for managing many of his papers after his death.

Finch was a social activist and liberal and took part in many of Russell's political, antiwar, and antinuclear efforts. She and Russell were sentenced to two months in prison in 1961 for breach of peace for failing to obtain a license to organize a demonstration against nuclear weapons. At the public outcry—both were then advanced in age—the sentence was commuted to a week in Brixton prison. *See also* PACIFISM; PUGWASH CONFERENCE.

FREE WILL. *See* DETERMINISM AND FREE WILL.

FREGE, GOTTLOB (1848–1925). A German philosopher and logician, Gottlob Frege made significant advances beyond classical or **Aristotelian logic**, which is limited to the **analysis** of a small portion of **language** (categorical **propositions** such as 'all horses are smelly' and 'some things are wooden') and which cannot explain the validity of more complex arguments containing, for example, relational propositions. He introduced his logical language and system of logic (a set of axioms and rules governing the acceptable inferences from one sentence in the language to another) in order to argue for **logicism**, the doctrine that mathematical **concepts** (e.g., 'number') reduce to logical concepts (e.g., 'is a member of') and that truths about number (e.g., '1 + 1 = 2') follow from truths of logic.

One of Frege's core insights in the development of his logical language is the analogy between functions in **mathematics** (e.g., 'x^2') and singular referring expressions in ordinary language (e.g., 'the father of *x*'). Replacing the variable '*x*' in 'x^2' with the name of the number 2 yields as its value '2^2,' that is, the name of another object, the number 4. Likewise, replacing the variable '*x*' in the 'the father of *x*' with the name of the object Cain yields as a value 'the father of Cain,' which is the name of another object, the man Adam. (*See* DESCRIPTIONS, THEORY OF.) Frege also sees equations like '$x^2 = 4$' as analogous to assertions like 'the father of *x* is Adam.' In this case, he thinks, replacing variables with names results in a sentence that **denotes** an object, the true or the false, which he calls the sentence's **truth**-value. Frege, in other words, analyzes predication as a mapping from objects to truth-values.

Equally important is Frege's analysis of quantifiers, that is, what is meant by 'all' and 'some.' He analyzes quantifier expressions as predicates (which denote concepts) that are said of (predicated of) what is denoted by other predicates. For example, in 'all horses are smelly,' the quantifier-expression is a predicate, 'for all *x*,' said of what is meant by the predicate 'if *x* is a horse, then *x* is smelly.' In his analysis, 'all horses are smelly' says 'for all *x*, if *x* is a horse, then *x* is smelly.' Likewise, in 'some things are wooden,' the quantifier-expression is the predicate 'there exists at least one thing *x* such that' and is said of what is meant by '*x* is wooden.' Here, 'some things are wooden' is interpreted 'there exists at least one thing *x* such that *x* is wooden.' (*See* QUANTIFICATION, INTERPRETATIONS OF.)

Note that his analysis allows predicates to vary in what they take as arguments, that is, in what kinds of things can replace their variables. Predicates like '*x* is yellow' take objects (like the sun) as arguments, resulting in sentences like 'the sun is yellow.' Predicates like '*x* is a color' take concepts (like red) as arguments, resulting in sentences like 'red is a color.' The latter are called higher-order predicates. Quantifier-words are therefore higher-order predicates.

Aside from his analysis of language, Frege devised a system of logic that is important for setting a new standard for rigor. In his work, a demonstration is a series of sentences that must be justified at each step either as an axiom of the system or as following from an axiom by specified rules of inference. So long as the axioms and

rules of inference are trustworthy and the steps are fully explicit and justified, a **proof** may also be considered trustworthy. Given the care with which Frege's system in *Grundgesetze der Arithmetik* protects against fallacy, Russell's discovery of a contradiction, called **Russell's paradox**, is especially poignant.

Russell's paradox arises when a concept is predicated of itself (alternatively, when a set is taken as its own member). In Frege's system, concepts cannot be predicated of themselves, only of other predicates or objects, so the paradox does not apply directly. But his system contains an axiom (Basic Law V) that associates predicates with extensions or **classes**, the set of things to which the predicate applies, and in doing so it opens the way for the set of all sets that are not members of themselves, which is Russell's paradox. The discovery of a contradiction nullifies Frege's system, highlighting, among other things, the need to distinguish logic from problematic set-theoretical concepts and throwing the logicist program in doubt. *See also* AXIOMATIC SET THEORY; SENSE *v* REFERENCE; THEORY OF TYPES AND ORDERS, DEVELOPMENT OF.

– G –

GENERALITY. *See* QUANTIFICATION, INTERPRETATIONS OF.

GOD. Arguments for the **existence** of God, Russell famously claims, are all fallacious. For example, the argument that God must exist because there must be a first cause is fallacious because if everything must have a cause, then God must too, but if anything can exist without a cause, then it could be the world just as well as God. There is no reason to believe the world could not have come into existence without a cause, and no reason to believe that it has not always existed, so there is no reason to believe that the world had a beginning at all. (*See* CAUSALITY.)

The argument for God's existence from natural **law**, a common argument in the 18th century, is similarly fallacious, Russell says. According to the natural law argument, events occur according to the laws of nature, and all laws must have a lawgiver, thus God, nature's lawgiver, wills that all events follow these laws. But Russell points

out that most events occur at frequencies that are statistical averages of chance occurrences, and that it is these statistical frequencies that the laws of nature describe. This is especially true of the description of atomic **matter** in the 20th century by quantum physics. The various states of matter the laws describe are, by that theory, all chance occurrences and so could not occur by design. Furthermore, the argument rests on confusing natural and human laws. Human laws are commandments as to how one should behave, but natural laws are descriptions of how a thing does in fact behave, and from a description of how things do behave we cannot infer that someone must have commanded them to do so.

The argument for God's existence from design—a favorite of Robert Boyle in the 17th century and a popular argument during the 19th century—is similarly fallacious, Russell argues. The argument from design claims that everything in the universe was created for a purpose—namely, so that humans could exist—and that things could not be as they are if a designer had not created them that way. In particular, it is argued that such organs as the human eye could not come into existence by natural laws, but must have been created by an omnipotent and omniscient designer. But Russell points out that in the 19th century, Charles Darwin answered the question 'why is man here?' by showing how living things could have the properties they have by random variations of characteristics and according to the laws of nature, without being designed by a God with some purpose in mind.

Russell finds that **moral** arguments for the existence of God are similarly fallacious. He begins by attacking **Immanuel Kant**'s argument, which he characterizes as claiming that without the existence of God, there could be no right or wrong, and that since there clearly is a right and wrong, God must exist. Russell's response turns on the Socratic question: are actions right because the gods command them, or do the gods command them because they are right? Russell argues that if actions are right or wrong simply because God commands them, then there is no right or wrong for God, and we can claim neither that God is **good** nor that God's dictates are good. However, if we believe that God is good, notions of right and wrong must have a meaning independently of what God wills, so that either there is no

right and wrong, or these qualities are independent of God's will and do not imply the existence of God.

Another moral argument for the existence of God that Russell thinks is fallacious is the argument for the remedying of injustice. This argument claims that the existence of God is necessary to bring justice into the world. However, the world is in fact not just. The good often suffer and the wicked often prosper. Thus, the argument goes, if there is to be justice in the universe, it must occur in a future life in order to rebalance the injustice of the present one, and for this, God must exist, along with heaven and hell. But we only know this world, which is unjust, so any probabilistic inference from all our experience to elsewhere would suggest that any other world is also unjust. Our experience is thus evidence against the existence of a deity and not for it.

Although Russell thinks it possible to refute any and all arguments for the existence of God, he realizes that people believe in God not because of intellectual arguments but because of habits and emotions. Most people believe in God because they were taught from early infancy to do so. After that, it is the desire for safety that causes people to believe in God. A contributing factor is the belief that **religion** makes people good, that without it they would be wicked, which leads to the conclusion that it is wrong to reject—or voice one's rejection of—religion or God. Against this, Russell argues that the faithful cause considerable wickedness on the basis of their religious faith—and the greater their faith, the greater the wickedness (*WNC* 5–14, 19–21). *See also* AGNOSTIC OR ATHEIST?; CHRISTIANITY; JESUS OF NAZARETH.

GOOD AND EVIL. Russell says that human beings are a strange mixture of the divine and the diabolic, so that both good and evil are equally inevitable. Thus, complete despair, he says, is no more rational than blind optimism. It may seem, he continues, that one **individual** cannot do anything toward making the world a better place, but this is a fallacy. A good society is produced by the good individuals in it, just as surely as a majority in a presidential election is produced by the votes of individual voters. Everyone can do something to increase **happiness** and reduce misery in his or her own

environment, and the sum of such actions is what produces a better world. Good and evil spring from the actions of individuals, and not only of prominent people, but of ordinary men and women who make up communities. (*See* GOOD LIFE.)

With this in mind, Russell suggests seven ways individuals can make the world a better place: (1) never go along with what you believe to be wrong; (2) if you have a prejudice, struggle against it; (3) do not be credulous, but ask for evidence before you accept any idea; (4) if there is wrongdoing that you know of in your immediate vicinity, make it your affair to do something about it; (5) do not be afraid of making a fuss; (6) treat the people you disagree with not as evil but as mistaken, as you will be more likely to be listened to that way; (7) in any struggle, do not become satisfied too easily and think that your own group is faultless (*OKWH* 8–11).

In another list, Russell states that there are three kinds of evil in the world: (1) physical evils such as death, pain, and the difficulty in getting food, shelter, and clothing; (2) evils of character, such as ignorance or violent passions; (3) evils of **power**, such as tyranny and in general the interference in the liberty of one group by another. Social systems, he says, should be judged on how well they treat these kinds of evils (*PRF* 183). *See also* ETHICS.

GOOD LIFE. According to Russell, the good life is one "inspired by love and guided by knowledge." Both, he says, are necessary for a good life; neither one without the other will do. Love without **knowledge** can too easily do injury to **happiness**. As an example, Russell says that in the Middle Ages, priests often assembled the people together in churches to pray when pestilence appeared, inadvertently spreading infection that much more quickly. Similarly, knowledge without love can produce great unhappiness. Russell points to the great destructive **power** of modern warfare during World War I. As can be seen from his examples, Russell roughly equates living a good life with being a utilitarian: one needs to aim at maximizing the happiness of the whole to live the good life oneself. "The logical content of the statement," says Russell, "is that, in a community where men live in this way, more desires will be satisfied than in one where there is less love or less knowledge" (*WNC* 63).

By 'love,' Russell means to include both a delight in contemplation and **sympathy or benevolence**, which he defines as a desire for the welfare of others. The pleasure of a parent in a beautiful and successful child combines both kinds of love. In a different way, so does sexual love, at its best. By 'knowledge,' Russell says he does not mean **ethical** knowledge of the proper goals in life, but the scientific knowledge that helps people to achieve their desires and thereby increase their happiness. Since he points out that one must have a certain amount of **intelligence** to be guided by knowledge, intelligence seems to be necessary as well to Russell's idea of the good life. A person must also, says Russell, possess a certain animal vitality, for otherwise life will be tame and **boring**. Finally, self-control is necessary, for improvement in knowledge and love comes gradually (*WNC* 56–63). *See also* AFFECTION.

GRAMMAR AND ANALYSIS. Analysis, for Russell, begins with some statement that is obviously true but, like a commonsense **belief**, is also very **vague**. You then try to clarify its meaning until you have a statement that is precise rather than vague—but the resulting statement will then not be so obviously true (*PLA* 37–8). One of the main uses of analysis is to clarify a statement's metaphysical presuppositions by providing a **definition** of its **concepts** and an analysis of its underlying logic and meaning.

In the style of **Aristotelian logic**, much traditional grammar and metaphysics analyzes simple statements like 'the sun is yellow' into a subject that names a thing that the sentence is about (the sun) and a predicate, such as an adjective, that names a property of the subject (its yellowness). Since the time of **Aristotle**, it has commonly been assumed that subjects name substances (or **particulars**), while predicates name properties (**universals**) like yellow but not substances or things.

In different ways, both before and after "On Denoting" (1905), Russell objects that this linguistic distinction between subject and predicate can be metaphysically misleading. In such cases, he thinks that analysis is necessary to clear up the confusion. Before 1905, Russell's objections to the misleading nature of grammar concern the way in which the subject-predicate form cannot properly account for

relations between things by exclusively attributing a property, not a relation, to a thing or set of things. (*See* ASYMMETRICAL RELATIONS; EXTERNAL RELATIONS.) In "On Denoting" (1905), he analyzes definite descriptions such as 'the present king of France' into their true logical form, so that the phrase disappears from any statement in which it originally occurred, and so that the statement no longer appears to refer to a **nonexistent** object, the king of France. After 1905, his objections also include the problem posed by true statements, like 'the soul is a mythical entity,' for which no entity exists to correspond to the subject term. To do this, he simply analyzes 'the soul' in the same way that he treats 'the present king of France' in 1905. The statement must, he says, be analyzed so that it does not seem to assert the **existence** of something that does not exist.

In Russell's middle and late periods (1912–1918 and 1919–1965), he claims that commonsense entities like people or tables and chairs do not exist except as **constructions** from **classes** of the data of immediate experience. Again, he treats these ordinary objects along the lines of his 1905 essay. According to Russell, on this account even true sentences like 'Fred is a fine fellow' mislead, by suggesting—through their use of a subject term or name—the existence of a single object (Fred) to whom the sentence refers (*HWP* 162–7). *See also* BUNDLE THEORY OF OBJECTS; DESCRIPTIONS, THEORY OF.

GREATEST CARDINAL PARADOX. *See* CANTOR, GEORG.

GRELLING'S PARADOX. Words may express properties—for example, 'wise' expresses the property of wisdom—but they also possess properties, such as that of being synonymous with another word. Homological words are those that possess the property they express, and heterological words are those that do not possess the property they express. The word 'wise' is heterological, then, as it is not wise. To ask whether the word 'heterological' is heterological yields the paradoxical answer that 'heterological' is heterological if and only if it is not heterological. This paradox, also known as the Grelling-Nelson paradox after the mathematicians and philosophers Kurt Grelling and Leonard Nelson, is a **semantic** contradiction, despite bearing a strong resemblance to **Russell's paradox**, which is a logical one. *See also* RAMSEY, FRANK P.

– H –

HAPPINESS. In his book *The Conquest of Happiness* (1930), Russell reflects on those people he knew who are happy and tries to formulate some rules about what makes them so. Happiness, he points out, depends both on external and internal circumstances. The external things that are necessary for happiness are simple: food, shelter, health, love, successful **work**, the respect of the people in one's group, and at least for some, having children. People who possess these things yet are still unhappy, Russell says, suffer from psychological maladjustments, which, if serious, may require the aid of a therapist, though in most cases people can cure themselves. To be happy, he argues, people must have passions and interests that are directed outward, not inward. Thus unhappy people need to practice techniques that turn their **attention** outward, away from themselves. One problem with self-centered interests is that they provide little variety, so that an inward-looking person is bound to experience **boredom**.

A happy person, says Russell, lives objectively rather than being focused on the self, and has wide **affections** and interests. It is these interests and affections that make a person happy, and they in turn make that person an object of interest and affection to others, which itself is a great source of happiness. When you overcome self-absorption, the objective interests that arise must be determined by the "the spontaneous workings of your nature and external circumstances," says Russell (*CH* 189). Only genuine objective interests will provide happiness, and leaving them to your nature and circumstances ensures that they will be genuine.

The happy life, says Russell, is to a large extent the same as the **good life**, for the good life is that of the hedonistic utilitarian. Happy people, says Russell, will feel themselves to be citizens of the universe, enjoying the spectacle it offers and joys it affords, and—because they do not feel separate from those who will follow them—they will be untroubled by the thought of death. "It is in such profound instinctive union with the stream of life that the greatest joy is to be found," he concludes (*CH* 191). *See also* HUMAN NATURE.

HERD INSTINCT AND THE INDIVIDUAL. The idea of "the herd" and the relation of **individuals** to the herd are themes found throughout

Russell's writings. The herd is any group of people with which one has a psychological feeling of belonging. And the herd **instinct**, which every group of humans in regular close proximity develops, is one that produces a uniformity of behavior in the group and hostility to anyone felt to be outside the group. **Fear** of the herd is deeply ingrained in almost all people, as is evident in the fear of displeasing it—for example, by being in any way different from its other members—and of thus being shunned or punished by it.

Russell recognizes that the herd instinct is essential to bind a group together for its own protection and security, but beyond that, its influence should, if possible, be limited, for he believes that no **progress** in human society is ever produced except by opposing this instinct. This is because the herd instinct makes people fear public opinion, which is just a fear of the disapproval of the group. To differ in tastes and convictions from the people among whom one lives is often to find oneself an outcast and miserable, he says. This tyranny of public opinion, as he calls it, tends to stifle intellectual development in all people. Russell recommends showing an indifference to public opinion, for if the herd sees that you are afraid, it only encourages it to persecute you even more. In general, Russell recommends that "one should respect public opinion in so far as it is necessary to avoid starvation and to keep out of prison, but anything that goes beyond this is voluntary submission to an unnecessary tyranny, and is likely to interfere with happiness in all kinds of ways" (*CH* 136).

With the outbreak of World War I, Russell became increasingly pessimistic about human nature, for there seemed to be no good reason for **war**, yet all of Europe exhibited a desire and even **excitement** to go to war, and once the fighting had started, to continue fighting. This drove him to believe that humans are motivated not by reasons but emotions, so that an understanding of sociological, **ethical**, and political questions must be found in psychology. The psychological basis for people's anticipation of and pleasure in war seemed to him to be due to the instinct in people to cooperate with one's herd and oppose members of other herds. He saw that people felt a great joy in being at one with the herd, a feeling that the war provided and for which they were willing to give up all reason and adopt whatever rationalizations for violence they could find, no matter how slender. From these basic instincts, other more malevolent ones followed,

such as a delight in cruelty and hatred of others, which also required rationalization so that people could enjoy them without the discomfort of guilt.

HOBBES, THOMAS (1588–1679). Russell agrees with Thomas Hobbes that government is necessary because it is the only alternative to **anarchy**, which is undesirable. Russell points out, however, that a state can be so bad that temporary anarchy may seem desirable, as in times of revolution. Russell also points out that only the threat of rebellion can keep every government's tendency toward tyranny in check. Thus, Russell does not accept Hobbes's idea that citizens should be totally submissive toward government (*NH* 80–1).

Governments, Russell claims, try to be irremovable, to enrich themselves and their friends at the expense of the public, and to suppress every new discovery or idea that threatens their **power**. Thus, while Hobbes is right to fear anarchy and use it as a justification for government, he overlooks the threat of injustice and ossification from an all-powerful government and the need for at least a threat of anarchy to restrain these tendencies in government.

In general, though, Russell admires Hobbes in being free from superstition, clear, logical, and with an **ethics** that is intelligible and free of dubious concepts because it is argued on the basis of enlightened egoism, that is, on the basis of principles of mutual self-interest. He is the first really modern political philosopher and one of the most purely modern ever. When he errs, says Russell, he errs through oversimplification rather than from unrealistic or fantastic assumptions or inferences. And Hobbes errs, Russell says, in assuming that the interests of all citizens are the same so that there is one national good and, moreover, that the interests of the monarch are those of all the citizens of the state. Rather, the interests of different classes in society can differ greatly, and power-sharing among them is necessary at times to avert civil **war**.

Hobbes also errs, Russell thinks, in not sufficiently considering the relations between different nation-states except to say that they are in a state of nature in relation to each other just as individuals without government are. This follows from his principles and the absence of a **world government**. Hobbes, however, does not think that anything can be done about this. Russell, on the contrary, believes that every

argument Hobbes puts forward for removing individuals from a state of nature by the establishment of a commonwealth hold equally for taking nations out of the state of nature they are in by the formation of a world government (*HWP* 556–7). *See also* WORLD CITIZENSHIP.

HOPE AND WEARINESS. A hopeful age, Russell says, can endure great present evils because people believe those evils will pass, but in a tired age, even real goods lose their appeal and people look to the past for what is best and view the future with weariness and often with horror. Russell thinks the Hellenistic Age, as exemplified by stoicism, was a tired age—sickly and weak, valuing peace more than victory or reform—while the age of **Francis Bacon**, John Locke, or Marie Antoine Condorcet was a hopeful one. Similarly, Russell finds Constantine's adoption of **Christianity** to have been successful due to "the misfortunes and weariness of the Roman world." Christianity, he says, succeeded there because it was effective in bringing consolation. The **traditional** religions of the Greek and Roman gods, on the other hand, hoped for **happiness** on earth (*HWP* 262, 281, 753). Russell also views the Victorian Age, "for all its humbug," as a period dominated by hope rather than **fear**, this hope being the cause of the great **progress** in human happiness that was made during that period. To have progress, Russell believes, a society must have hope (*WIB* 79). *See also* GOOD LIFE.

HUMAN NATURE. Throughout his writings on social and political philosophy, Russell is concerned to propose policies not in conflict with the biological **impulses** he thinks are at the root of human nature. He groups these impulses into two kinds, those that are possessive and those that are creative, though he notes that these labels do not fit every human impulse he finds. Some human impulses he finds are envy, selfishness, the impulse to defend one's children and spouse (but probably no one else), the impulse to compete, vanity, love of **power**, and the **instinct** to work with and seek the approval of those who resemble oneself, hating those who do not. The impulses first evolved in humans to produce the social cohesion necessary for survival, but, says Russell, they are no longer necessary for that and are today the source of many social problems.

Note that he does not believe that these impulses are the whole of human nature. Most of our habits and desires, he says, are learned and so can be changed by proper **education**. And even our basic impulses, he thinks, can be modified by education to a large extent (*AI* 1–24; *CH* 21, 69, 96). **Fear** and hatred, for example, are two characteristics of human nature that Russell believes can be nearly eliminated from human nature by proper educational, economic, and political reforms.

Active malevolence is another characteristic that Russell claims to be an aspect of human nature, both in the form of ill will directed at particular people or groups and in the form of a general attitude that gives personal pleasure. Again, in the past this was useful for creating loyalty to one's group and opposition to other groups, but it is now mainly a source of unhappiness.

Russell points out that people usually justify this trait with moralizing. In fact, he asserts that about half of conventional morality is a cloak for our active malevolence, and that the emotion must be faced if we are to be better people. As examples of this active malevolence, he notes the glee people show in repeating and believing rumors of scandal, the unkind treatment of prisoners, the barbarity with which the white race treats blacks, the gusto with which old women and clergymen pointed out the duty of military service to young men during World War I, and the way even children can be the objects of cruelty. He says that our active malevolence is our worst feature and the one most important to change if we are to increase our **happiness**. Russell thinks that the malevolent side of human nature probably has more to do with why people go to **war** than all the economic and political causes together (*WNC* 46, 77). *See also* TEACHING VIRTUES.

HUMANISM. There are several meanings of the term 'humanism.' The most common sense of the term refers to the Renaissance intellectual movement that revived and valued the study of Greek and Roman classical literature. In the 20th century, the term has come to be used for an intellectual movement of people who reject theism (**belief** in a supernatural being), accept naturalism (the view that all reality, including **science** itself, can be explained within science), reject a supernatural creation of the earth, accept evolution theory as the best

account of the creation of human life, and seek moral values that will improve people's lives. In addition, humanists typically think that these moral values will be found by reason and experience, rather than, say, by divine revelation or in sacred texts.

A group of such humanists issued a humanist manifesto in 1933 proclaiming these values. The members of the group were in large part Unitarians and called themselves 'religious humanists,' even though they rejected belief in a supernatural being. They were, essentially, naturalists who found **religion** and especially religious feelings appealing. In 1979 or 1980, another group of humanists, led by Paul Kurtz, began calling themselves 'secular humanists.' They espoused the same beliefs and values as the religious humanists but did not find religion or religious emotions attractive.

Many people, particularly in the humanist movement, claim that Russell was a leading humanist. But was he a humanist at all? He accepted the other tenets of humanism, but whether or not he was a naturalist is a controversial issue. Furthermore, he was a member of the British Humanist Association (at one time presided over by A. J. Ayer), though he tended to call himself a rationalist or **skeptic** instead of a humanist. When asked in a letter by Warren Allen Smith if he considered himself a humanist, he replied: "I am not in the habit of giving myself labels, which I leave to others. I should not have any inclination to call myself a humanist, as I think, on the whole, that the nonhuman part of the cosmos is much more interesting and satisfactory than the human part. But if anyone feels inclined to call me a humanist, I shall not bring an action for libel" (*Humanist* March/April 1981, 21). *See also* AGNOSTIC OR ATHEIST?; GOD; IMMORTALITY.

HUME, DAVID (1711–1776). Russell believes that David Hume ought to be counted among the most important philosophers for pushing the British **empiricism** of John Locke to its logical conclusion and showing that **knowledge** and rationality are not possible on empiricist assumptions. Hume had reached a dead end, Russell says, by showing that empiricism could not account for reason. He represented the "bankruptcy of 18th-century reasonableness" by starting out, like Locke, intending to be sensible and empirical, accepting only what could be confirmed by experience and observation, only

to arrive at the "disastrous conclusion" that nothing at all could be learned based on experience and observation alone, so that there is no such thing as rational **belief**.

Russell argues that Hume's self-refutation of rationality was followed by a "great outburst of irrational faith" in philosophy, a period in which British empiricists ignored Hume's **skepticism** rather than attempting to refute it, and Jean Jacques Rousseau and others accepted the idea that reasonable belief is impossible but claimed that emotions lead people to the truth. Russell also argues that the rationalism of German philosophers like **Immanuel Kant** and Georg Hegel and their followers can be easily refuted by Humean arguments, while the philosophies of Rousseau, Arthur Schopenhauer, and Friedrich Nietzsche cannot be refuted because they do not pretend to be rational. This tendency led to the growth of unreason throughout the 19th and 20th centuries, and resulted, Russell says, from Hume's destruction of empiricism.

Because of the significance of Hume's results to the subsequent rise of irrationality in European culture and society, Russell believes that it is important to find an answer to Hume's skepticism, for if one cannot be found, "there is no intellectual difference between sanity and insanity." Russell does not see that any attempt to refute Hume's results have been successful, but he hopes that some position less skeptical than Hume's will be found. At the very least, he thinks, Hume's arguments prove that the principle of **inductive** reasoning, which Hume showed could not be justified in any way, must be an independent logical principle and that **science** is impossible without it (*HWP* 659–74). *See also* TRADITIONAL PHILOSOPHY.

– I –

IDEAL LANGUAGE. *See* LOGICALLY PERFECT LANGUAGE.

IDEALISM. While materialists assert that everything in the universe is made up of only one kind of substance, namely **matter**, dualists say that there are two fundamental kinds of substance in the universe: in addition to matter, there is mind, a fundamental substance we all possess. Thus, minds or souls or spirits exist, and for **mind/matter**

dualists these are not reducible to matter. Idealists go all the way with this idea and counter materialists by saying that there is *only* mind—that everything in the universe, even those things we ordinarily call physical objects, are really created by and composed of thoughts or ideas or feelings or **perceptions** or **consciousness**, that is, mind. Idealism, like materialism, is thus a species of **monism**, a philosophy that maintains that reality is composed of only one kind of substance.

This position was first argued for in modern times by the Irish philosopher George Berkeley, who maintained that a careful analysis of our experience shows that what we take to be material objects are really only ideas. The German philosopher **Immanuel Kant** similarly argued that all the things we take to be material objects existing in **space and time** are really just appearances, which like Berkeley's ideas are similarly composed of mind, not matter. In fact, Kant claimed that space and time themselves are just aspects of the way we perceive ("forms of intuition"). The German philosopher Georg Hegel developed Kant's view further by arguing that in addition to everything at bottom being mind, there is only one mind in the universe, so that the universe itself is one single large mind, which he called the "Absolute Mind."

This doctrine of idealism, in one form or another, has been most influential in Germany, but it also flourished in Britain in the last third of the 19th century and first two decades of the 20th in what is called British idealism. British idealists such as Bernard Bosanquet, Edward Caird, T. H. Green, Harold Joachim, J. M. E. McTaggart, and **Francis Herbert Bradley** were most influenced by Hegel's form of idealism, though influences of other idealists, especially Kant, can also be found in their work. It is against this philosophy of British idealism that Russell, who was schooled in British idealism and for a few years influenced by it, rebelled. With his friend G. E. Moore, Russell began the analytic school of **realism** that eventually blossomed into British analytical philosophy, which then became the dominant form of philosophy in the 20th and 21st centuries. *See also* EXTERNAL RELATIONS; TRADITIONAL PHILOSOPHY.

IDENTIFICATION OF TYPE, AXIOM OF. This axiom, which is *1.11 of ***Principia Mathematica*, first edition** (1910–1913), con-

cerns the notion of **asserting a propositional function**. According to the **theory of types**, a variable in a propositional function can take as its values only arguments (entities) of a certain type—those for which the propositional function is significant (i.e., which are in its range of significance). Given these type distinctions, there is need of an axiom to establish that when 'ϕx' and '$\phi x \rightarrow$ 'ψx' can be asserted, 'ψx' can also be asserted—that is, their arguments are the same type. For without this axiom, there is no guarantee that what is denoted by the free (i.e., *real*) variable 'x' in 'ϕx' is the same type of entity as what is denoted by the 'x' in '$\phi x \rightarrow \psi x$.' Whenever any two propositional functions can significantly have the same argument, they can significantly have the same range of arguments—that is, arguments of the same type. Thus Russell calls *1.11 the axiom of identification of type. He abandons the axiom in ***Principia Mathematica*****, second edition** (1925–1927). *See also* AMBIGUOUS ASSERTION; RAMIFIED THEORY OF TYPES; REAL AND APPARENT VARIABLES.

ILLUSION AND PHILOSOPHY. Russell was a **pacifist** during World War I. He thought there was no good reason for the nations of Europe to go to war at that time, and he therefore opposed the war. His experience in opposing this war, which swept up all of Europe into a nationalistic fervor of **excitement** to kill other Europeans, led Russell to the **skeptical** view that most of what we believe is what we want to believe and not what is most likely to be true. It led him to conclude that our social, political, psychological, economic, moral, and religious **beliefs** about human reality have little to do with that reality and almost everything to do with our self-serving desires. In this regard, his view of belief is like the Hindu belief that everything is "Maya," or illusion. Unlike the Hindu view, however, he does not think that true reality is spiritual and known by looking inward. Rather, Russell thinks reality is ultimately physical, but that, in human affairs, we are rarely interested in knowing what it is (*SE* 26–9, 35).

This skepticism might be called a moral skepticism, since the comforting illusions tell us what good people we are and how much better we are than others. However, this moral skepticism also involves skepticism of many factual beliefs, since moral arguments involve many factual beliefs, and the **false** moral beliefs that we

hold to comfort ourselves are maintained by a host of false factual beliefs. Russell's moral skepticism therefore asks us to question many factual beliefs, held as conventional wisdoms, along with convenient moral beliefs. Philosophers typically begin their thought from skepticism, but skepticism in **traditional philosophy** is global, doubting all our factual beliefs at once. Russell, however, is asking us to doubt factual beliefs on a "local" level, raising doubts about some while taking others to be true. Russell is urging the philosopher to argue with the sociologist, for example, when the philosopher suspects the sociologist is using bad statistical arguments to support comforting but false beliefs. The philosopher then acts as a gadfly to social scientists and others rather than abstaining from commenting on the **sciences**.

The philosopher, then, must start from skepticism about all of the conventional wisdoms of "common sense," endeavoring to uncover their self-serving falsity so as to find out the truth. Russell thinks that examples of such self-serving falsity are all around us. The prevalence of **religion** is one he thinks is obvious, but so are the practices of historians. Writing in 1919 at the end of World War I, he asserts that if all non-Germans were prevented from writing for one hundred years, only the early victories of World War I would be remembered, and the ultimate disaster would be forgotten. "Every man, wherever he goes, is encompassed by a cloud of comforting convictions, which move with him like flies on a summer day. Some of these convictions are personal to himself. . . . Next come convictions about the superior excellence of his family. . . . Then there are beliefs about his class. . . . Concerning his nation, also, almost every man cherishes comfortable illusions. Finally we come to the theories that exult mankind in general, [for example, that] God made man in His own image, and the welfare of man is the ultimate purpose of the universe" (*SE*, 16).

Russell thinks the philosopher must struggle with such illusions in order to see them as, for the most part, false. We do this by accepting as true only those propositions for which we have good evidence. The truth is generally less comforting than our illusions. However, "there is a stark joy in the unflinching perception of our true place in the world," Russell says, "and a more vivid drama than any that is possible to those who hide behind the enclosing walls of myth" (*SE* 22). *See also* PUBLIC PHILOSOPHY.

IMAGE-PROPOSITIONS. In his **neutral monist** period, Russell explains **belief**, that is, the believing and the content believed, in terms of feelings we have toward word- or image-**propositions**—or rather, not toward images as such, but toward what the images mean. For example, when we experience the image of an object as familiar, we believe or judge that an object or event corresponding to it exists. Though Russell explains propositions as linguistic structures composed of words and as collections of images, he treats image-proposition as more fundamental and primitive.

According to his new doctrine, a belief involving images is true when the relation among images and the relation among the things imagined is the same, as when a window is imagined to the left of the door, and it is in fact so. In *The Analysis of Mind* (1921), Russell says that the logical schema of belief as a collection of images is the same as for his old **multiple relation theory** of belief, presumably because in both theories, if the belief is true, the relation in the proposition is the same as in the fact. But his earlier theory—which assembled the judgment from things believed in, rather than from their images—had been unable to explain what constitutes a **false belief**, and Russell believes that his new doctrine is able to do so, for there can be a proposition or content composed of images, even if nothing in the world corresponds to it. Since what we judge is not the objective fact itself but an image-content related to the objective fact, Russell admits that his new theory opens up a gap between the content of a belief and the objective fact that verifies it. But he claims this leads to **skepticism** only if we suppose some ideal **unity** of content and objective fact to be necessary for ascertaining the truth of a belief. *See also* MENTAL ACTS AND CONTENTS; NEGATIVE FACTS AND PROPOSITIONS.

IMMORTALITY. In addition to denying such tenets of **Christianity** as the belief that **God** exists and that Christ was divine (or else the best person who ever lived), Russell rejects the idea that souls are immortal, holding instead that humans are a part of nature and not contrasted to it. He argues there is no probable evidence that our personalities are immortal, for the brain is known not to be immortal, and all evidence points to the view that mental life depends on the brain, so mental life is probably not immortal either. Psychic research claims to have evidence of survival, but Russell thinks the

evidence of the existence of a soul from psychic research is weaker than evidence that the soul is extinguished when the body dies. Furthermore, such evidence, if it existed, would not prove that the soul is immortal but merely that it persists for at least a finite amount of time after death.

Aside from its putative immortality, the soul is also usually thought of as being unchanging. But we see personalities grow and change from infancy through to aged senility. Personalities clearly change just as material objects do, and since material objects change because they are composite, due to the rearranging of their elements, including the dissolution of the proper arrangements of those elements, it is likely that personalities are also in some sense composite and come to an end in a similar way. In any case, we do not experience any single element behind all of these psychological changes that is itself unchanging—that is, we do not experience the soul, we only experiences the changes.

It is not rational argumentation that underlies **belief** in a future life, Russell says, but emotions, especially **fear** of death (*WNC* 50–53, 88–93). *See also* AGNOSTIC OR ATHEIST?; RELIGION; SUBJECT OF CONSCIOUSNESS *or* SELF.

IMPERIALISM. In the 1920s, Russell argues that one of the most destructive forces of modern **civilization** is imperialism, which, with nationalism, he believes was a cause of World War I. In this and in later decades, Russell's notion of imperialism includes a **fear** of the cultural despotism of the **United States** and Britain as a kind of ruthless capitalist exploitation (*FO* 448). Russell believes that the only escape for countries and cultures tyrannized by imperialism would be rebellion so universal that it would bring devastation to everyone concerned. (*See* WAR, THE EVILS OF.) His conception of the destructive nature of imperialism is not always tied to war, however. Thus Russell anticipates that China will meet with slow destruction by means of Americanization, and he argues that it is necessary to protect what is unique to the cultures of China and Japan from American imperialism. But in most cases, he anticipates that intolerance between what he calls the white and nonwhite races will grow as the result of imperialism, and that the result will be the tendency of weaker powers to wage war on the cultural despots,

with the probability of great loss to the culture of the weaker **power**. *See also* CAPITALISM, THE DANGERS OF; COLONIZATION, WARS OF.

IMPREDICATIVE DEFINITIONS AND PROPERTIES. A **definition** is impredicative if it defines a property by reference to a totality of properties containing the property in question. In ***Principia Mathematica*, first edition** (1910–1913), a property (e.g., '*x* has all the properties of a great general') is said to be impredicative if it refers to a totality of properties. Like **Henri Poincaré** before him, Russell thinks that impredicative definitions and properties involve a **vicious circle**, and that impredicative properties (i.e., **propositional functions**) give rise to contradictions like the **liar paradox**.

Russell sees that in a system governed by a **theory of types**—that is, stratified into type-1 properties of individuals, type-2 properties of properties of individuals, and so on—a property may be of any type and still refer to all of a set of properties in the way that gives rise to paradoxes like the liar paradox. Thus, he concludes, even though the type distinctions prevent contradictions like **Russell's paradox** from occurring, they are not sufficient, and it is necessary to further distinguish types of properties into different orders. (The combination of these two distinctions is the **ramified theory of types** and orders.) Type-*n* properties are therefore of different orders. For example, both '*x* is courageous' and '*x* has the property of being courageous' are type-1 properties (they both take objects as arguments), but the former is a first-order property and the latter is a second-order property.

The imposition of order distinctions blocks certain kinds of paradoxes but also certain important mathematical principles that refer to a totality of properties. To resolve this issue, Russell takes advantage of the fact that different orders of functions that take arguments of the same type are formally equivalent, adopting the axiom of **reducibility**, that there is a formally equivalent predicative propositional function (i.e., a propositional function of the lowest order) for any function of higher order. This axiom, which is later rejected by **Frank P. Ramsey**, allows Russell to proceed as though *Principia* contained only first-order (i.e., predicative) functions. Russell rejects the axiom of reducibility in ***Principia Mathematica*, second edition** (1925–1927). *See also* EXTENSIONALITY, THESIS OF.

IMPULSES. The distinction between desires and impulses for Russell is that desires are feelings for some end of which we are conscious, at least to some extent, and about which we can reason. Impulses are feelings for certain kinds of activities that are principally unconscious; being unconscious, they do not have conscious ends and are not particularly purposive or rational. Impulses, unlike desires, are blind, as they are **instinctive** and do not spring from a prevision of consequences.

Russell's view that **human** life is driven largely by impulses originates from his association with D. H. Lawrence in 1915 and his experiences as a pacifist during World War I. After observing the eagerness and emotional display throughout Europe at the prospect of the **war**, which seemed to Russell a completely irrational impulse on the part of Europe to self-destruct, he came to believe that human action is due far more to unconscious impulses than to reason, and that to justify these impulses, humans accept all sorts of untrue **beliefs**. It is impossible to reduce the dangerous effects of certain impulses, such as those that drive us to war, by means of reason alone, Russell decides; rather, other impulses must be used against them. "Only a passion can control passion, and only a contrary impulse or desire can check impulse. . . . It is the life of impulse that needs to be changed, not the life of conscious thought" (*PSR* 11).

Russell distinguished between possessive and creative impulses. Possessive impulses aim at acquiring or retaining something that cannot be shared, while creative impulses aim at bringing some valuable thing into the world that can be shared, such as **knowledge**, art, or goodwill. He takes the state, war, and property to be embodiments of possessive impulses, and **education**, **marriage**, and **religion** to be embodiments of creative ones. "Blind impulse," he says, "is the source of war, but it is also the source of **science**, and art, and love. It is not the weakening of impulse that is to be desired, but the direction of impulse towards life and growth rather than towards death and decay" (*PSR* 15).

Our impulses are not fixed at the beginning of our life by our native disposition, he thinks, but within wide limits are modified by circumstances and our way of life. Thus Russell believes that education and political institutions can have a great influence on the dispositions of people and should be structured so as to promote creativeness at the expense of possessiveness (*PSR* 7–15).

INCOMPLETE SYMBOLS. *See* DESCRIPTIONS, THEORY OF.

INDIVIDUALISM. The psychological trait of individualism figures significantly in Russell's theory of **education**: the best way for children to learn is by following their own interests as much as possible. This would, he thinks, also foster individualism in thought, or creativity, which is of great value both to society and for an individual's **happiness**. Individualism as an **ethical** principle for living is, additionally, of great importance to Russell, since he believes that following our desires is the best way to achieve happiness and develop as a person. However, Russell also believes that society cannot survive with rampant individualism. And as humans cannot survive well without society, he stresses that in **teaching**, the value of individualism must be tempered by that of citizenship—by the personal habits that bond one with the group (*ESO* 12–3). *See also* HERD INSTINCT AND THE INDIVIDUAL.

INDUSTRIALISM. In *The Prospects of Industrial Civilization*, a book Russell wrote with his wife Dora Russell (**Dora Black**) in 1923, the conditions required for industrialism are said to be the resources to organize many in a common task, an orderly and stable government, skilled labor, scientific **knowledge**, and elaborate machinery capable of reducing the total labor of production. The effect of industrialism, on the other hand, is the creation of greater order in society, making it more "organic," that is, creating greater interrelation between all its parts. Industrialism, however, is said to sacrifice independence to cooperation. This makes it possible for the group to achieve results that no number of less well-organized individuals could achieve. Moreover, in such a society, no person is self-sufficient; hence, a form of exchange of products is necessary. Even agriculture, as it becomes more scientific, requires many things the farmer cannot produce.

With this increase in organization, the Russells claim, there is also necessarily an increase in government and a decrease in personal liberty, that is, liberty for a person to do whatever he or she desires. At the same time, however, the individual gains greater liberty from the necessities of life, from having to always **work**, this work being a barrier to any desire for knowledge, beauty, and enjoyment. In this sense, then, industrialization makes people freer from the bondage

of nature, freer to enjoy luxuries, **education**, literature, arts, good works, or **war**.

Primarily for economic reasons, there has already been a significant diffusion of civilization in industrial countries, they point out. Because people with some education are more efficient at work than those who cannot read or write, industrial countries have instituted compulsory universal education. Industrialization thus makes universal education both possible and necessary. Moreover, **democracy** usually accompanies the education of the working class; democracy becomes more possible and less deniable with universal education. (*See* DEMOCRACY AND CAPITALISM.) Industrialism was, in fact, a revolt against **aristocracy** and monarchy on the part of both capitalists and workers (*HWP* 677). But the increase in liberty produced by the rise of democracy that accompanied this revolt was soon negated by the rise of large industries that could not be controlled by democracy. This, the Russells think, is the major problem facing modern society today.

Other effects of industrialism are that, while there is an increase in **women's rights** as well as in the employment of women, plus a decrease in the size of families, large-scale war becomes the standard, accompanied by mass destruction, so that war becomes ever more horrible. Despite the increased horrors of war and decreased personal liberty due to industrialization, both Bertrand and Dora Russell view industrialization as progressive, as an improvement in human life. It must be pointed out, however, that nowhere in his writings does Bertrand Russell discuss or perceive the problems of pollution that industrialism brings in its wake (*PIC* 22–5). *See also* CAPITALISM, THE DANGERS OF; PROGRESS.

INEXPRESSIBILITY OF FACTS. In a series of lectures delivered in England in 1918 and published as "The Philosophy of Logical Atomism," Russell acknowledges **Ludwig Wittgenstein**'s role in persuading him that we cannot name **facts** but only assert or deny them. Russell's point is inexpressible, as he sees, for if we cannot name facts so as to **talk about** them, then neither can we name them so as to say that we cannot talk about them. Aware of the difficulty, Russell poses the issue more carefully in "Logical Atomism" (1924), saying that the appropriate **symbol** for what makes a proposition true or false is a sentence, not a name.

The distinction he adopts between asserting and naming is part of Russell's doctrine that there is no single meaning to the word 'meaning,' that meaning is not a single kind of relation between a word and what it means but infinitely many types of relations. (*See* 'MEANING,' THE MEANING OF.) It follows, he says, that we misuse **language** and speak nonsensically in attempting to name what can only be asserted or denied. It may not be obvious, for example, that talking about facts is nonsensical, but we only have the word 'fact' because we wrongly attempt to name what it is that underlies the truth of our assertions. The word 'fact,' along with words like 'complex,' 'object,' and 'relation,' is therefore inherently misleading. (*See* RELATIONS, SYMBOLS FOR.) Put another way, as it is in the work of **Frank P. Ramsey** and **Rudolf Carnap**, such categories are *formal* or *syntactical*; they describe the syntax or **grammar** of language rather than categories of things in the world. *See also* CONCEPTS *v* OBJECTS.

INFINITY. In the last third of the 19th century, **Georg Cantor** and Richard Dedekind finally produced a clear and mathematical **definition** and theory of infinity, clearing up puzzles about infinity that philosophers had been arguing over for several thousand years. Russell says Cantor's work is probably the greatest mathematical achievement of the late 19th and early 20th centuries (*ML* 50). It certainly was important for Russell's labor on the foundations of **mathematics**.

Russell's program of **logicism**, of defining all mathematical concepts in terms of logical concepts and then deriving all mathematical truths from logical truths, is commonly said to have been founded on the writings of **Gottlob Frege** and **Giuseppe Peano**, on their logic of relations, quantifiers, and the Fregean definition of '**number**.' But Russell emphasizes the importance to him of Cantor's work on set theory and infinity perhaps even more often than he does that of Frege and Peano.

In particular, it is Cantor and Dedekind's definition of infinity and Cantor's set-theoretic mathematics of infinity that are so important to Russell's logicism, for his program used set theory to prove theorems of mathematics for infinite classes of objects, and without Cantor he could not have done this. The value of Cantor's work was to "render

possible the creation of an exact science of the infinite," Russell says, and "it has at last given the means of treating with logical precision many studies which, until lately, were wrapped in fallacy and obscurity" (*ML* 52).

Besides defining infinity and developing its mathematics, Cantor removed the paradoxes and contradictions from the notion of infinity that had been associated with it since before the time of **Zeno** in ancient Greece. These paradoxes all pointed to the conclusion that infinity and continuity are impossible. With his definitions, Cantor showed that this is false, and this then made a precise mathematics of infinity possible (*ML* 45–56). Russell also credits Cantor with having developed a precise definition and theory of continuity for the first time, showing "that continuity, as he defined it, was the concept needed by mathematicians and physicists" (*HWP* 829).

INFINITY, AXIOM OF. In ***Principia Mathematica*, first edition** (1910–1913), in theorems where it is necessary, Russell assumes the **existence** of an infinite **number** of individuals as the antecedent of a conditional: for example, 'if there are infinitely many individuals, then . . . ' Hence he avoids taking it as an axiom, largely because he is aware that the assumption of an infinite number of a particular type of entity is in tension with the nonempirical or **a priori** status of logic, since an assertion about the number of things in existence must surely belong to one of the special **sciences** and not to logic. Moreover, it becomes difficult to see how *Principia* can rightly be called an exercise in **logicism**, one whose goal is to reduce mathematical concepts and truths to logical ones, if it must make an extra-logical assumption. At the same time, he needs some such assumption, for without an infinite number of individuals, he cannot show that every integer has a successor. This is because, like **Gottlob Frege**, Russell defines numbers as classes of classes of individuals, but unlike Frege, his **theory of types** requires that classes of individuals be distinct from classes of classes of individuals, and so on. As a result, for Russell, a particular number, for example 0, the empty class, cannot be counted as an individual and used to define its successor, 1, as the class containing as its sole member the empty class, and this used to define the successor of 1, and so on. He must instead assume that there are infinitely many individuals at the ground level. He abandons this assumption in ***Principia***

***Mathematica*, second edition** (1925–1927). *See also* NO-CLASSES THEORY; REDUCIBILITY, AXIOM OF.

INSTINCT *v* HABIT. Habits, for Russell as for **David Hume**, are like **inductive** reasoning—from the observance of events of type A being repeatedly followed by events of type B, one forms the habit of expecting B whenever one observes A. By touching a stove and finding it hot, we learn not to touch it or hot stoves generally. Instincts, on the other hand, are less like inductive reasoning or habits and more like spontaneous responses to stimuli. When you touch a hot stove, you immediately jerk your hand away in response to the pain. Habits are learned; instincts are not.

What is called 'instinct' in psychology is for all practical purposes the same as what is called 'intuition' in philosophy, according to Russell. And intuition, according to some philosophers, is a source of **knowledge**. In fact, these philosophers generally claim that what we know by intuition is vastly superior to what is acquired in a more pedestrian fashion by experience and inductive reason. Moral **truths**, for example, have commonly been claimed known by moral intuition. Like **John Stuart Mill** before him, Russell is adamantly opposed to what he calls the 'mysticism' of this theory of intuition. In Russell's own time, **Henri Bergson** was one the most influential proponents of intuitive truth, and Russell wrote regularly against Bergson's philosophy and especially against Bergson's idea of intuitive knowledge. Later, Russell attacks the similar theory of instincts propounded by D. H. Lawrence. Instinct or intuition, he says, does not provide us any knowledge at all. In Russell's writings on instinct, he is not, therefore, merely arguing for technical points concerning animal behavior; his targets are also the theories of people like Bergson and Lawrence.

Russell argues that instincts are not fixed but can be augmented and improved by experience, as when older stags are less easily lured with hunters' calls than young stags are. However, Russell acknowledges the complexity of sorting out instincts from learned habits by pointing out that much learning is based on instincts for learning, as in the case of **language** acquisition, beginning in children's instinctive imitation of sounds (*OP* 64, *AM* 21–31).

Human activity is motivated either by instinct, mind, or spirit, Russell says in 1916, in *Principles of Social Reconstruction*. While

instincts produce the feelings that "express the animal nature" in humans, the life of the mind is based on impersonal thought, on an **impulse** of curiosity, a concern with objects on their own account. And the life of the spirit, Russell says, is concerned with impersonal feelings, for example, feeling the same interest in the joys or sorrows of others as in our own. "Instinct, mind and spirit are all essential to a full life," he says, but for such a life, they must be "developed in coordination and intimately blended in a single harmonious whole" (*PSR* 142–3).

INTELLIGENCE. In 1929, Russell thinks there is no evidence to decide whether intelligence is mainly innate or learned, but that "while anyone can be ruined by a bad **education**, and in fact almost everyone is, only people with certain native aptitudes can achieve great excellence in various directions" (*MM* 255). Though many progressive educators believe that the proper way to develop a child's intelligence is to give them a maximum amount of freedom, Russell believes that to develop intelligence, discipline is necessary (*IPI* 142–4). In most cases, this must be accomplished by rewards and punishments. However, while discipline is necessary to develop intelligence, Russell thinks that freedom of thought is also essential for intelligent thought. Thus, by rewards and punishments, a child must be trained to think freely. This especially means that a person should learn not to **fear** the disapproval of what Russell most commonly calls 'the **herd**' (*ESO* 57, 88). This freedom of thought expresses itself in a general way as a refusal to accept dogmas of any sort, including **skepticism** as an absolute and certain philosophy. One must instead learn to live with uncertainty. Living with uncertainty is the highest mark of an intelligent person (*UE* 27).

Russell defends the "great man" theory in history: that history has taken the direction it has because of the actions and ideas of a few great individuals. This view contrasts, for example, with the theory that history is created by impersonal forces, that if particular great figures had not existed, history would not develop very differently, since others would inevitably have taken their place. Against this, Russell believes in particular that all the great achievements of culture, including the **sciences**, are due to the efforts of just a few great intellectuals. It is intelligence, he thinks, that has shaped our cultural history. *See also* EUGENICS; PROGRESS.

INTENSIONAL FUNCTIONS. *See* EXTENSIONAL *v* INTENSIONAL FUNCTIONS.

INTENTIONALITY OF THOUGHT. According to the doctrine of intentionality, what is unique to thought—to **consciousness**—is that we cannot think without thinking of something, without being directed to something, without thought having some object. This doctrine, which also appears in various ways in the work of continental philosophers like Franz Brentano, **Alexius Meinong**, and Edmund Husserl, is crucial to Russell's theory of **acquaintance** as a relation between a mind and some object. Since Russell's work belongs in the Anglo-American or analytic tradition, the concept of intentionality constitutes a point at which the intellectual divide between continental and analytic philosophy narrows. *See also* MENTAL ACTS AND CONTENTS; SUBJECT OF CONSCIOUSNESS *or* SELF.

INTERNATIONAL WAR CRIMES TRIBUNAL. Russell, who followed the **war** in Vietnam from the earliest years of American engagement there, formed the International War Crimes Tribunal in 1966 as a watchdog organization whose aim was to raise pertinent questions about foreign policy in Vietnam in a public way and thereby prevent the occurrence of atrocities, even if not empowered to impose sanctions. The tribunal received funding from the Bertrand Russell Peace Foundation, founded by Russell in 1963. The tribunal, which was composed of luminaries from a number of fields, including the philosopher Jean Paul Sartre, took place in Sweden in 1966 and Denmark in 1967. It invited evidence from all parties and raised questions concerning acts of **aggression**, experimentation with new or forbidden weapons, the targeting of civilians, the torture of prisoners, the creation of labor camps, and acts of genocide. It has come to be a model for other tribunals, most recently the Iraq War Crimes Tribunal. *See also* PUGWASH CONFERENCE.

INTROSPECTION. In his early work, Russell often employs introspection (sometimes called "inspection") to arrive at conclusions about the nature of mind. With others at the time, he assumes that introspection is a legitimate method in philosophical and psychological investigations. Adopting the method of logical **construction** in and

after *Our Knowledge of the External World* (1914)—the strategy of using logic to arrive at classes of **sense data** and **universals** that have the properties previously attributed to inferred entities (e.g., material objects)—does not lead Russell to abandon introspection. Rather, he employs the two methods in tandem, and a failure to discover a supposed **mental act** or entity in introspection sometimes leads him to devise a logical construction possessing the necessary properties.

In his **neutral monist** period, Russell defends introspection against **behaviorism**. For example, in *Analysis of Mind* (1921), after considering and rejecting various alternatives, Russell defines what is introspected as what could not, even theoretically, be observed by another. Introspection for him thus involves sensations and **images**. Though images are **private** in a way sensations are not, and though they and sensations have different kinds of causes, Russell does not believe images to be sufficiently different from sensations as to warrant treating introspection as a source of **knowledge** just for images. *See also* MATTER, THE NATURE OF; WATSON, JOHN B.

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JAMES, WILLIAM (1842–1910). William James's writings in *Principles of Psychology* (1890), *Varieties of Religious Experience* (1902), *Essays on Radical Empiricism* (1907), and *Pragmatism* (1912) spell out the philosophical position called 'pragmatism,' which was James's attempt to explain **belief** without reference to mind or **consciousness** and to give a theory of **truth** according to which we judge a belief to be true by its consequences, that is, if it assists us in living.

Russell's conception of what is desirable in a theory of truth develops in part as a rejection of the pragmatist account, which he says (in the 1908 "Transatlantic Truth") fails to explain how truth is based on **fact** and differs from falsity, and gives only a criterion of truth but does not say what it is. In contrast, he values his own **multiple relation theory** of judgment for its ability to explain what truth or falsity actually is. As Russell turns to **neutral monism** in the late 1910s and early 1920s, his antipathy toward certain aspects of James's view of belief and **knowledge**, if not toward his theory of truth, begins

to diminish. *See also* MIND/MATTER DUALISM; SUBJECT OF CONSCIOUSNESS *or* SELF.

JEALOUSY. Love and jealousy are both **instinctive** feelings, Russell claims. However, while **religion** has made jealousy a virtue that the community should support, it finds love "at best excusable." Official religious approval of jealousy, he argues, aids in keeping women virtuous, which is necessary for maintaining the system of monogamous patriarchal families, for otherwise paternity would be uncertain and the patriarchal family impossible. The father's love for his children, the love of **power**, and the desire to survive death all reinforce the institution of monogamous patriarchy, thereby reinforcing the importance of jealousy, since it is useful for maintaining the system. Russell notes that only with the introduction of the patriarchal system did men begin to demand that their brides be virgins. In matriarchal societies, Russell claims, women "sow their wild oats as freely as men." He bases these claims primarily on the writings of Bronislaw Malinowski.

It is not clear how well the patriarchal system will survive with the emancipation of women. Russell predicts that women will tend to a system allowing freedom to both sexes rather than one imposing on men the restrictions previously imposed only on women. In any case, he predicts that without the importance of jealousy to maintaining the patriarchal system, and without the support of religion and the community, jealousy would not be nearly as strong as we experience it in modern society.

Russell also accounts for the general attitude of disgust toward **sexual** matters that one finds in many philosophies and religions, and especially in **Christianity**, as a response to jealousy. Whenever jealousy is aroused, sexual acts appear disgusting and sexual passions seem loathsome. He identifies what he calls "sexual fatigue" as another cause of this disgust. Sexual fatigue occurs particularly among women, especially among married women and prostitutes, who cannot refuse to have sex with men. Jealousy and sexual fatigue together can be a powerful force of antisexual passion, Russell claims. He suspects that there were other causes of the rise of antisexual feelings in the ancient world—for he does not think they occurred before the rise of **civilization**—but he says that he does not know what they are;

he speculates that perhaps the cause was something as simple as the transition to a sedentary life with the invention of agriculture. In any case, it was during a decadent and morbid period of ancient civilization, when it was under the sway of philosophies of sexual disgust, that Christian **ethics** were first formulated, and more vigorous men and women of later periods have had to deal with this unfortunate fact.

The institution of **marriage** was developed in ancient times, Russell points out, and it is probably not the best system for modern times. In fact, he argues, it is, in its present state (1929), the cause of much unhappiness. For example, it is harder to insist on faithfulness for both partners in a modern marriage, and yet, when mutual faithfulness is not demanded by both parties in a modern marriage, the instinct of jealousy, which survives from ancient times where it had a more significant function than it has today, proves fatal to the persistence of intimacy between the partners. However, Russell argues, even though jealousy is an instinctive emotion, it can be controlled if it is recognized as bad rather than being extolled as an expression of "just moral indignation." Thus, he claims, infidelity should not form a barrier to subsequent **happiness** for a couple. Russell therefore proposes a system of marriage where adultery is accepted but jealousy is not. This will involve controlling jealousy rather than fidelity, for "the good life cannot be lived without self-control, but it is better to control a restrictive and hostile emotion such as jealousy, rather than a generous and expansive emotion such as love" (*MM* 8, 15, 26, 39–43, 140–3, 231, 239). *See also* AFFECTION; DIVORCE; GOOD LIFE; *MARRIAGE AND MORALS*; WOMEN'S RIGHTS.

JESUS OF NAZARETH (7 BCE–26 CE). Russell defines a **Christian** as one who believes in **God** and **immortality**, and who believes that Jesus was divine, or at least the best and wisest of humans. In addition to not believing in God, immortality, or the divinity of Jesus, Russell did not think that Jesus was the best or wisest of us, though he agreed with many of his precepts, especially that of turning the other cheek (Russell was a famous **pacifist**), of judging not, lest ye be judged, of giving to those who ask for aid, and of selling all that one has and giving to the poor. Indeed, Russell thinks that Christians seldom take these maxims seriously enough.

Russell nevertheless thinks there are many defects in Jesus' ideas and practices. He points out that numerous passages in the Gospels indicate that Jesus believed his second coming would occur during the lifetimes of his contemporaries. The early Christians believed this too, and prepared for it. Russell points out that this belief was neither true nor wise. Apart from this lack of wisdom about physical reality, Russell points to what he considers several moral defects in Jesus. The first is that Jesus believed in hell. Russell believes that any one who believes in everlasting punishment is not really humane, and he also thinks that the emphasis on hell as punishment for **sin** introduced considerable cruelty to the world. Not only do the Gospels make clear that Jesus believed in everlasting punishment, but they also make clear that he was prone to vindictive fury against those who would not listen to him, a quality perhaps common in preachers that detracts from their excellence. Stories of petty vindictiveness—withering the fig tree, or putting the devil into the Gadarene swine and driving them into the sea—abound in the Bible. Russell points out that Socrates never exhibited such vindictiveness against those who would not listen to him. He therefore puts Socrates (and Buddha) above Jesus as being wiser and more virtuous (*WNC* 14–9). *See also* RELIGION.

JUSTIFIABLE WARS. Russell was a conditional, or relative, **pacifist**. In writing on the subject, he generally opposes **war** and believes people should work to abolish it. However, he does not believe that all wars are wrong. Some are justified. Russell distinguishes between four kinds of wars: wars of **colonization**, wars of principle, wars of self-defense, and wars of prestige. He believes that past wars of colonization were justified when they clearly helped spread **civilization**, but that no present wars of colonization can be justified in this way. With this qualification, he thinks that the first and second kind of wars can be justified, the third seldom, except against adversaries of an inferior civilization, and the fourth never.

Wars of principle, Russell says, are those where at least one side is "honestly convinced that the progress of humankind depends on the adoption of certain beliefs" that can only be defended by warfare, and that they are in fact correct in this **belief** (*JWT* 30). For example, a nation practicing religious tolerance, he says, could be

justified in resisting a persecuting nation that holds a different creed. The English and American civil wars are other examples of justified wars of principle. However, such wars are much less often justified than most warring parties believe. It is rare, he says, that principles of genuine value to humanity can be propagated only by military force. Another fact that makes it difficult to justify wars of principle is that bad principles tend to come to the fore during war, stifling any of the good principles being defended. For example, those fighting for religious toleration are likely to persecute citizens who do not accept this; similarly, those fighting for **democracy** tend to exclude from **power** those who do not support the war.

Wars of self-defense, Russell believes, are almost universally viewed as being justified, and every war, he says, is claimed to be one of self-defense. "Every strategist assures us that the true defence is offence; every great nation believes that its own overwhelming strength is the only possible guarantee of the world's peace and can only be secured by the defeat of other nations" (*JWT* 33). However, Russell believes that wars of self-defense are really seldom justified, at least not in conflicts between civilized nations. He believes that the principle of nonresistance would prevent a civilized nation from destroying another civilized nation, or even denying it self-government, if the latter offered no resistance to it but was resolute in not acquiescing to its demands. Nonresistance, then, is a sufficient means of repelling hostile **aggression** by civilized nations, so that more forceful means of self-defense in such situations would be unwarranted.

Russell believes that wars of prestige are never justified. World War I, for example, which began over demands for Austrian participation or nonparticipation in the trial of the Serbians for the Sarajevo murders, was a war of prestige before it broke out, with nothing important at stake. "Men desire the sense of triumph," he says, "and fear the sense of humiliation which they would have in yielding to the demands of another nation. Rather than forgo the triumph, rather than endure the humiliation, they are willing to inflict upon the world all those disasters which it is now suffering and all that exhaustion and impoverishment which it must long continue to suffer" (*JWT* 35). In other words, it would not have affected the lives of the Balkan people to yield to Austrian demands or those of the Austrians to accept the denial of those demands; rather, it was the vanity that people call

"honor" that led to the disaster of World War I (*JWT* 19–37). *See also* IMPERIALISM.

– K –

KANT, IMMANUEL (1724–1804). A German philosopher who critically examined the nature and extent of reason, Immanuel Kant argues (e.g., in the 1781 *Critique of Pure Reason*) against the view that all **propositions** are either uninformative "**analytic**" **truths** as in 'bachelors are unmarried,' which are true wholly by virtue of the meanings of their terms, or "synthetic" statements of matters of fact, such as 'swans are white.' Kant agrees that propositions of the former kind give no information about the world, while propositions of the latter kind give such information. He also agrees that we can, independently of experience (i.e., **a priori**), know statements of the former type to be true, while our **knowledge** of the truth of the latter kind is based on experience (i.e., a posteriori). He denies, however, that all propositions fall into one or the other of these types. There are propositions, he says, that give information about the world of experience that are known to be true independently of experience. Kant thus holds that there are propositions that are both synthetic and a priori.

In particular, Kant believes that **space and time** are forms of intuition that our mind imposes on all sense experience, so that we experience all objects in space and time (and so that our very **perception** of space and time is a priori, but synthetic because of the world as we experience it). In addition, he believes that the mind possesses built-in conceptual categories of space and time so that **beliefs** about space and time based on our experiences are likewise a priori, but synthetic, since about the world of experience. Certain beliefs, such as that every event has a cause, organize the experience that forms our beliefs, and thus what they express is information about what we experience. But as they concern the very means by which we understand our experience at all, they are known to be true independently of experience. Hence, though synthetic, they are also a priori.

Propositions of geometry, for example, express truths about space, according to Kant, and propositions of arithmetic address succession and therefore temporality. These propositions therefore bear

on experience. Their truth is not derived from experience, but from our categories of understanding the world, which must be assumed if we are to have any beliefs about the world at all. In defending the existence of synthetic a priori knowledge, Kant nevertheless believes that propositions of logic are analytic a priori, that is, true because of the words combined in them and not because of any relation to experience.

In adopting the view that **mathematics** reduces to logic (**logicism**), Russell agrees with Kant that mathematics is synthetic a priori, and he takes this to support the view that Kant is wrong about the analyticity of logic. For if mathematics is synthetic a priori, and logic reduces to mathematics, then logic must be synthetic a priori as well. Apart from this, Russell is in general unsympathetic to Kant's doctrines. For example, Russell accuses the Kantian philosopher of misapplied psychology. (*See* EPISTEMOLOGY, PSYCHOLOGY, AND LOGIC.) According to Russell, Kant's view implies that a truth of mathematics is true simply because we happen to be so made that they appear true to us. But mathematics (and logic) must really be universally and necessarily true about the world, not merely accidentally true, for Russell, and it must be independent of the mind. In general, **G. E. Moore** and Russell repudiate the Kantian or **idealist** view of the mind as somehow conditioning truth about the world. Russell opposes idealism and defends the objectivity of knowledge by insisting that the mind is passive toward what it experiences, rather than constitutive of that experience. *See also* HUME, DAVID; KANT'S MORAL PHILOSOPHY.

KANT'S MORAL PHILOSOPHY. Immanuel Kant's moral philosophy rests on one principle, his categorical imperative. From the categorical imperative, Kant believes that all other moral principles can be derived. The categorical imperative has two basic versions (a third minor variant will not be discussed here). (1) Only accept those moral rules that you could accept if everybody acted on them (i.e., ask, "What if everybody did it?"). (2) Never treat another person merely as a means to your own ends, but respect the person's desire to achieve his or her own ends.

Given either version, it is impossible, Kant thought, to accept immoral principles. For example, suicide is wrong, he argues, because if

people ended their lives out of self-love (i.e., killed themselves to end their suffering), the principle supposedly behind their action would be contradictory, yet reason cannot accept a contradiction. Similarly, it is immoral to promise to pay back a loan knowing you will not, because no one would believe promises if everyone broke them; hence, the principle supposed to lie behind deliberate promise breaking is also inconsistent and impossible to accept.

Russell's chief criticism of Kant's categorical imperative is that it is a necessary but not sufficient criterion of morality. That is, it only says 'do not accept principles that are ruled out by the categorical imperative,' which is thus a necessary condition for knowing what to do, but it does not tell us which of the remaining maxims we should follow—it does not give a sufficient reason for acting morally. More than this, Russell claims that to arrive at a sufficient reason for acting morally, one must consider the effects of an action and perform those that produce the most desirable effects. Russell is a consequentialist who believes that actions should be judged right or wrong on the basis of their consequences. (*See* BENTHAM, JEREMY.) But as Kant denies that moral principles are those with the most desirable ends, he has nothing concrete to say about picking moral rules.

Russell further criticizes the second version of Kant's categorical imperative (treat persons as ends, not merely as means to your own end) for not being able to tell you what to do when interests collide. For example, in politics it is impossible to respect all the goals of all the people: some goals must be sacrificed to others. He then points out that if the second version of the categorical imperative is interpreted to mean that all people should be treated as equals rather than as saying absolutely that every person's goals must be respected, this not only resolves the problem but also then gives one an **ethical** basis for **democracy**, though Kant does not seem to be a particularly strong advocate of democracy. An advocate of **world government**, Russell greatly admires Kant's proposal in *Perpetual Peace* for a federation of nations as a means for abolishing **war** (*HWP* 710–2). *See also* PACIFISM.

KNOWLEDGE, DEFINITION OF. In the ***Problems of Philosophy*** (1912), Russell defines knowledge as true **belief** validly inferred from known premises. In current terminology, his definition says

that knowledge is justified true belief. Russell's discussion of knowledge thus anticipates current debates in philosophy as to whether knowledge is justified true belief, debates that began with Edmund Gettier's 1963 paper "Is Knowledge Justified True Belief?" (*Analysis* 23:121–3). Gettier had written his 1961 dissertation on Russell's theories of belief and doubt.

Russell points out that a person might have a true belief—for example, that the name of the previous British prime minister begins with a 'B'—and yet not be said to *know* it, if the belief was validly inferred from a **false belief**—for example, from the belief that the previous prime minister was George Bush, not Tony Blair. (In his 1963 paper, Gettier raises essentially the same problem.) For Russell, this shows that it is not enough even to say that knowledge is true belief validly inferred from true premises, for a person might validly infer additional beliefs from the true belief that the name of the previous prime minister begins with 'B,' and yet we would not want to call that knowledge. He resolves this problem by saying that the true belief must not only be justified and justified on the basis of true premises, but justified on the basis of premises *known* to be true.

But what are "known premises"? For Russell, premises are known to be true either when they are based on still other knowledge or else are known intuitively and with **certainty**, as are judgments based on **perception** and the principles of logic. These self-evident beliefs, he says, are in a certain sense infallible. Yet Russell also thinks this **definition** is too narrow, for it is often fair to say that we know something if we know premises from which it can be validly inferred, even if we do not carry out the inference ourselves every time (*PP* 111–8, 131–40, *HK* 170–1).

In Russell's late work, 'knowledge' is not a precise concept: it includes everything from animal habits formed on the basis of experience to mathematical **proofs** about imaginary **numbers** (*HK* 13, 113). Moreover, what counts as knowledge verges by degrees from probable opinion, and the line dividing them is not clear (*PP* 134). *See also* ACQUAINTANCE; INDUCTION; KNOWLEDGE OF OBJECTS *v* KNOWLEDGE OF TRUTHS.

KNOWLEDGE OF OBJECTS *v* KNOWLEDGE OF TRUTHS. In ***Problems of Philosophy*** (1912), Russell distinguishes between

knowledge of objects and knowledge of **truths**. By knowledge of things, Russell means the **acquaintance** we have with what is in our present experience. This knowledge, which is the kind we have of **sense data** (and **universals**), tells us that something (e.g., a patch of color) exists, but nothing else. Yet acquaintance is **certain**, whereas the kind of knowledge we possess in propositions is not, since propositions (**beliefs** or judgments that such and such is the case) can be **false** as well as true.

Russell draws the distinction in the context of arguing that it is possible to judge that something exists that is outside our present experience. He argues that besides knowledge of things, we have knowledge by means of **descriptions**, as when we know there is a thing called 'the father of Jones' by virtue of acquaintance with Jones, the universal *paternity*, and the fact that every person has a father. We thus have knowledge that passes beyond the limits of present experience and can form judgments, such as that the father of Jones exists, without ever having been acquainted with the man himself.

In these cases, we describe objects and judge facts that lie outside our experience by means of terms within our experience. Following "On Denoting" (1905), Russell treats even what appear to be ordinary names, like George Washington, as shorthand for what are really sets of disguised descriptions on a par with 'the father of Jones,' the particularities of which vary from person to person. Similarly, the **words** in the description are themselves often revealed on **analysis** to be shorthand for further descriptions, which ultimately reduce to words whose meanings are objects known by acquaintance. *See also* MEANING AS ENTITIES; MIND/MATTER DUALISM; SKEPTICISM.

KNOWLEDGE OF THE EXTERNAL WORLD. In his 1914 study *Our Knowledge of the External World*, Russell assumes that **knowledge** is ultimately grounded in sense experience (and **introspection**) as well as in **a priori** logical **truths**. Indeed, these two kinds of data—what we immediately experience and our general, logical knowledge—constitute the only knowledge we possess with **certainty**. Such knowledge is very limited, since neither the present testimony of the senses nor any grasp on indemonstrable truths

suffices, for example, for knowledge of ordinary objects, which we merely infer to be the causes of our sensations. Indeed, the **empiricist** emphasis on experience as the basis of knowledge notoriously opens the way to **skepticism**, the doubt whether we have any knowledge of the causes of our experiences, and thus to various forms of **idealism**. By introducing logical **constructions** from **sense data** in place of suppositious inferred entities, where the constructions do the work that the objects do in our scientific theories, Russell hopes to show that we are justified in claiming genuine knowledge on the basis of these constructions from certain knowledge.

In demonstrating the procedure that yields constructions, Russell first argues that each person's experience takes place within a privileged perspective that defines a **space** similar but not identical to any space occupied by, or capable of being occupied by, another. The object in question—a coin, in his example—is then identified with the **class** of classes of all such actual and possible perspectives, which exists in what Russell calls public space. His construction of such ordinary objects is extended to the entities of physics—to material points and temporal instants—using, for example, the relation of *simultaneity* to define an instant as a set of all and only simultaneous events.

Russell's study of our knowledge of the world is not confined to the 1914 text but appears in "The Relation of Sense-Data to Physics" (1914), "The Ultimate Constituents of Matter" (1915), *Analysis of Mind* (1921), *Analysis of Matter* (1927), and *Human Knowledge* (1948). The details of Russell's constructions change as he adjusts to changes in physics (most notably to Albert Einstein's theory of relativity) as well as to changes in his own theory of mind (following his adoption of **neutral monism** in *Analysis of Mind*), but his attempt to explicate knowledge in terms of the data of our experience remains constant.

In *Analysis of Matter*, Russell argues that there is a one–one relation between the structure of sensations and the structure of the external world. If this is the case, then what we know about the world is its structure. In 1928, M. H. A. Newman noted (in "Mr. Russell's Causal Theory of Perception," *Mind*, n.s. 37, no. 146) that such knowledge of the world is a trivial logical property that any set of the right number of things defined under the appropriate relation can

satisfy, and since what constitutes knowledge of the world cannot be purely structural, a structuralist theory of knowledge is vacuous. Russell subsequently conceded the point, noting that some terms (those concerning space and time) must be taken as primitives instead of structurally defined. *See also* LOGICAL POSITIVISM.

– L –

LANGUAGE. In *My Philosophical Development* (1955), Russell writes that until around 1917 he had always thought of language, or rather, the relation of language to **facts**, as something that could be ignored. Later in the same text, he explains that around 1918 he began to be concerned with the relation of **words and sentences** to things that constitutes meaning.

His observation that he began to examine language in 1917 or 1918 may occasion surprise if we think of earlier texts like "On Denoting" (1905) as work on language, or at least as work on some linguistic phrases and their relation to the world. Yet in these earlier years, even when he looks at certain problem cases, Russell does not bother to examine the nature of words and sentences as facts on a par with other physical facts; rather, he ignores the general nature of language. He does, to be sure, have a theory of **meanings as entities**, but while this provides objects as the meanings of terms, it does not explain how words as physical objects themselves succeed in being meaningful entities. It is, as he says, only in 1918 and in the early 1920s that he begins thinking about the nature of language itself and asking what the physiological, psychological, **behavioral**, and formal bases are of the phenomenon we call language. (*See* 'MEANING,' THE MEANING OF; SYMBOLS, THEORY OF.)

In turning to study the nature of language, Russell is concerned with it not only as a physical phenomenon, but as a public one as well, arguing that language is social (and so public) both in its origins and its main functions. True, we do use language for **private** purposes or in private ways—a person may keep a diary meant to be kept hidden from everyone else, or use language in solitary thinking—but language is clearly used principally for communication. Hence, it must be public: everyone must know the meanings of its terms and

its grammatical rules. According to Russell's theory of language, meanings are psychological, implying that the meaning of a word is private, consisting of all the **beliefs** and experiences each individual associates with the word. (*See* MEANING, CAUSAL THEORY OF.) But this does not, he thinks, impede the public function of language, because there is enough similarity in our private associations for competent speakers to be able to understand one another.

Education, Russell continues, tends to depersonalize language by teaching everyone common verbal **definitions** of terms, such as "Water is H_2O," and as our instruction progresses, we come to manipulate words and sentences correctly according to the rules we have learned without much reflection on their meaning. We thereby become more and more completely public characters even as we lose the ability to use language to express emotion. In this case, for example, we can no longer hope to be poets. Pure **mathematics**, Russell says, is capable of being expressed entirely in completely public and impersonal concepts (*HK* 17–9). *See also* LOGICALLY PERFECT LANGUAGE; VAGUENESS.

LANGUAGES, HIERARCHY OF. *See* OBJECT LANGUAGE *v* META-LANGUAGE.

LAW. Russell points out that law is often thought to be an alternative to force, but this, he says, is a mistake. Law is, rather, "a way of organizing and concentrating force and transferring it from individuals to groups. . . . It diminishes the opportunities for individual violence, and substitutes for the personal interest of a single person the average interest of the group which holds power. . . . Moreover, as a rule, the law will concede some rights even to those who do not belong to the dominant group, since otherwise, there is danger of rebellion" (*NH* 82–3).

He further notes that in its decline, the Roman Empire became fragmented into many small territories ruled by petty kings constantly at **war**, and that throughout the Dark Ages and Middle Ages, lawlessness was equally rampant, with the result that almost everyone worshipped law, seeing it to be the first requirement of **progress**. Gradually, law and order was restored and the state increased in size, with a corresponding increase in wealth and **power**, until the need

for law and order was for all practical purposes met and liberty was the central concern of most thinkers (*AI* 17–20). However, nothing like the laws of a nation exists even today to govern international relations between states. And yet without international laws enforceable by a **world government**, Russell argues, **anarchy** and war will continue to reign between states just as in a country without law. For this reason, and because the weapons of war become more and more destructive each year, he believes there is an urgent need for world government and international law (*JWT* 93).

The power of law, Russell says, lies in the coercive power of the state. In civilized countries, coercive power, with some exceptions, is the prerogative of the state, and the law is the set of rules according to which it exercises this prerogative in dealing with its citizens. The law uses punishment not only as a form of direct physical power to make some actions impossible, but also as a form of inducement; for example, fines do not make actions impossible but only unattractive. What Russell thinks is most important about the law is that it is nearly powerless when it is not supported by public opinion. The effectiveness of law depends more on sentiment and opinion than on the powers of the police (*P* 37–8).

LEIBNIZ, GOTTFRIED W. (1646–1716). A German intellectual, Gottfried Wilhelm Leibniz is known in **mathematics** for discovering the calculus independently of Isaac Newton and in philosophy for defending philosophical rationalism, that is, for believing, along with René Descartes and Baruch Spinoza, that we arrive at genuine **knowledge** of the world by means of reason, and not merely, as is held in **empiricism**, by means of sense experience or internal experience. In his metaphysics, Leibniz defends a kind of **atomism** with a theory of simple self-sufficient entities or *monads*. Though these do not interact, **God** has so orchestrated their existence that when what might, if they interacted, be called a cause occurs in one monad, what might be called an effect occurs in others and in the right manner, at the right time. (*See* CAUSALITY.) Leibniz's equally famous view is that God has chosen this as the best possible world.

Though Leibniz's views are vulnerable to many objections, it should be noted that he at least hoped by means of them to overcome the difficulties besetting other systems, such as those besetting Descartes's

mind/matter dualism. Besides his metaphysics, Leibniz's approach to problems of identity and individuation is also of philosophical interest. In contemporary philosophical circles, he is less known for his metaphysics than for expressing such principles as the identity of indiscernibles, that is, no two objects have the exactly the same properties. Put another way, if x and y have all the same properties, then $x = y$, that is, they are the same object. (*See* BUNDLE THEORY OF OBJECTS.)

In *A Critical Exposition of the Philosophy of Leibniz* (1900), Russell argues that Leibniz's metaphysical views are flawed because his conception is grounded on a false (or at least insufficient) subject-predicate logic, that is, on **Aristotelian logic**. *See also* GRAMMAR AND ANALYSIS; TRADITIONAL PHILOSOPHY.

LIAR PARADOX. The liar paradox (or Epimenides' paradox) is of great antiquity, originating in the remark by the Cretan philosopher Epimenides that Cretans always tell lies. The contradiction begins to appear in Russell's unpublished work in 1905, where it sometimes is phrased in terms of **propositions** and sometimes in terms of **beliefs**. In one typical formulation in terms of propositions, the liar paradox says 'I am lying,' or 'there is a proposition p, which I now assert and that p is **false**.' If we use the quantifier expression '$(\exists p)$' for 'there is a proposition p such that' and '$\phi\hat{x}$' for the **propositional function** 'is asserted by me' and 'p' as a variable ranging over propositions, then in symbols the sentence is '$(\exists p)(\phi p \ \& \sim p)$.' In this early work, Russell sometimes also attempts to resolve the paradox by eliminating false or **negative** or even all propositions. (*See* MULTIPLE RELATION THEORY OF JUDGMENT; NO-CLASSES THEORY.)

Russell's first published attempt to resolve this semantic paradox occurs in "On *Insolubilia*" (1906), where it is imbedded in a version of his substitutional theory, which attempts to prevent logical contradictions like **Russell's paradox** by showing that the substitution of entities in propositions can do everything hitherto required of propositional functions, **classes**, and **relations**, which are thus logical fictions. (*See* DESCRIPTIONS, THEORY OF.) In this paper, following **Henri Poincaré**, Russell accepts the **vicious circle principle**, formulating it as the rule that 'whatever contains an apparent variable cannot be a possible value of that variable.' (*See* IMPREDICATIVE DEFINITIONS AND PROPERTIES.) To solve the liar paradox,

Russell further claims that a proposition is what is affirmed by a statement containing no apparent variables and cannot itself contain any apparent variables. It follows that 'there is a proposition *p*, which I now assert and that *p* is false' is not paradoxical but false, because it does not state a proposition. Moreover, as there is no way of talking about all statements, the liar paradox cannot be interpreted in terms of statements.

As Russell shifts away from a substitutional approach to paradoxes toward his **ramified theory of types**, his solution to the liar paradox also changes. In "Mathematical Logic as Based on the Theory of Types" (1908), Russell interprets the liar paradox as 'it is not true for all propositions *p* that if I affirm *p*, then *p* is true.' This sentence contains a variable '*p*' that takes propositions as **values**. The paradoxical interpretation of the sentence arises if we take what it expresses (a proposition) to be a value of the variable that it contains, since then what it says is false, though what it says is true, since it says that it is false. The paradox vanishes if what contains a variable is a higher type than the values of the variable it contains. Of course, the ramified theory of types therefore prohibits talking about all propositions, which are, Russell says, illegitimate totalities. *See also* RAMSEY, FRANK P.

LOGIC, ARISTOTELIAN. Russell asserts that **Aristotle**'s influence, which was great in many fields, was greatest in logic. Aristotle was the recognized authority in logic from his own time in the fourth century BCE until the 19th century. However, Russell does not view Aristotle's great and prolonged influence in a positive light. While Aristotle made a significant advance in logic over his predecessors, it was also "a dead end," says Russell, "followed by over two thousand years of stagnation." Furthermore, Russell believes that since the advent of modern logic, which he more than anyone else helped to create, there is no good reason anymore to study Aristotle's logic. Aristotle's formal theory of the syllogism, Russell says, "is unimportant. Any person in the present day who wishes to learn logic will be wasting his time if he reads Aristotle or any of his disciples."

Aristotle's most important contribution to logic, Russell says, is the doctrine of the syllogism (a deductive argument such as: no fish are rational; all sharks are fish; therefore, no sharks are rational).

But there are formal defects in Aristotle's syllogistic logic. First, Aristotle does not distinguish between a statement like 'all humans are mortals' and 'Socrates is a human.' Modern logic sharply distinguishes between the two, and modern logic is correct. Also, Aristotle believed that all statements of the form 'all A are B' implied statements of the form 'some A are B,' but this is not the case when no A's exist. If Aristotle were right, we could correctly infer from 'all golden mountains are mountains' and 'all golden mountains are golden,' both of which are true, to 'some mountains are golden,' which is false. Russell declares that this error was the source of much bad philosophy. Given these two errors, it was then assumed that 'all men' was the subject of 'all men are mortals' in the same way that 'Socrates' was the subject in 'Socrates is a mortal,' so that there must in some sense be an object denoted by 'all men' just as there is one denoted by 'Socrates.' This led Aristotle to say that a species is a substance and led others to accept the **existence** of all sorts of abstract entities.

According to Russell, Aristotle's reputation led to an overestimation of the syllogism, which is just one of many types of deductive arguments and a not very significant one at that. For example, it is inadequate to account for the logic of **mathematics**, and in fact seldom occurs in mathematics. Similarly, Aristotle's great reputation and influence among ancient and medieval philosophers led to an overestimation of the importance of deductive logic to **knowledge**. Only with the rise of modern **science** and modern philosophy did people come to recognize that what is important to knowledge is **inductive**, not deductive, logic. Arguably, however, Russell's own influence on 20th-century deductive logic and philosophy led analytic philosophers and philosophers of science following him to overestimate the importance of deductive logic for understanding both science and commonsense beliefs (*HWP* 195–202). *See also* GRAMMAR AND ANALYSIS; TRADITIONAL PHILOSOPHY.

LOGIC AS UNIVERSAL *v* LOGIC AS SCHEMATIC. According to the modern schematic conception, logic, taken as an object of investigation, is a formalism consisting of schemata—that is, meaningless signs—that can be interpreted in various ways and may be true under some or all interpretations. In this view, for example,

a logical truth is a statement that is true for all possible interpretations. Notions like 'true in an interpretation'—or the crucial 'true in all interpretations'—are meta-theoretic, that is, they belong not to the formalism but to the **language** we use to talk about the formalism. Hence the schematic conception of logic assumes the **object language versus meta-language** (or theory versus meta-theory) distinction, restricting the logical schemata themselves to the object language and formulating notions about them like 'true in a given formal language' in the meta-language. By permitting a perspective on logic from outside it, the schematic approach is able to introduce and answer in the meta-language such questions as whether a formal language contains any inconsistencies and whether the language is able to express everything we want it to express and nothing we do not want it to express.

In contrast, in a universalist conception, logic consists not of uninterpreted signs true for all interpretations but of **logical propositions** or theorems that have only one interpretation and are true in it. In such a view, logic is a universal language within which all reasoning is and must be carried out. Thus logic includes what is said in it as well as what is said about it; that is, the object language and meta-language are just two different uses of the same language. Taking this perspective, some people claim, tends to discourage the raising of meta-level questions about logic, such as whether it is consistent or complete.

Especially in his early work, Russell appears to wish to maintain a universalist view of logic. This is evident in his desire to allow **unrestricted variables**, that is, to allow the range of the variables of quantification to be all inclusive, and his belief that the principles of logic—the principles of reasoning—are objective, unconditionally true, and immediately applicable in all branches of knowledge. *See also* PRIMARY *v* SECONDARY LANGUAGE; TAUTOLOGY.

LOGICAL ATOMISM. In 1918 and 1919, Russell published a series of lectures on logical atomism (published as "The Philosophy of Logical Atomism"), and in 1924 he published an essay titled "Logical Atomism." In describing his philosophical views as a kind of atomism, Russell draws attention to the fact that he maintains, against **monism**, that reality consists of a great many ultimate constituents or

"atoms." In describing his position as *logical* atomism, Russell draws attention to the fact that these logical atoms are the end products of conceptual **analysis**, though he also believes that his views must be constrained by current scientific knowledge. (*See* PHILOSOPHICAL LOGIC.)

Thus what exists is linked to the problem of determining the **words** and phrases that actually and not apparently denote things, and the genuinely denoting constituents of **language** can only be discerned by a process of logical analysis. This analysis shows that many inferred objects, like tables and chairs, are logical fictions: by using a logical language in their **construction**, other entities (classes of **sense data**) are shown to have all the relevant properties of the inferred entities without postulating the **existence** of such entities. The result of this analysis is thus not only a metaphysical doctrine about what exists but an ideal or **logically perfect language**, one consisting only of words that denote the data of immediate experience and **logical constants**, that is, words like 'and' or 'not.'

The objects of Russell's atomism (sense data and **universals**) in their relations or with their qualities constitute the various **forms of facts** on the basis of which we determine the **truth** or falsity of the various forms of propositions that express the facts. At the simplest level, there are **atomic** propositions containing a symbol for a **relation** and two names. If true, such propositions correspond to atomic facts containing a universal and two **particulars** (i.e., sense data). Molecular propositions are composed of atomic propositions joined by one or more logical constants like 'and.' Truth in this case is a function of the truth or falsity of the atomic constituents, plus the meaning of the logical word or words involved. Besides atomic facts, then, no molecular facts are needed to account for the truth of molecular propositions. There are exceptions, however: Russell argues that **negative facts** must exist to account for the truth of negative propositions, and he also argues that general facts are necessary to account for the truth of general propositions.

Since the truth of the atomic propositions is fully determined by correspondence to facts, it follows that if all other propositions are derived from atomic ones by means that allow us to calculate their truth or falsity, the totality of true atomic propositions provides the basis for deducing every other possible truth. In short, if we knew

the truth and falsity of all atomic propositions (and that they are all of them), we would know all there is to know. Russell acknowledges that the nature of a **belief** poses a difficulty for this thesis of **atomicity**, a thesis he inherits from **Ludwig Wittgenstein**. He therefore struggles to construe belief propositions in a way that shows they do not offer any such obstacle. *See also* CARNAP, RUDOLF; FALSE BELIEF; RAMSEY, FRANK P.

LOGICAL CONSTANTS. In Russell's early **realism**, whatever can be thought or expressed has meaning only if it corresponds to and names an entity. (*See* MEANINGS AS ENTITIES.) In ***The Principles of Mathematics*** (1903), logical constants like 'or,' 'and,' 'not,' '**class**,' and 'member of' therefore denote abstract entities, constants peculiar to logic, and logic is treated as a **science** comprised of maximally general truths containing nothing but variables and logical constants. (*See* LOGICAL PROPOSITIONS.)

Russell's conception of logical constants begins to shift in the late 1910s and early 1920s under the influence of **Ludwig Wittgenstein**. In the introduction to the second edition of *The Principles of Mathematics*, written in the early 1930s, Russell considers the sense in which logical constants can be said to occur in propositions of logic, admitting that logic is more linguistic in nature than he had previously supposed and that many of the logical constants he took to be entities exist only at the level of **language**. According to the theory Russell adopts in this period, logical constants belong to our metalinguistic talk about language and **express** a subject's psychological attitudes toward a proposition (such as choice or rejection). *See also* OBJECT LANGUAGE *v* META-LANGUAGE; PRIMARY *v* SECONDARY LANGUAGE; TAUTOLOGY.

LOGICAL CONSTRUCTIONS. *See* CONSTRUCTION *v* INFERENCE.

LOGICAL FICTIONS. *See* DESCRIPTIONS, THEORY OF.

LOGICAL POSITIVISM. Logical positivism is a school of philosophy whose adherents (e.g., **Rudolf Carnap** and Otto Neurath) were members of the Vienna Circle founded by Moritz Schlick. Logical

positivists emphasize the importance of logic, borrowing **Ludwig Wittgenstein**'s conception of a **logical proposition** as a **tautology** and his conception of philosophical propositions as a species of nonsense. Like positivists generally, they believe that **knowledge**, except for mathematical and logical knowledge, can be acquired only by the methods of **science** and not by **a priori** means. Though individual logical positivists differ on the details, in general they confine theory to reports of what can be justified by experience, and they view the sentences of metaphysical and ethical theories as unverifiable and therefore meaningless, since they are neither statements of logic nor justifiable by sense experience. (*See* VERIFICATIONIST THEORY OF MEANING.) What remains of philosophy is scientific philosophy, cleansed of these claims—or, as expressed by Carnap, it is replaced by the logic of science, that is, the syntax of the **language** of science.

Although Russell shares their interest in the philosophy of science (especially physics) as well as their conviction that logic is a means of solving philosophical problems, he is not a logical positivist. In his middle and late period, Russell's assumption that a theory of language must be constrained by a study of the ways in which **words and sentences** are grounded in experience puts him in opposition to Rudolf Carnap, as does his repudiation of Carnap's physicalism, the claim that the language of physics suffices for all the sciences, including psychology. Russell's defense of **universals** and of a priori general principles throughout his career also puts him at odds with empiricism. *See also* MATHEMATICS, ANALYTIC *v* SYNTHETIC.

LOGICAL PROPOSITIONS. In ***The Principles of Mathematics*** (1903), Russell presents logic as a completely general **science** whose propositions contain only **unrestricted variables** and **logical constants**. He views **propositions as entities**, that is, complex objects consisting of abstract or concrete objects. In terms of the degree of abstractness in the entities making them up, the propositions of logic and those of a particular science sit at different points on a spectrum, with logical propositions representing the point of maximum generality and abstraction. Since logical propositions are not different in kind from propositions of other sciences, Russell thinks it possible to generate a proposition of a special science from a proposition of

logic, and vice versa, by systematically substituting terms for variables or variables for terms.

This process of substitution inevitably highlights the structure or form of a proposition, and by 1914 the nature of form is prominent in Russell's discussion of logical propositions, alongside his discussion of **forms of facts**. Thus Russell describes logical propositions as constituted by nothing *but* form, saying in the unpublished 1913 manuscript *Theory of Knowledge* that they do not have forms but are forms. The study of **philosophical logic**, he says in the same period, is in great part the study of such forms. (In his **epistemology**, we understand logical propositions—propositions in which form alone remains—by means of an act of **acquaintance** with the abstract form itself. Because what is known by acquaintance is indubitable, the resulting knowledge has as much **certainty** as is possible.)

Yet Russell sees many difficulties in his conception of logical propositions as well as with the notion of replacing the components of a proposition with other components. **Ludwig Wittgenstein** eventually persuades him that a logical proposition is radically different from an empirical proposition, that it is a mere **tautology** and says nothing—general or otherwise—about the world.

In his 1931 introduction to the second edition of *The Principles of Mathematics*, Russell says that he was too generous when he first wrote the *Principles* in saying that a proposition belongs to logic or **mathematics** if it contains nothing but logical constants, for he now sees that propositions that are clearly extra-logical (e.g., 'there are three apples') can be posed in purely logical terms. Though he now thinks that what captures that which is distinctive in logic is the notion of tautology and, following **Rudolf Carnap**, explains tautologies in terms of **analytic** propositions, that is, those that are true in virtue of form, Russell notes that we have no clear **definition** of what it is to be true in virtue of form and hence no clear idea of what is distinctive to logic.

LOGICAL TRUTH. *See* LOGICAL PROPOSITIONS; TAUTOLOGY.

LOGICALLY PERFECT LANGUAGE. In "The Philosophy of Logical Atomism" (1918–1919), Russell describes the logical perfection of an ideal **language** in terms of its **grammar** and vocabulary.

In its grammar or syntax, the structure of sentences mirrors that of the various **forms of facts**, containing the same degree and kind of complexity. Its vocabulary is unambiguous, since there is only one **word** for each simple object, and combinations of words rather than single words are used to represent combinations of things. Thus any language of this sort would (could it be realized) lay bare the structure of facts. In describing such a language, Russell assumes what he later calls the **primary versus secondary language** distinction, that is, the distinction between those words that denote entities and those that, like the **logical constants** 'and' and 'not,' serve another purpose. (*See* OBJECT LANGUAGE *v* META-LANGUAGE.) Without such words, the language would be very limited, but with the addition of words like 'and,' 'or,' and 'not,' an ideal language would be able to express all possible truths.

Russell describes the ideal language somewhat more formally in the essay "Vagueness" (1923), where he says it consists of one–one **relations** between the elements of the representing system and what is represented. Viewed from the perspective of logic, it is irrelevant what kinds of **symbols** make up such a language—they may be words, **images**, thoughts, or something else—but whatever they are, a precise or accurate representation system is one–one with the terms it represents and one–one with the relations. In both texts, Russell acknowledges that such precision is an ideal that is out of reach in practice, since words in actual languages are sometimes ambiguous (one–many), sometimes redundant (many–one), and always vague to a degree in determining when or when not to use a word (e.g., a color word). As a result, actual languages fall short of the ideal, containing more complexity and less precision than there are things in the corresponding fact.

In considering such a language, Russell anticipates much of his own later work as well as the related efforts of **Rudolf Carnap**, a philosopher of **science** and a **logical positivist**. *See also* MINIMUM VOCABULARY; WITTGENSTEIN, LUDWIG.

LOGICISM. The relation of **mathematics** to logic, the relation of mathematics and logic to the mind, and the nature of **proof**—these issues and others belonging to the philosophy of mathematics are answered differently by the logicist tradition (established by **Gott-**

lob Frege on the European continent and Russell and **Alfred North Whitehead** in England) than by formalism (e.g., David Hilbert) or constructivism or intuitionism (e.g., **Henri Poincaré**). In logicism, mathematical **concepts** can be defined in terms of logical concepts and mathematical **truths** deduced from logical truths. In this sense, logicism reverses constructivism, which views mathematics of the finite as founding logic, with logic merely generalizing mathematics. Furthermore, logicism denies that mathematics or logic is constrained by structures of human thought; in this they oppose intuitionism.

By presenting logic as a formal system of truths, deducible from axioms according to rules of inference, Frege and Russell believe they have shown that logic, and therefore mathematics, can proceed virtually mechanically. Nevertheless, neither Frege nor Russell conceives of logic as formalists do, as merely a manipulation of signs; for both of them, mathematical and **logical propositions** express maximally general mind-independent truths about the universe. Finally, logicism, unlike intuitionism, does not in principle reject nonconstructive methods of proof like reductio ad absurdum (assuming the negation of a proposition and deriving a contradiction to show that the original proposition is true) or the legitimacy of analysis of **infinite** sets.

Even so, in his early work Russell conceives of logic as the most general principles of reason. It follows, he thinks, that one cannot justify its principles in terms of reductio proofs, that is, by assuming their negation and deriving a contradiction, for if the axiom—which may be treated as a rule of inference—is true, what follows will be derived from a false rule of inference and so be unwarranted. Likewise, one cannot assume the negation of an axiom of logic and, as in the case of assuming the negation of the parallel postulate, from which interesting non-Euclidean results follow, derive similarly interesting results. For again, if the axiom is true, the results derived from its negation will be unwarranted. (*See* LOGIC AS UNIVERSAL *v* LOGIC AS SCHEMATIC.) Moreover, the need to address the contradictions (such as **Russell's paradox**) emerging from **Georg Cantor**'s analysis of infinite sets leads Russell to embrace doctrines—such as Poincaré's **vicious circle principle**—that emerge from a constructivist conception of mathematics explicitly hostile to **analysis** of the infinite. Today, logicism is generally thought to have

failed, though a movement to rehabilitate it has taken place in recent years. *See also* AXIOMATIC SET THEORY.

– M –

MACH, ERNST (1838–1916). Austrian citizen Ernst Mach was educated in Berlin in physics, mathematics, and psychology, particularly the study of sensory **perception**. His work in the philosophy of **science** advocates both positivism and phenomenalism. As a positivist, he views **knowledge** as based on sensation and believes that science—done properly—limits itself to descriptions of sensation and refrains from making claims that transcend what we actually sense, such as claims about physical atoms. As a phenomenalist, Mach overcomes the quarrel between materialism and **idealism** by rejecting the use of notions of **consciousness** in attempting to explain experience, on the grounds that distinctions between the physical (**sense data**) and the mental (sensations or ideas) are not in the nature of experience itself, but are simply terms we have used with respect to our experience, which is more primitive than either of these notions.

Mach's phenomenalism is compatible with, though developed independently of, the **neutral monism** of **William James**, a version of which Russell adopts in the early 1920s. Yet throughout his life, Russell is unsympathetic to the limitative or antimetaphysical aspects of positivism and **empiricism**, and he explicitly rejects Mach's views as unduly materialist as early as the 1903 ***Principles of Mathematics***. Mach's philosophy of science helped to shape the movement called **logical positivism** embraced by the Vienna Circle, where it sits well with the **verificationist** and antimetaphysical themes inspired by **Ludwig Wittgenstein**'s *Tractatus Logico-Philosophicus*. *See also* CARNAP, RUDOLF; MATTER, THE NATURE OF.

MACHIAVELLI, NICCOLÒ (1469–1527). Russell considers Niccolò Machiavelli to have been the first great modern political philosopher, the first whose political philosophy was scientific and empirical. In *The Prince*, Machiavelli describes what means are best for a political leader to use in order to achieve assigned ends, means that to most readers appear astonishingly ruthless. In *The Discourses*,

written at the same time as *The Prince*, Machiavelli argues for what he takes to be the best political ends for a state, and Russell finds those ends to be admirably republican. It has been common to read Machiavelli as presenting two incompatible political philosophies, but Russell sees that they are compatible; in his *History of Western Philosophy* (1945), he shows how to read them as two parts of the same view, namely that *The Prince* tells how a leader should achieve certain ends, and *The Discourses* says what those ends should be. Russell further defends *The Prince* by saying, "It is futile to pursue a political purpose by methods that are bound to fail; if the end is held good, we must choose means adequate to its achievement."

Russell, always the champion of candor, applauds the frankness of *The Prince*, saying, "Such intellectual honesty about political dishonesty would have been hardly possible at any other time or any other country, except perhaps in Greece among men who owed their theoretical education to the sophists and their practical training to the wars of petty states which, in classical Greece as in Renaissance Italy were the political accompaniment of individual genius." Russell says the Italian Renaissance, also like ancient Greece, was a period of **individualism** and hence instability. As in ancient Athens, this period of liberty in the Italian Renaissance led to the production of great works in architecture, painting, and poetry and great men like Leonardo da Vinci, Michelangelo, and Machiavelli.

Russell recognizes that social stability is necessary for **happiness**, but also that every stable system to date has hampered the development of great achievements, such as those of the Italian Renaissance or ancient Greece. Finding a way to allow great liberty while still having a stable society is a major unsolved problem of political philosophy, Russell thinks (*HWP* 503–11). *See also* POWER.

MARRIAGE. Central to Russell's views on marriage in his 1929 ***Marriage and Morals***, his famous book on the subject, is the idea that **sexual** infidelity should be tolerated in marriage and not considered grounds for **divorce**. Russell believes that modern conditions of life, such as increased opportunities to meet members of the opposite sex, greater opportunity for divorce, and a general relaxation of social customs concerning monogamy and divorce, tend to promote infidelity in marriage, and that this is not all for the bad. He argues that

fidelity in marriage leads to a diminished life—one in which the emotions of "receptivity" and **sympathy** are stunted and opportunities for valuable human contact lost—and that it promotes instead what he calls a "policeman's outlook" on life, characterized by emotions that forbid things. Thus, he thinks that infidelity is in general preferable to monogamy.

While Russell does think that human monogamous marriage is based on **instinct**, he believes that human imagination and **intelligence** can easily override this instinct and, as noted above, that modern life destroys it utterly. He thinks that at least "uninhibited civilized people, whether men or women, are generally polygamous in their instincts." **Jealousy** too is instinctive, he believes, and often fatal to intimacy even in marriages where infidelity is accepted. But jealousy, he believes, is not an emotion that promotes **happiness** for the same reasons infidelity is to be preferred to fidelity. At the same time, he does not believe that divorce is a good solution to these causes of unhappiness in marriage, for the same conditions that led to the first divorce will lead to a second and a third; and anyway, divorce is especially undesirable when there are children in the marriage.

Russell thus proposes a kind of "open" marriage in which adultery is accepted but jealousy is not. Though such a marriage will involve controlling jealousy rather than fidelity, he says that "the good life cannot be lived without self-control, but it is better to control a restrictive and hostile emotion such as jealousy, rather than a generous and expansive emotion such as love." Other conditions for a good marriage, he says, are a feeling of equality on both sides, no interference with mutual freedom, complete physical and mental intimacy, and similar standards of values. Marriage is, he thinks, "the best and most important relation that can exist between two human beings" (*MM* 139–44). *See also* AFFECTION; GOOD LIFE.

MARRIAGE AND MORALS. Russell's most notorious book, *Marriage and Morals,* was published in 1929. In it, Russell proposes that complete fidelity should not be expected in most marriages and that infidelities should be tolerated and should not count as grounds for **divorce**. In later years, he said that he no longer knew what he thought on the subject of **marriage**. It is this view and the book itself

that got him barred from teaching at City College of New York in 1940. *Marriage and Morals* immediately became a standard text for the 20th-century **sexual** revolution and, more generally, the rebellion against Victorian morality.

That movement began in the first decades of the 20th century with the 'Little Renaissance' in Greenwich Village and Chicago and in such artistic scenes as the Bloomsbury group in London, of which Russell was a member. These small bohemian scenes existed in relative isolation from mainstream culture before World War I and then exploded in the 1920s across the **United States** and Britain as a popular rebellion against Victorian morals. (An earlier 19th-century movement of sexual liberation had some influence on the 20th-century movement.) At the same time, a more political and more organized "sex reform" movement emerged, with conferences, intellectual journals, and a political agenda that pursued everything from wider dissemination of **birth control** information to advocating homosexual rights and the abolition of marriage. Russell took part in the movement, along with his wife Dora Russell (**Dora Black**).

The book *Marriage and Morals* emerged somewhere in the middle of this movement ideologically. It is not so radical as to advocate the abolition of marriage or to defend homosexuality, for Russell thought that marriage could be a good institution for raising children and did not address the issue of homosexuality, but it is radical enough to propose that marriages be open, and that infidelity should be tolerated and not amount to grounds for divorce. Being at the ideological center of this movement ensured the book's popularity, and copies of it could be found on the shelves of bookstores and in the book section of drugstores, card shops, and the like all across America until the early 1970s. *See also* UNITED STATES AND RUSSELL; WOMEN'S RIGHTS.

MARX AND MARXISM. Considering only the philosophy of Karl Marx (1818–1883) and not his economic or political theory, Russell finds Marx difficult to categorize. Marx is a product of the Philosophical Radicals, Russell asserts, continuing their rationalism and opposing romanticism; he is a reviver of materialism, giving it a new interpretation and new connection with human history; he is also the last great system-builder, who, as a successor of Georg Hegel,

believed in a rational principle that explains the evolution of human history and predicts a progressive future for it. The stimulus to Marx's work was always the **hope** of social revolution, says Russell. (*See* PROGRESS.)

Marx's materialism was a "dialectical" materialism, differing from earlier materialism, Russell argues, in regarding sensation as active rather than passive. That is, like the French philosophers Etienne Condillac and Maine de Biran, and in a tradition of French philosophy that runs from them to Jean Piaget, Marx believed that we only know of the world by acting on it and then noting where and how it resists our will. We thus transform the world in coming to know it. For Marx, then, there is no real **knowledge** to be gained from passive reflection ("Eleven Thesis on Feuerbach").

Expressed with respect to our knowledge of human society, it is not just that people are products of circumstance and upbringing, but also that these circumstances and upbringing are determined by other people. Thus, for philosophers to know **truth**, they must create it, altering the world in acting on it rather than just by passively reflecting on it. In acting on the world, humans produce three basic stages that are of interest to Marx. The first is the feudal stage, followed by that of **capitalism**, and finally by that of **socialism**.

For Marx, the most important way that humans act on the world is through production, or economics, so that the real driving force of human history is the means of production. Russell does not accept this thesis as it stands, for he believes there are other factors that drive history, especially politics, for there are other forms of **power** besides economic ones, and politics is the principal one of these. However, he thinks Marx's thesis that economics drives history contains a great deal of truth, and he bases his own *History of Western Philosophy* on it to a great extent. Thus, Russell's history, like Marx's, tries to show the social and political causes as well as social and political effects of the various philosophies that have occurred in Western thought, and many of these are economic. (*See* CAUSALITY.) In any case, it is on the activist empirical theory of knowledge that Marx bases this dialectical view (*HWP* 783–5). *See also* DEMOCRACY AND CAPITALISM; RUSSIA AND RUSSELL; TRADITIONAL PHILOSOPHY.

MATHEMATICS, ANALYTIC *v* SYNTHETIC. Whether logic consists of **analytic** or synthetic **propositions** is a question that has often been addressed in terms of the analytic or synthetic status thought to belong to theorems in **mathematics**. But on this there has been little consensus. In holding mathematics to be synthetic and logic analytic, **Henri Poincaré** follows **Immanuel Kant**. In ***The Principles of Mathematics*** (1903), Russell argues that Kant was right to hold that the theorems of mathematics are synthetic (and our **knowledge** of them **a priori**) but wrong to hold that mathematics is distinct from logic. The gist of so-called **logicism**, a position Russell shares with **Gottlob Frege**, is that mathematical **truths** reduce to logical truths, that mathematics is just an extension of logic. Given this reduction, and his assumption that mathematics is synthetic, Russell concludes that logic is also synthetic and a priori.

But what does it mean to say that mathematics is synthetic? At times, Russell appears to agree with Kant that sentences like '5 + 7 = 12' are synthetic if the meaning of the predicate '= 12' is not part of the meaning of the subject term '7 + 5' but conveys information beyond that expressed by '7 + 5.' When this is applied to arguments, he appears to believe that an inference is synthetic if the conclusion extends knowledge beyond what is already contained in the premises. Since he stresses (against Kant and various forms of **idealism**) that mathematical and logical objects—such as **numbers** and propositions—are not merely created by the nature of our reasoning but exist outside the mind, he concludes that inference extends knowledge in the sense that it consists of acts of discovery of things outside the mind. Thus he thinks logic and mathematics are synthetic, because in their chains of reasoning we arrive at new knowledge.

Russell's conception of logic shifts dramatically by 1918, when reflection on **Ludwig Wittgenstein**'s views convinces him that logic consists not of substantive, that is, synthetic truths, but of **tautologies**, which he identifies with analytic propositions whose truth is independent of experience. Because he continues to assume that logic and mathematics are in some sense continuous, he concludes that the propositions of both are analytic. *See also* GRAMMAR AND ANALYSIS.

MATHEMATICS AND PHILOSOPHY. In 1928, Russell notes that Nikolay Lobatchevski refuted **Immanuel Kant**'s view of **mathematics** with the invention of non-Euclidian geometry. And when Karl Weierstrass showed that the concept of continuity does not include that of infinitesimals, and **Georg Cantor** provided a consistent theory of continuity and **infinity**, they eliminated all the old paradoxes about infinity that philosophers had struggled with for centuries. Russell adds that in the meantime, **Gottlob Frege** had showed that mathematics followed from logic, thereby refuting Kant's rejection of this possibility. Russell points out that these philosophical results were all achieved by ordinary mathematical means and are as **certain** as the multiplication tables, yet many philosophers responded by ignoring the situation and not reading any of the authors concerned. *See also* LOGICISM; SCIENCE AND PHILOSOPHY; ZENO'S PARADOXES.

MATTER, THE NATURE OF. An interest in matter is not prominent in Russell's early work, and the objects Russell discusses in this period are often abstract entities revealed only to the mind's eye. Yet his development of the theory of **descriptions** in 1905 shows Russell that many philosophical problems can be resolved by a similar use of logical techniques, laying the groundwork for his later **analysis** and **construction** of matter.

There are several stages in his development of this position. In ***The Problems of Philosophy*** (1912), Russell infers the **existence** of matter from his experience of **sense data** like colors and tones. Showing the influence of **Alfred North Whitehead**, in *Our Knowledge of the External World* (1914) the method of inductive inference from sensations to the existence of material objects is replaced by a method of defining or constructing these previously inferred entities in terms of the data of sense, which are more **certain** than inferred entities. (The precise nature of Russell's position on sense data is disputed. It is viewed by some as akin to **Ernst Mach**'s phenomenalism, though Russell denies that sense data are **mental**.) He now views obedience to the practice of replacing inferences with constructions as the supreme maxim in philosophy. In *Our Knowledge of the External World*, Russell attempts to arrive at something with the public quality we attribute to a material object, beginning with something ultimately

private: our own sense data viewed from the space of our perspective. This is possible, he thinks, because though any single observer experiences sense data from a unique perspective, it is possible to relate that to the perspective of other observers or potential observers so as to define a **class** of the classes of perceived and potentially perceived sense data of each and every private perspective. Since this class—the construction—has all the properties of the inferred object, it can be used instead of it; moreover, as a construction out of sense data, its existence is known with more certainty than the putative entity it replaces.

A later change is due to Russell's newly critical view of **consciousness** in the 1920s. For in this period, Russell rejects his theory of consciousness as a relation between something psychical (a **subject**) and something physical (a sense datum). In his new view, both the so-called mental and the so-called physical dimension are constructed out of classes or series of **neutral** data. A later adjustment (e.g., in the 1927 *Analysis of Matter*) is to incorporate Albert Einstein's theory of general relativity into his account of spatial points and temporal instants, for Einstein's theory explains gravitational force geometrically, in terms of curvatures in **space and time**, and Russell's 1914 analysis does not take account of this. In the same period, Russell takes a structuralist position on the nature of **knowledge** of the physical world, but this doctrine is shown to be flawed, and Russell soon abandons it. *See also* CARNAP, RUDOLF; LOGICAL POSITIVISM.

MEANING, CAUSAL THEORY OF. In *The Analysis of Mind* (1921), Russell introduces a causal account of the meaning of **words and sentences**. (This doctrine is distinct from his causal theory of **perception**.) According to his causal account of meaning, we pay **attention** to or notice certain aspects of our present experience as well as the association between these aspects and other, aural experiences, such as words used on these occasions. For example, out of the mass of present sensations, we notice a box of toys and hear the words 'box of toys.' Repeated over time, psychological laws of association take over, and we begin to associate the sight of the box with the sounds of the words 'box of toys.' As a result, a habit develops of using the words 'toy box!' to demonstrate the box when it is present and to call

for it when not, as well as a habit of expecting toys when we hear the words uttered. (*See* INSTINCT *v* HABIT.) Thus, according to the causal theory, the meaning of a word, say, 'car,' is defined in terms of those things (cars) the experience of which led us to learn the word, as well as in terms of having effects (e.g., to move aside), if uttered, much like those of real cars. These causal relationships are part of the meaning of a word.

Though this is largely a **behaviorist** view of word meaning, Russell argues that there are **images**, that these are **private**, and that what they mean is established causally, for example by repeatedly seeing a toy box. Between the image and the word, there comes to be a causal reciprocity: words may call up images, and images, words. Yet words need not have accompanying images, according to Russell, and in many cases, the image associated with a word (if any) tends to drop out, to be replaced by definitions of words in terms of other words; as adults, we often use largely imageless speech.

In *Inquiry into Meaning and Truth* (1940), Russell elaborates these ideas further in connection with his notion of a **primary language** containing object words and forming basic propositions—propositions that are descriptive of our present experience and on the basis of which other propositions are justified. In attempting in this way to establish the connection between words and things, Russell exhibits his ongoing belief (rejected in different ways and for different reasons by **Ludwig Wittgenstein**, **Rudolf Carnap**, and others) in the importance of establishing the relation between **language** and the world. *See also* 'MEANING,' THE MEANING OF; MEANINGS AS ENTITIES; VERIFICATION AND REFUTATION.

'MEANING,' THE MEANING OF. In "Logical Atomism" (1924), Russell notes that certain **words**—such as 'relation,' 'fact,' 'complex'—by their very nature sin against the **theory of types**. For example, we use the word 'relation' (as opposed to words for particular relations) to say 'relations are not attributes,' which appears to us to be a perfectly good philosophical sentence. But in fact, we cannot name relations, since names denote objects, and objects and relations belong to different logical types. A sentence like 'relations are not attributes' therefore sins against the theory of types—and so does saying that objects and relations belong to different logical types.

Put another way, if words relate in different ways to what they mean, it seems that we cannot talk about the things meant—for example, about complexes or facts or relations—without using a sentence that misrepresents what is intended. The last sentence commits this error, for example, since it refers to the things that are the meanings of **symbols** when it says we cannot talk about them. In "The Philosophy of Logical Atomism" (1918–1919), Russell alludes to this point when he says he cannot say what 'meaning' means and that there are an **infinite** number of ways in which words possess meaning.

Though Russell acknowledges the existence of constraints on what can be said about meaning, and hence a certain kind of **inexpressibility**, he is confident that he can theorize about meaning by talking about the different kinds of symbols we use rather than what they mean. Instead of saying 'relations are not attributes,' we must say 'relation words are not attribute words.' In *Tractatus Logico-Philosophicus* (1922), **Ludwig Wittgenstein** denies the possibility of expressions of syntax, for example of sentences about the forms of sentences. Russell, in his approach, therefore rejects Wittgenstein's conclusion that such matters must be shown by **grammar** and not said. In doing so, Russell resembles **Rudolf Carnap**, who later also thinks there can be sentences of syntax. Indeed, by resorting to sentences like 'relation words are not attribute words,' Russell anticipates certain aspects of Carnap's distinction between the formal mode and the material mode of speaking. Yet unlike Carnap, Russell sees ontological significance in the constraints on what can be said. Russell views it as philosophically significant that, for example, relation words can only be used as such and cannot occur as the subject of a sentence. This leads **Frank P. Ramsey** in the 1920s to attack what he sees as Russell's excessively **realist** and metaphysical perspective on **language**. *See also* CONCEPTS *v* OBJECTS; OBJECT LANGUAGE *v* META-LANGUAGE.

MEANINGS AS ENTITIES. From roughly 1900 to the mid-1920s, Russell defends a form of semantic **realism**: all **words** that possess meaning do so by **denoting** abstract or concrete objects or 'terms,' which may be **complexes** or simples and which we apprehend by an act of **acquaintance**. His view is also pluralistic: the meanings of sentences are built up out of the meanings of their several words.

Thus Russell conceives of **propositions** as complex objects, since as the meaning of a sentence, a proposition is the **unity** of the entities meant by the words in the sentence.

Prior to 1905, Russell assumes that the words and phrases that superficially appear in a sentence are the logically relevant units of meaning. In his 1905 paper "On Denoting," he attempts to solve the problem of **descriptions** that, like 'the present king of France,' have meaning without referring to or denoting any single entity. From this point on, and with respect to an increasingly broad class of cases, he no longer assumes that, without deeper logical **analysis**, we can discern which words and phrases are units of meaning, or how they contribute to the meaning of sentences in which they occur.

Yet Russell engages in this shift to deeper analysis without abandoning his **realist** assumption that whatever has meaning—though after analysis it may not turn out to be the word or phrase we started with—does so in the sense that it means some entity (some **universal** or collection of **sense data**) in our immediate experience with which we are acquainted. Semantic realism culminates in Russell's doctrine of **logical atomism**, only to be abandoned around 1918 along with **mind/matter dualism** for a **causal theory of meaning**, a view that is, nevertheless, still pluralistic. *See also* 'MEANING,' THE MEANING OF; MENTAL ACTS AND CONTENTS.

MEINONG, ALEXIUS (1853–1920). Austrian psychologist and philosopher Alexius Meinong studied with Franz Brentano and in 1894 founded a famous school of experimental psychology in Ganz, where he was a professor of philosophy. His most famous work, *Über Gegenstandstheorie* (1904), or *Theory of Objects*, develops the concept of **intentionality**, that is, the idea that **consciousness** is always of objects. The text also argues that **nonexistent** objects, like golden mountains, lay claim to a kind of being, that is, to subsistence as opposed to **existence**, for we can think about and be conscious of them.

Russell's doctrine of **acquaintance** is a relational theory of mind that, like Meinong's, assumes intentionality to be the essence of consciousness. But Meinong broadens Russell's antipsychologistic conception of what is and is not a proper subject for philosophy to include psychological questions about the nature and content of the mind. (*See* PSYCHOLOGISM.) He thus contributes to Russell's

interest in **belief**, supposition, and other **mental acts**, subjects that through Russell have since come to be central ones in analytic philosophy. Russell's 1904 essay "Meinong's Theory of Complexes and Assumptions" illustrates his growing fascination with descriptive psychology. In this essay and elsewhere, Russell enthusiastically reviews Meinong's classification of various types of mental acts as well as his largely descriptive approach.

In 1906, Russell adopts Meinong's conception of belief as a single state of mind synonymous with an idea or thought. He begins to ask such questions as whether in acts of denying, affirming, and assuming *p*, the mind relates to the same or different **propositions**. These questions play a role in his attempts in this period to prevent the **liar paradox** by eliminating propositions as entities. In "On Denoting" (1905), Russell claims that his theory of **descriptions**—his theory of analyzing away phrases like 'the present king of France'—enables him to avoid taking Meinong's step and allowing nonexistent objects. Despite this criticism, Meinong's influence on Russell continues for some time. In his 1913 text *Theory of Knowledge*, Russell compares his own view of understanding to Meinong's notion of supposition. In this sense, his break with Meinong occurs not until the late 1910s, when he abandons the doctrine of acquaintance. *See also* COMPLEXES AND SIMPLES; MULTIPLE RELATION THEORY OF JUDGMENT.

MEMORY. In *Theory of Knowledge* (1913), Russell explains memory of recent events (e.g., the sounds of a clock that has just ceased to chime) in terms of direct **acquaintance** with past **sense data** of certain kinds. Remembered events or objects are also accessible by **introspection**, that is, by acquaintance with the contents of our own minds. Memory also plays a role in Russell's account of error. (*See* FALSE BELIEF.) Since we require memory to attach the appropriate meanings to the **words** occurring in judgment, and memory is always fallible, Russell argues that a judgment may be in error even if it is about present **perception**. (*See* MEANINGS AS ENTITIES.) Russell also shows interest in **David Hume**'s doctrine that the **subject of consciousness** or self is nothing but a sequence of connected memories, a view that he accepts when he abandons **mind/matter dualism** for **neutral monism** in 1918. *See also* GRAMMAR AND ANALYSIS.

In *Analysis of Mind* (1921), the rejection of the subject of consciousness complicates the analysis of remembering, as it has to be a present occurrence resembling or related to what is remembered, rather than a relation of a subject to a past occurrence. Yet Russell describes himself as an **idealist** (or idealistically inclined **empiricist**) about memory, though a **realist** about sensation. That is, in the case of sensations, he believes we know things directly, but in the case of memories, he believes we know only our own **mental** contents (such as **images**). In Russell's analysis, memory is a present image (or may involve only words) combined with a feeling of **belief** and amounting to the judgment that there was in the past an object accompanying the image. It therefore differs from perception, which involves a judgment that certain objects exist now. In this way, memory yields **knowledge**, unlike pure imagination or pure sensation, neither of which involve judgments.

In arriving at this view of memory, Russell puts aside the **skeptical** problem of ascertaining, apart from memory, that there was a past event, or the related problem of remembering the meanings of our words, so as to start with admittedly **vague** but **certain** beliefs, for example that we do have such a thing as memory, and that the **truth** of a memory must be based not merely on pragmatic considerations but on the resemblance between present images and past events.

MENTAL ACTS AND CONTENTS. Until late in 1918, Russell follows **Alexius Meinong** in distinguishing a **subject**'s act of thinking about St. Paul's Cathedral (for example) from the object of that act, the cathedral. Yet he does not follow Meinong in embracing as a third category the content of thought—for example, the idea of St. Paul's cathedral. Rather, Russell's **mind/matter dualism** leads him to view judging, thinking, sensing, and other mental acts as having the form of a dual or dyadic relation between a subject of consciousness or self and what is thought about, usually an extra-mental object. He holds, for example, that **propositions** are entities, which, in judging, the mind grasps. Indeed, Russell thinks the relation between psychical and physical entities is guaranteed by the **intentionality** or object-oriented nature of awareness, that is, of what he calls **acquaintance**.

In mostly unpublished work in 1906, Russell experiments with a theory of content for judgments. But a theory of mental content does

not appear prominently in his thought until he turns from dualism to **neutral monism** in 1918. Russell then denies there is any mental act of thought distinct from the content of thought. In his new view, to say that thinking occurs is to say that some thought or content occurs. Russell's rehabilitation of content takes the form of a theory of **image-propositions** and a doctrine of the **beliefs** associated with those images. Since mental acts are understood to belong to subjects, his rejection of mental acts coincides with his deciding that the subject is a logical fiction—that words like 'I,' which appear to denote a subject, are mere shorthand for a more complicated **construction** out of **classes** or series of neutral data. *See also* PERCEPTION *v* SENSATION; 'THIS,' 'HERE,' 'NOW.'

META-LANGUAGE. *See* OBJECT LANGUAGE *v* META-LANGUAGE.

MILL, JOHN STUART (1806–1873). A philosopher of wide-ranging interests, John Stuart Mill wrote on **ethics**, politics, **religion**, **women's rights**, and logic. A friend of Russell's parents, Mill was Russell's secular godfather, appointed to take care of him in the event of their death. Russell's parents did die while Russell was still in his infancy, but by that time Mill had been dead for several years. Russell, nevertheless, was greatly influenced by Mill's work and in fact claimed that "with Mill's values, I for my part find myself in complete agreement" (*PFM* 114).

The major works by Mill on ethics are *On Liberty* (1859) and *Utilitarianism* (1863). In *Utilitarianism*, named for the school of thought to which Mill belonged, Mill follows **Jeremy Bentham** in treating the greatest **happiness** for the greatest number as the principle on which judgments of right and wrong are ultimately based, though he disagrees with Bentham as to what pleasure amounts, arguing that in general, people prefer a life that includes the "higher" pleasures of ideas, arts, and good works to a life consisting of nothing but sensual satisfaction. In *On Liberty*, Mill argues that people should have the liberty to do whatever they want, whether they harm themselves or not, as long as they are not harming others. His justification for this is a utilitarian one, namely, that the best way to maximize the amount of pleasure people experience is to allow them the liberty to pursue

their own happiness, since each individual is more likely than others to know what is in his or her own interest.

Disgusted by laws and attitudes concerning women, Mill wrote a classic feminist treatise, *The Subjection of Women* (1869), arguing that **marriage** is, for women, like slavery but worse, since more intimate and pervasive. In *A System of Logic* (1843), Mill, an **empiricist**, argues that truths in logic and **mathematics** are not known **a priori** but **inductively**, that is, they are known to be true by experience. The inductive logic presented in that book, while commonly referred to as "Mill's methods," was largely borrowed from John Herschel. The book itself was a standard logic text well into the 20th century, only to be superseded by the modern deductive logic developed by Russell and modern inductive probability theory, or more specifically, until it was superseded by Cohen and Nagel's 1936 logic text.

In his personal life, Mill was sometimes unconventional and, in his later life, reclusive, in part in reaction to the social disapprobation toward his relationship with (and eventual marriage to) Harriet Taylor, to whom he gave credit for the central idea in *On Liberty*. While Russell agreed with Mill's ethics, he thought Mill's writings were not so much intellectually important as important for their moral and political influence. *See also* GOOD LIFE; INDIVIDUALISM.

MIND/MATTER DUALISM. Russell's early work rejects the various forms of **monism** that attempt to reduce what we experience as material to **mental** substance, or vice versa. Like **G. E. Moore**, he also opposes the **idealist** theories—current when they were university students—according to which minds shape how things are experienced. Against these doctrines, his writings as early as 1900 assume that experience is essentially a dyadic **relation** between mental entities (minds or **subjects**) and nonmental ones, and that minds are passive and receptive in the processes of thinking and perceiving by means of which they apprehend and discover objects.

Apart from these doctrines, Russell does not make an extended study of mind and **consciousness** until his discovery in 1904 of **Alexius Meinong**'s work in descriptive psychology. He then explicitly adopts the view that thought is characterized by **intentionality**: to think is to think of objects. Over the next decade, he further elaborates on the various ways of being conscious, that is, the various ways

of having **acquaintance** with objects, while paying increasing attention to problems of **knowledge**.

Russell believes for some time that we know the subject or self by acquaintance, that is, in **introspection**. Though by 1913 he has come to think that the subject of consciousness or self must be inferred, he does not think that absence of acquaintance with a mental entity, the subject or self, makes his dualism vulnerable or justifies replacing it with **neutral monism**. Neutral monism denies any essential difference between mental and material events. In Russell's jargon, it denies any intrinsic difference between experiencing a sensation (as in seeing a red patch) and what is sensed (the **sense data**, such as red patches). Russell's principle objection to neutral monism concerns the analysis of **words** like 'this,' 'here,' 'now,' and 'I.' If we are to explain the meanings of these words, he says, we must distinguish between what is essentially mental and subjective and what is material and **objective**.

In 1918, Russell comes to believe that he is mistaken and that there is no good reason to assume that mind and **matter**, a sensation and a sense datum, must differ intrinsically. *See also* MEANINGS AS ENTITIES; 'THIS,' 'HERE,' 'NOW.'

MINIMUM VOCABULARY. By a minimum vocabulary, Russell understands a list of terms sufficient to define the whole of a **science** and containing no **words** that are defined by means of others in the vocabulary. In 1944, for example, his minimum vocabulary for a science does not include words for cardinal **numbers**, since he has shown that we can define them as **classes** of classes. His point in this period is less one of showing what exists than of constructing a particular set of basic terms, and he therefore typically concedes that different minimum vocabularies may be devised (*PBR* 14). In *Inquiry into Meaning and Truth* (1940) and *Human Knowledge* (1948), the pursuit of a minimum vocabulary for a particular domain of science is posed as the question of an empirical vocabulary containing words for observed qualities, spatial relations, and the like, and raising questions concerning whether proper names are eliminable or part of the basic vocabulary.

The general notion of a minimum vocabulary, if not the label, is allied to the kind of **analysis** typical of much of Russell's work,

wherein a particular area of thought is shown to involve only certain terms and no others. His **logicist** thesis, for example, involves in part the claim that logical words suffice to define mathematical ones. Similarly, his **logical atomism** makes use of the related notion of a **logically perfect language** in which there is no redundancy. *See also* CARNAP, RUDOLF; DESCRIPTIONS, THEORY OF; LANGUAGE; LOGICAL POSITIVISM.

MONISM. In the history of philosophy, 'monism' has two meanings, sometimes referring to a doctrine of substance and other times referring to a doctrine about the number of things there are. In the first sense, it refers to the view that the multiplicity of things in the universe, no matter how apparently diverse, are really composed of one kind of substance. Thus, materialism is a kind of monism, as it asserts that everything in the universe is made of matter. Monism in this sense contrasts with **mind/matter dualism**, which asserts that there are two kinds of substance, material and **mental** (immaterial).

In the second sense, 'monism' denotes the view that reality is one thing, and there is not a multiplicity of things in the universe. Understood in this sense, monism contrasts with pluralism, atomism, and monadism—doctrines which each in different ways assert the **existence** of many entities. (*See* BRADLEY, FRANCIS HERBERT; LOGICAL ATOMISM.) The monist in this second sense says that all **propositions** that assert relations can be reduced to those that assert a property of some thing or subject-term. In other words, all relation terms reduce to one-place predicates. The monist therefore denies the fundamental existence of **relations**, saying that all relations within a whole are less real than the whole, and that the analysis of the whole into related parts is a falsification of reality.

Russell's early work embraces pluralism, defending it by means of his doctrine of **external relations**, the view that at least some relations cannot be reduced to properties. If a relation is fundamental, he reasons, then so are the several things it relates, and there will be more than one thing. At least some relations, **asymmetrical relations**, are irreducible to properties, he notes, and thus reality is not one but many; that is, it is composed of a plurality of diverse entities, bound but not dissolved into wholes by external relations.

Besides being a pluralist who rejects monism in the second sense, Russell until 1918 is a dualist who rejects monism in the first sense, that is, as a doctrine of substance, in favor of mind/matter dualism. After 1918, Russell continues to be a pluralist, but his adoption of **neutral monism** reverses his earlier position on substance, and he rejects mind/matter dualism for a doctrine of one kind of substance that is neither mental nor material but neutral and out of which both mind and **matter** are constructed. *See also* GRAMMAR AND ANALYSIS; MOORE, G. E.; TRADITIONAL PHILOSOPHY.

MOORE, G. E. (1873–1958). Professor of moral philosophy at Cambridge and one of Russell's longtime associates, George Edward Moore is a principal founder, along with Russell, of analytic philosophy. Important works by Moore include "The Nature of Judgment" (1899), *Principia Ethica* (1903), "The Refutation of Idealism" (1903), "A Defence of Common Sense" (1925), and "Proof of the External World" (1939). He is perhaps most known for his **analysis** of the concept ***good*** in *Principia Ethica*. Moore's importance also lies in his shift away from idealism and **psychologism** and toward **realism** in "The Nature of Judgment" and "The Refutation of Idealism."

Moore attacks idealism to defend a realist notion of objective **knowledge** by distinguishing judgment from what goes on inside the mind that judges, and in these essays he argues that **propositions** are collections of **concepts** existing outside the mind and in unvarying **relations** to each other. (*See* MIND/MATTER DUALISM.) A proposition is therefore not a complex idea in the mind that is true by being about something, some fact; it is at all times intrinsically true (or **false**) by virtue of the unvarying relation among its constituent concepts. (*See* TRUTH, THEORY OF.) In this view, which can be called 'Platonic realism,' propositions are extra-mental objects of thought, and in thinking a proposition, we are directly in touch with something outside of the mind, rather than, at best, indirectly in touch with it via the contents or ideas of our own minds, or at worst, never in touch with external reality at all but only with the contents of our minds.

In ***The Principles of Mathematics*** (1903) and elsewhere, Russell acknowledges his debt to Moore, especially with respect to Moore's notion of a proposition. Though both view propositions as existing

independently of the mind and not in any way influenced by the knower, Russell, unlike Moore, concentrates less on defending the **objectivity** of knowledge than on refuting **monism**, that is, the doctrine, antagonistic toward analysis, that wholes or unities are more real than their parts. Monism holds that relations can be reduced to properties of substances (and different entities ultimately to only one absolute entity, the universe). Russell's rejection of monism leads to his emphasis on **external relations** and pluralism. *See also* GRAMMAR AND ANALYSIS; KANT, IMMANUEL.

MULTIPLE RELATION THEORY OF JUDGMENT. In the 1903 ***Principles of Mathematics***, Russell considers both true and false **propositions** to be objective complex entities composed of the things and **concepts** referred to by the sentence expressing the proposition. (*See* MEANINGS AS ENTITIES.) He takes for granted that in judging, the mind stands in a direct relation to the proposition. But Russell's sympathetic examination from 1902 to 1905 of **Alexius Meinong**'s psychological and phenomenological doctrines leads him to emphasize **belief**, which he treats as a single mental entity, a complex idea. Since he believes that the **liar paradox** and related contradictions arise so long as it is possible for a proposition (or belief) to talk about itself, and that this is possible so long as a proposition (or belief) is treated as an entity, Russell soon acknowledges that he needs to eliminate beliefs and propositions as single entities.

To do so, Russell uses the methods of elimination and **construction** first published in "On Denoting" (1905). In particular, he now treats the sentence purportedly expressing a proposition (or a belief) as an incomplete symbol that has meaning only in being asserted, doubted, and so forth. As a single entity, the proposition (or belief) is a false abstraction, a logical fiction. (*See* DESCRIPTIONS, THEORY OF.) In "On the Nature of Truth" (1906–1907) and unpublished notes, he eliminates belief as a single thing, a complex idea, by treating it as an act of cognition holding between a **subject of consciousness** and multiple ideas. However, worries about a **theory of truth** quickly lead him to relinquish this experiment, and in "On the Nature of Truth and Falsehood" (1910), a proposition is analyzed as a relation between a subject and multiple objects, bound together into a **fact** of belief.

The objects gathered into the belief fact are not intended to be naïve objects of common sense like tables and chairs, but objects of **acquaintance** (**sense data** and **universals**). Yet for the sake of simplicity in exposition, Russell often uses ordinary objects and even fictional people like Othello to present the theory. Thus, a simple example is 'Othello believes that Desdemona loves Cassio,' which Russell analyzes in terms of the **relation** of belief holding between Othello and Desdemona, Cassio, and the relation *love*.

In adopting this view, Russell claims to avoid paradox and to account for the difference between true and false propositions. But, as he begins to discover in 1913, his new theory is weak in several respects. The theory treats things and relations—Desdemona, Cassio, and *loves*—as objects in a relation of belief, but if a relation like *loves* occurs as an object, it cannot also occur as an actual relation between two things, hence nothing combines Desdemona and Cassio into a meaningful unit. On the other hand, if *loves* did occur as a relation, then Desdemona would love Cassio, and the possibility of **false belief** would be excluded. (*See* BIPOLARITY OF PROPOSITIONS.) In general, the theory identifies what makes a belief true, that is, the relation of things in the world, with what makes it meaningful.

By the late 1910s and early 1920s, these considerations, many of which come from his student **Ludwig Wittgenstein**, lead Russell to look for a new theory of belief even as he reexamines his theory of **symbols**, especially in connection with relations. It is not surprising that in *My Philosophical Development* (1959), Russell attributes his rejection of the multiple relation theory to two things: getting rid of the subject of consciousness and concluding that a relation cannot occur as a term. *See also* EXTENSIONALITY, THESIS OF; PROPOSITIONAL ATTITUDES; UNITY OF THE PROPOSITION.

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NAMES *v* DESCRIPTIONS. *See* DESCRIPTIONS, THEORY OF.

NECESSITY AND POSSIBILITY. In Russell's work, the concepts of necessity, possibility, and impossibility are explicated in terms of **propositional functions**. To say, for example, that a triangle

necessarily has three sides, is, he argues, to say that the propositional function '*x* is a triangle and *x* has three sides' is true for all **values** for *x*. Likewise, to say that it is impossible for a triangle to have four sides is to say that there are no values for which the propositional function '*x* is a triangle and *x* has four sides' is true. Finally, to say that a square may have unequal sides is to say that there are some values for which the function '*x* is a square and *x* has unequal sides' is true. In this **analysis**, necessity, impossibility, and possibility are modal concepts used only of propositional functions and **propositions**; hence, it is a mistake to say that an object is necessary, impossible, or possible, for example that **God** exists necessarily. *See also* EXISTENCE AND SUBSISTENCE.

NEGATION, INTERNAL *v* EXTERNAL. *See* DESCRIPTIONS, THEORY OF.

NEGATIVE FACTS AND PROPOSITIONS. In ***The Principles of Mathematics*** (1903), Russell asserts that anything that can be thought has being, and that the absence of a property has being as much as the property itself. Since at this time he views **propositions as entities**, he therefore also accepts that some of them are negative. This point is explicit in 1904 when Russell denies **Alexius Meinong**'s view that negative propositions cannot exist, since we are never **acquainted** with them. Russell agrees that we are acquainted with positive propositions and not with negative ones, but he insists that both positive and negative propositions must exist, even if we only know of one of them by acquaintance. In this period, since his notion of a true proposition is, roughly, that of a **fact**, the notion of **truth** as correspondence with fact is not available to him as an account of the difference between a true and a false proposition—indeed, Russell admits that nothing can be said to explain that difference.

In 1910, the emergence of the multiple relation theory brings the notion of a fact into the foreground, for it introduces a new theory of truth, according to which, in the case of a true **belief**, things in the world are related as they are in the belief, and in the case of a **false belief**, not so related. Russell appears to accept negative facts alongside his multiple relation theory; he mentions them in notes dating from 1913, where they are linked to his student **Ludwig Wit-**

tgenstein's doctrine of the **bipolarity of propositions**, the view that a proposition, to be significant, must be capable of being (at different times) both true and false.

Russell continues to defend negative facts even when he begins to reject the multiple relation theory of judgment. In "The Philosophy of Logical Atomism" (1918–1919), Russell dismisses the idea (attributed to Raphael Demos) that to say, for example, 'this is not blue' is to assert that some other proposition (i.e., belief) incompatible with *p* is true, such as 'this is red.' And in "On Propositions" (1919), Russell defends negative facts by arguing that as absent facts are the same as negative facts, we cannot eliminate negative facts by explaining the truth of 'this is not blue' in terms of the absence of the fact that this is blue.

In *The Analysis of Mind* (1921), Russell introduces the distinction between **expressing and indicating** to distinguish between the psychological content of a sentence and the fact that makes it true or false. Negative facts are used to explain the truth of negative beliefs, that is, what beliefs indicate, and Russell explains what negation **words** express in terms of feelings of rejection toward or disbelief in some positive **image-proposition** or word-proposition. The notion that words like 'not' get their meaning by expressing emotional states toward a proposition is also part of the **primary versus secondary language** Russell now draws.

Though Russell's later work continues to define not-*p* by what it expresses, which is to say, by disbelief in *p*, he does not eliminate negative facts until 1948 in *Human Knowledge*, one of the goals of which is to explain how observation can verify or refute a negative proposition like 'this is not blue' without requiring a commitment to negative facts. In that text, he argues that what makes 'this is not blue' true (what it indicates or states) is the **existence** of some color differing from blue. *See also* OBJECT LANGUAGE *v* META-LANGUAGE; VERIFICATION AND REFUTATION.

NEUTRAL MONISM. Neutral **monism** separates itself from other forms of monism, such as materialism (the doctrine that what exists is material) and British and Kantian **idealism** (the doctrine that only thought or mind is ultimately real), by arguing that the categories of mind (or **consciousness**) and **matter** are simply names we give

to one and the same reality, which is more fundamental than either. **William James** and **Ernst Mach** are among the early proponents of neutral monism; later proponents were the American or new realists Ralph Barton Perry and Edwin Holt. For a long time, Russell's commitment to **mind/matter dualism** prevents him from embracing neutral monism, though he admits to being drawn to the ontological simplicity it makes possible, which sits well with his preference for **constructions** over inferences and his respect for Occam's razor, the principle of not accepting unnecessary entities into one's ontology. But by 1918, Russell concludes that the arguments he previously used to defend the existence of essentially **mental** phenomena, distinct from matter, are fallacious.

In *Analysis of Mind* (1921), sensations are a neutral stuff, neither mind nor matter, out of which mind and matter are constructed. Russell constructs a material object, for example a star, as the set of those closely related sensations or aspects, associated with different points of view or places, which the physical **laws** of perspective, reflection, and so forth then relate to each other. Note that this collection constructs only a thing at a particular moment; the star as a thing enduring in time is constructed from the series of these sets. Russell further constructs a **perception** of the star as the series of sensations or aspects of the star associated with one place (a particular brain, a photographic plate, etc.); he then treats the set of all such series as a biography of mind.

The material thing—the series of sets of sensations collected from different vantage points—is of interest to and under the laws of physics (e.g., perspective). The perception or mind—the set of sensations or the series of sets of sensations associated with one place (a brain)—is of interest to and under the quite different laws of psychology (e.g., association). Sensations are themselves neither physical nor psychological, though they form things that we call either mental or material, depending on the physical or psychological nature of the laws under which the things fall.

Yet Russell also thinks that some phenomena can be considered as falling under both kinds of law. For example, when we have the idea of forming the word 'orange' in our mouth, our throat constricts a tiny bit as if to mouth 'orange,' and in this case there is no clear distinction between our mouth-and-lip sensations and our tactile **image** of having

words in the mouth. We do not violate the laws of physical **space** by treating tactile images of having words in one's mouth as material events located in the body, specifically in the mouth or jaw, but we do violate those laws if we attempt to treat an image of a friend as physical (since the expected correlations with touch, etc., will not occur). Thus, besides involving neutral data, some phenomena are neutral with respect to the laws they function under, though others quite definitely exist only under psychological law or only under physical law.

In admitting that visual images are always configured under psychological laws, Russell appears to commit himself to the sort of mental **particulars** rejected by neutral monism. Moreover, Russell defends neutral monism even as he stresses observable behavior and other themes coming from **behaviorism**, a view usually associated with materialism. For this reason, Russell's approach is idiosyncratic, and rather than say he adopts neutral monism, it might be better to say that he adapts it to his purposes, which are to enable a rapprochement between physics and (behaviorist) psychology. *See also* PRIVATE *v* PUBLIC; SCIENCE AND PHILOSOPHY; WATSON, JOHN B.

NO-CLASSES THEORY. The phrase 'no-classes theory' here refers to the various attempts Russell made over a period of years to handle set-theoretic paradoxes by eliminating **classes**, and sometimes **propositional functions** and **relations**, from the list of basic entities in his logical system. Though the label 'no-classes theory' is most identified with a version occurring in ***Principia Mathematica*, first edition** (1910–1913), Russell's first published attempt to suspend belief in, or eliminate, classes is "On Some Difficulties in the Theory of Transfinite Numbers and Order Types." Written in late 1905 but published in March 1906, it occurs alongside the **zigzag** and size-limitation theories as an attempt to solve the paradoxes of the greatest cardinal and the greatest ordinal. (*See* CANTOR, GEORG.)

In this paper, Russell concedes that the **comprehension axiom** (that every property defines a class of things, namely, the class of things having that property) is flawed, since the paradoxes show that a propositional function (a property) may be definite even though its truth-range (the range of objects for which the proposition is true) does not form a class. He refers to certain properties as 'self-reproductive,' properties that create an ever-expanding class of things possessing the

property, for example the class of all classes. In such cases, once we seem to have all of the entities with that property in a class, the class itself generates a new element having that property, and since we can keep defining further new members having the property, the class defined by it has no genuine closure, no total number of members. This he thinks shows that what is involved is not an entity, for when we cannot collect a totality there is no such thing.

Making use of his 1905 discovery of his **theory of descriptions**, a method of contextually defining certain apparently **denoting** words or phrases, so as to do without those words or phrases, Russell asserts that the words 'class,' 'relation,' and 'propositional function' are merely abbreviations for statements about some or all of their **values**, that is, about some or all of the **propositions** formed by assigning arguments (i.e., entities) to each of their variables. (*See* SUBSTITUTIONAL THEORY.)

By 1908, Russell has rejected this analysis of propositional functions and turned to the **ramified theory of types** to resolve the contradictions, but in doing so, he also employs a contextual **definition** of classes, that is, a definition explaining how to translate sentences referring to sets into sentences making no such reference. In the first edition of *Principia Mathematica*, he construes sentences containing symbols for classes in terms of sentences containing symbols for the propositional function defining the class. That is, he treats a sentence appearing to assert that a class has a property φ as a figurative way of asserting that a property ϕ has the property φ.

The class of things x defined by some property ψ (e.g., being in one's family) is written: $\{x: \psi x\}$, and a sentence asserting some property φ of the class (e.g., 'the people in one's family are generous') is written: $\varphi\{x: \psi x\}$. Russell's definition asserts the existence of a property ϕ that is true of everything the class-defining property ψ is and has the property φ said of ψ. In symbols: $(\exists\phi)[(x)\ \phi!x \leftrightarrow \psi x)\ \&\ \varphi(\phi)]$. This reads 'there is some property ϕ such that for all x, ϕx if and only if ψx, and that ϕ is φ'—or 'there is some property ϕ such that ϕ is true of the same things as ψ and that ϕ is φ.' The definition therefore asserts the **existence** of propositional functions, and whatever needs to be said of classes can be said in terms of propositional functions, stratified according to the **theory of types**.

Since Russell can continue to talk about classes (of various types) with the understanding that such talk is shorthand for more complicated talk about propositional functions, and since his **axiom of reducibility** has the effect of making the logic of the *Principia* extensional, so that it might as well be about classes, some commentators view his no-classes theory in the *Principia* as fairly conservative. *See also* IMPREDICATIVE DEFINITIONS AND PROPERTIES.

NOMINALISM. *See* REALISM.

NONEXISTENT COMPLEXES. In his pre-1910 work, Russell thought that logic involved the study of objects such as **propositions**, which existed if true, and subsisted if **false**. (*See* EXISTENCE AND SUBSISTENCE.) After 1910, he views propositions as logical fictions and sentences expressing them as incomplete symbols. (*See* DESCRIPTIONS, THEORY OF; MULTIPLE RELATION THEORY OF JUDGMENT.) Nevertheless, for the space of about eight years, Russell continues to think that logic is the study of objective, abstract entities, and in the short manuscript called "What Is Logic?" written in September and October of 1912, he tries to explain logic as the study of forms of complexes.

Complexes, for Russell, are objects whose constituents are related to each other in some fashion. We might, for example, take a broom as a complex in which a stick *a* is related to a brush *b*. It could thus be analyzed as the complex *a*-*R*-*b*. The relationship between constituents in a complex constitutes its form. Thus the complex *a*-*R*-*b* has the two-place relational form *xRy*. The form *xRy*, though objective, cannot be another constituent of the complex, since this would give rise to a more complicated complex *a*-*R*-*b*-*xRy*, hence to a different form, and so on, in an infinite regress.

What highlights a complex's form is the notion of substituting certain entities in it for others so as to arrive at a different complex, but no such substitution is possible if a complex does not exist (i.e., if a certain **relation** does not hold among certain constituents). Thus in the case of nonexistent complexes—for example, the broom-tail attached to the living sawhorse in *The Land of Oz*—we cannot arrive at an objective form. Thus there are no forms for logic to be about in

the case of complexes that do not exist, though logic must apply to what is not the case as well as to what is.

After considering and rejecting various ways of defining the notions of 'form' and 'substitution in a complex,' Russell admits his inability to solve difficulties having to do with forms of nonexistent complexes. This is one of the issues Russell decides in 1912 and 1913 he wants to hand over to his student **Ludwig Wittgenstein**, and it is perhaps Wittgenstein who presses him to emphasize forms in the first place. *See also* FALSE BELIEF; PHILOSOPHICAL LOGIC.

NUCLEAR WEAPONS. In 1950, Russell favored the development of the hydrogen bomb by the West (the **United States** exploded its first atomic bomb in 1945 and the Soviet Union in 1949; both exploded their first hydrogen bombs in 1953), since he thought that every increase of Western strength decreased the likelihood of **war** between Soviets and Americans, or between East and West. More controversially, he also urged that governments form a world authority for the control of nuclear weapons that could threaten the Soviet Union with war, backed up, if necessary, with force if it failed to cooperate (*TWG*). Once the Soviet Union also had the hydrogen bomb, he favored a number of different schemes of mutual disarmament, though even as late as 1954, Russell agreed that the United States had to have a powerful nuclear force to convince the Soviets that they could not win a nuclear war (*ABR* 3:72–74). In every instance, however, Russell thought that the only permanent way of preventing a nuclear war was by the formation of a **world government**, where the internationalization of atomic energy was the first step. *See also* CIVILIZATION; PACIFISM; PUGWASH CONFERENCE; RUSSIA AND RUSSELL.

NUMBER, THE DEFINITION OF. In his 1889 *Arithmetices Principia*, **Giuseppe Peano** presented axioms of arithmetic that define the series of natural numbers and from which the **truths** of arithmetic can also be derived. But rather than define numbers themselves, which requires a shift into nonmathematical **language**, Peano simply used the **concepts** of 'number,' 'zero,' and 'successor' as undefined primitives of the system and derived the rest of the natural numbers from them.

In pursuing **logicism**—that is, the doctrine that **Peano's axioms**, and so all of arithmetic (indeed, all of **mathematics**, for Russell), can be derived from logical truths and that all of Peano's basic arithmetic concepts (e.g., 'number,' 'zero,' 'successor') can be defined in logical terms—Russell, only slightly differently than **Gottlob Frege**, defines numbers by employing the concept of a **class** and the logical relation of one-to-one correspondence between elements of classes, which he calls 'similarity.' In logical terms, a class is similar to another class when the members of the class can be put in one–one or unique correspondence with the members of the other. To assert the similarity—or *equinumerosity*—between sets is therefore to assert (using quantifiers like 'all' and the identity relation) that there is a one–one relation between the members of two classes. A number is then defined as the class of all classes similar to a given class, for example 'one' = df. 'the class of singleton classes,' 'two' = df. 'the class of all two-membered sets,' and so forth. By this view, all sets having the same number of elements can be put in a one–one relation with each other, and the set of all such sets is what the numeral that names it means. Such a class of classes is the definition of a number, because it can do everything that a number can do in mathematics. That is the test of its worth.

This way of defining numbers may appear **circular**, first because we appear to use the concept *one* in the concept of a one-to-one correspondence, and second because we appear to be counting the number of members in the sets. But the circularity is merely apparent. One-to-one correspondence can be defined without reference to the number 1 as follows: a relation is one–one when, if x and x' have this relation to y, then $x = x'$, and if x has the relation to y and y', then $y = y'$. And *similarity* requires not counting, but matching up members of different sets by using the relation of one-to-one correspondence; therefore, it can be used to define a number without circularity, that is, without invoking numerical concepts in defining a number.

It is difficult to assess whether or not Russell views himself as showing that numbers are really just classes of classes. In employing what he conceives of as logical terms—the notion of a class, the relation of similarity—to construct a concept equivalent in its use to our use of numbers, Russell engages in an early and perhaps the only really successful instance of logical **construction** (sometimes

called logical abstraction). Though, in general, constructions replace sentences ostensibly about certain entities (like numbers) with more perspicuous sentences about other entities (classes of classes), the point of a construction is sometimes less to eliminate an entity than, by the logical **analysis** of a certain notion, to show its true logical structure and clarify its place in the system of axioms and derivations. Moreover, even in his early work, Russell sometimes exhibits a conventionalist spirit, where a **definition**, rather than describing the nature of the thing defined, is acceptable if it can do whatever the term it replaces can do. However, he maintains this view alongside the conviction that analysis gets at what something really is.

– O –

OBJECT LANGUAGE *v* META-LANGUAGE. A **language** that is discussed in some other language is called an object language, while the language that speaks about the object language is called the meta-language. The meta-language will typically discuss the **words** or sentences of the object language, or else the rules or other properties of it. The two languages are only object language or meta-language relative to one another, and the object language can be a meta-language of some other language even as the meta-language is the object language of yet another, higher language. Frequently, some system of logic is what people have in mind as an object language, and if we speak about it in English, English in that case is the meta-language.

The distinction between object language and meta-language is related to the use/mention distinction, which marks the difference between using words and sentences to talk about things (e.g., 'this is red') and using single quotes around words or sentences to mention the words and sentences themselves (e.g., "'red' is a color word" or "'Snow is white' is true if and only if snow is white"). Yet it is possible to accept that sentences sometimes mention words or sentences without being committed to the belief that all or any of such cases belong in a distinct meta-language. This occurs when we view **logic as universal**, as an all-encompassing language that is used to talk about everything there is, including itself. Then, words are being

mentioned, but in the same language in which they are used, so there is no object language/meta-language distinction.

In his early work, Russell appears indifferent to the distinction now drawn between predicates (like 'implies') that are asserted of names in a meta-language and **logical constants** such as 'if, then,' which hold between sentences in the logical language, For example, he writes '*p* implies *q*' (instead of '*p*' implies '*q*') and treats it as a synonym for 'if *p*, then *q*.' In doing so, he blurs the distinction between names standing in relations in the meta-language and sentences asserted in the object language. He also blurs the distinction between a meta-language rule of inference (e.g., "whenever 'if *p*, then *q*,' and '*p*,' it is valid to infer '*q*'") said about the logical language and a logical truth (e.g., "if [if *p*, then *q*], and *p*, then *q*") said in the logical language.

The object language/meta-language distinction only gradually appears in Russell's work. In 1922, Russell introduces the notion of a hierarchy of languages, so that we may speak of one language from within another, its meta-language, and not be confined by **Ludwig Wittgenstein**'s contention that structural features of language cannot be said in language but only shown by it. Between 1923 and 1927, in revising the *Principia* along lines suggested by Wittgenstein and **Frank P**. **Ramsey**, Russell distinguishes between **talking about** or mentioning a proposition (as in "the sentence '*p*' is true") and using it to talk about or assert something nonlinguistic. And in the 1920s, he introduces what he calls the **primary versus secondary language** distinction. *See also* UNRESTRICTED VARIABLES.

OBJECTIVITY AND SUBJECTIVITY. There is room in philosophy for different conceptions of objectivity and subjectivity. For example, **Gottlob Frege** takes as the basic units of objective reality not objects or **concepts** but what they make up: abstract truths such as 2 + 2 = 4. Like Platonic forms, what makes such "thoughts" objective is that they are available to any thinking mind and are true even if no minds exist. It is therefore not surprising that he refers to experiences like pain, whose content cannot be conveyed in a thought, as examples of what is subjective and **private**.

Russell's early work assumes that subjectivity is peculiar to **consciousness** and that it is impossible to explain subjective experience solely in terms of matter or neutral data without assuming the

existence of mind. Words like 'this,' 'here,' 'now,' and 'I' suggest a center of experience, a subjective vantage point, and therefore support his point, he says. Objectivity characterizes what can be explained independently of that perspective. Russell's adoption of **neutral monism** involves a considerable shift in his conception of subjectivity and objectivity. In *Analysis of Mind* (1921), in which he adopts neutral monism, he argues that subjectivity is not something belonging exclusively to minds (which he constructs as sets of series of neutral sensations), but is as much a property of a photographic plate positioned to receive, for example, sensations of a star. In this view, **perception** is understood not as the essentially **mental act** of a **subject of consciousness**, but as a series of sensations associated with a single place, including the place where a photographic plate exists. *See also* MIND/MATTER DUALISM; 'THIS,' 'HERE,' 'NOW.'

ONTOLOGY OF *PRINCIPIA MATHEMATICA*. The question of the ontology of ***Principia Mathematica*, first edition** (1910–1913), is the question of what sorts of entities are assumed to exist—or must be assumed to exist—by the various doctrines in the text. There is, for example, debate as to whether the **ramified theory of types** requires us to view **propositional functions** as existing entities (i.e., properties, taken as existing things), as linguistic items having no **existence** apart from **language**, or as not quite either. Similar problems appear with respect to the status of **propositions**, which are eliminated in chapter 2, section 3, of the introduction in a manner some think is incompatible with the hierarchy of propositions. (*See* MULTIPLE RELATION THEORY OF JUDGMENT.) Since sentences asserting 'there is a . . . ' make existence claims, the debate might seem to be resolved by considering whether the doctrines in the *Principia* need to contain sentences that assert the existence of this or that kind of entity. Taking the approach just described, Russell appears to intend propositional functions, at least, to be existing entities, for the **axiom of reducibility** makes an existential claim about certain kinds of propositional functions.

But questions persist, first, because it is a matter of interpretation which part of the *Principia* to give precedence when there is conflict

(as there often is) between Russell's various presentations of his theory, and second, because Russell's use and discussion of key notions (like 'propositional function' and '**vicious circle principle**') is often **ambiguous**. (*See* OBJECT LANGUAGE *v* META-LANGUAGE.) Attempts to determine the ontological status of propositional functions and propositions therefore often refer for support to earlier texts, such as ***The Principles of Mathematics*** (1903), or to stages in his development toward a **theory of types**, such as the **substitutional theory**, though the interpretive difficulties usually reappear in the text and period under consideration. Hence, not only is there room for different views of the ontology of the *Principia*, but the interpretations, which have to account for various tensions within the text and between it and other texts, often amount to a whole perspective on Russell's logic as well as a whole way of looking at his logical development. Each whole perspective has arguments for and against it, and therefore, except in small details, they tend to coexist, at a stand-off, as alternative readings.

It is sometimes said, for example by Peter Hylton (1990), that Russell's logic is **realist**, and that even his 1906 **substitutional theory** is about propositions as entities, not about the substitutions of names in linguistic structures, and that Russell's view of propositions in the *Principles* makes little sense if propositional functions, which are intimately connected with them, are linguistic entities. But a very different total picture emerges among those who say, with Gregory Landini (1998), that Russell's theory of the different meanings of '**truth**' in the *Principia* is a theory of symbols or semantic relations, not a theory of things, that the multiple relation theory is a way of defining higher-order meanings of 'truth' foundationally, and that there are higher orders of sentences and of propositional functions as expressions, but among objects, only **universals** and **particulars**. Looking back, this interpretation tends, further, to view Russell's 1906 theory as employing the substitutions of names in linguistic structures and to stress that it views propositional functions as incomplete symbols. *See also* NO-CLASSES THEORY; *PRINCIPIA MATHEMATICA*, SECOND EDITION.

ORDERED PAIR. *See* WIENER, NORBERT.

– P –

PACIFISM. Absolute pacifism is the view that **war** is always wrong. Pacifists such as Leo Tolstoy, Mohandas Gandhi, and members of the Quaker faith have all held this view, but Russell does not. He is a consequentialist, and for consequentialists, there will always be situations in which a generally prohibited action is best. Though a pacifist, Russell therefore takes the view that while very few wars are worth fighting, some are. (*See* JUSTIFIABLE WARS.) He calls this view relative or conditional pacifism. In most cases, however, he agrees with the absolute pacifists that the evils of war outweigh the evils of defeat. The American War of Independence, he thinks, was worth fighting, as was World War II. However, he does not believe that World War I was worth fighting; rather, he thinks that concessions should have been made to Kaiser Wilhelm that would have averted the war, and that the costs of fighting turned out to be much greater than that.

Russell further distinguishes between individual and political pacifism. The individual pacifist refuses to fight no matter what the government does, while the political pacifist is principally concerned to keep his or her government out of war. It is possible to be both, but Russell's principle interest is in political pacifism, which he thinks is the most useful and the most likely to be influential. He is thus a relative, political pacifist. Even when wars are justifiable, he thinks that "war brings about such great evils that it is of immense importance to find ways short of war in which the things worth fighting for can be secured." He spent much of his life trying to diminish the likelihood of war and even served six months in prison for his pacifist activities during World War I.

To achieve whatever is worth fighting for without waging war, Russell thinks two things are necessary. First, an international government that possesses a monopoly of armed force must be created, that is, a **world government** with the power to enforce its decisions. Second, the only wars that are then fought are in defense of the international **law** established by this international authority. This international government with its monopoly of armed force must, Russell says, be one that guarantees every country freedom from **aggression** by going to war against any state declared by the world court to be

an aggressor. It must also intervene in the internal affairs of a state, when invited to do so by a sufficient minority, to prevent civil war and preserve majority rule. This, then, must be the long-term aim of the political pacifist, a goal Russell believes more achievable than is generally thought.

In the absence of an international government, the relative, political pacifist still needs criteria for deciding which wars should be supported. Resistance to tyranny and aggression, Russell says, are two such criteria. However, he thinks that an international government is the only way of making wars improbable.

Concerning individual pacifism, Russell thinks that it is a great virtue for a person to be willing to brave punishment for the sake of his or her conscience, and that such intellectual and moral **courage** is valuable to the community. Governments, however, cannot simply ignore conscientious objectors, for then people might suddenly develop a conscience, and in the case where the government was fighting a just war, such as World War II, injustice would result. Governments should thus require of conscientious objectors some kind of alternative service, Russell says, though he thinks the punishment should not be too severe should the conscientious objector believe that he or she could not provide service of any kind to a government at war. Still, Russell does not think that personal pacifism is as important as political pacifism, for it will do almost nothing to prevent war, whereas political pacifism can help to end wars (*FOP* 7–13). *See also* COLONIZATION, WARS OF; WORLD CITIZENSHIP.

PARTICULARS. In "On the Relations of Universals and Particulars" (1911), Russell argues for the **existence** of diverse particulars, that is, things like tables, chairs, and the material particles that make them up that can occur in one and only one place at any given time, as well as for the existence of universals, that is, entities like *redness* that occur in more than one place at any time. To the claim that a particular thing cannot be in two places, he adds the idea, dating in his work back at least to ***The Principles of Mathematics*** (1903), that particulars are numerically diverse—two or more, rather than one—if they exist in different places at the same time. That is, place or location distinguishes two particulars when they are otherwise the same. Finally, he argues that our perceived **space** consists of **asymmetrical**

relations such as *left* and *right*, that is, relations that order space. As he sees it, universals alone cannot account for the asymmetrical relations given in **perception**—particulars are also needed. Hence, wherever a spatial relation holds, it must hold of numerically diverse terms, that is, of diverse particulars. Of course, there is also need for universals, since numerically diverse particulars cannot explain what is common to several particulars, that is, what occurs in more than one place. *See also* BUNDLE THEORY OF OBJECTS; EXTERNAL RELATIONS; REALISM.

PEANO AXIOMS. In the 19th century, great strides were made at increasing the precision and generality of **mathematics** by the "arithmetization" of mathematics, that is, the reduction of higher mathematics to arithmetic achieved by deriving all of traditional pure mathematics from the natural **numbers**. The mathematicians and logicians most prominently involved in these developments were Augustin Cauchy, Karl Weierstrass, **Georg Cantor**, Richard Dedekind, **Giuseppe Peano**, **Gottlob Frege**, **Alfred North Whitehead**, and Bertrand Russell. Their work includes the rigorous derivation of calculus from the notions of limit and continuity by Cauchy and Weierstrass, the **definition** of irrational number and continuity in terms of natural numbers by Dedekind and Cantor, and the definition of **infinity** by Cantor. The culmination of this work came with Peano, who reduced arithmetic to three primitive terms and five axioms, from which all of the natural numbers and **propositions** of arithmetic could be derived. These axioms are called the "Peano axioms."

Peano begins his reduction of arithmetic by taking '0,' 'number,' and 'successor of' as primitive terms, and he then proceeds to define the natural numbers by introducing his five axioms and deriving the natural numbers from them. By defining addition and multiplication in terms of his primitives, axioms, and general logic, the propositions of arithmetic can then be derived. The five Peano axioms are:

1. Zero is a number.
2. The successor of any number is a number.
3. No two numbers have the same successor.
4. Zero is not the successor of any number.

5. If a property belongs to zero and also to the successor of any number that has that property, then all numbers have that property.

The fifth axiom, the principle of mathematical induction, is the most important. It establishes that every natural number is in a set N so long as 0 is in N and the successor of any natural number is in N. Since the first four axioms form a set including 0 and the successor of any number *n*, it follows from axiom five that there is an infinite set N of natural numbers. Though most mathematicians accept the axiom of mathematical induction, **Henri Poincaré** viewed its use as illegitimate, particularly for reasoning about the infinite, and he therefore denied that the axioms in fact define the series of natural numbers.

Once the natural numbers have been derived, arithmetic operations can then be defined in terms of these primitives, axioms, and logic. For example, addition is defined for any numbers $m + n$ by defining $m + 0$ as m and defining $m + (n + 1)$ as $S(m + n)$, that is, where 'S' is the successor function so that $S(m + n)$ is the successor of $(m + n)$. Finally, axiom five guarantees that this is a definition of $m + n$ no matter what numbers m and n may be. Then, having already defined the natural numbers in terms of their successors, we can add, for example, $4 + 3$ by saying $4 + 3 = 4 + S(2) = S(4 + 2) = S(4 + S(1)) = S(S(4 + 1)) = S(S(4 + S(0))) = S(S(S(4 + 0))) = S(S(S(4))) = S(S(5)) = S(6) = 7$. The operation of multiplication is similarly defined.

To introduce the operation of addition as if by definition is somewhat misleading, for it is not definable just in terms of the axioms and primitives. It might therefore be best to consider it as an additional postulate. This, plus a similar "definition," that is, axiom, of multiplication, will then allow for the derivation of arithmetic from Peano's postulates, though they are not sufficient to derive **analysis**. Since Peano's time, it has been discovered that the definitions of addition and multiplication can genuinely be derived from set theory and the logic of relations.

It was the project of Frege, Russell, and Whitehead, called **logicism**, to reduce arithmetic to logic in order to show that all of mathematics is mere logic and perfectly general. Clearly, the most important work that allowed them to take this last step was that of Peano, for once Peano had reduced mathematics to a few primitives and five

axioms, the logicians had only to provide their own definition of the three primitive terms and then derive the axioms from general logic in order to show that all of mathematics can be reduced to logic. Yet Russell also criticizes the Peano axioms for having multiple interpretations (due to being defined by **abstraction**) and therefore failing to isolate a particular entity that is the meaning of a numeral. This objection, linked as it is to Russell's conception of philosophical definition, shows that, in asking what number is, Russell is engaged in something more philosophical than the pursuit of arithmetization. *See also* AXIOMATIC SET THEORY.

PEANO, GIUSEPPE (1858–1932). An Italian mathematician, Giuseppe Peano taught at the University of Turin and produced a number of significant results in **mathematics**. For example, he proved that $y' = f(x, y)$ has a solution if f is continuous, and he discovered certain "**space**-fitting" curves that were thought not to exist. But today he is best known for his axiomatization of arithmetic, in which he presents three undefined primitive terms and five axioms from which the natural numbers and **propositions** of arithmetic can be derived. (*See* PEANO AXIOMS.) This work was essential for the development of modern mathematical logic and philosophy of mathematics. (*See* FREGE, GOTTLOB; LOGIC, ARISTOTELIAN.)

Peano expresses his five axioms of arithmetic in a logical notation from which we inherit the sign '$\in$' for set membership and the sign '$\supset$' for material implication. He also introduced the symbols '$\cap$' and '$\cup$' for **class** intersection and union, and he was the first to distinguish clearly between 'being a member of' and 'being a subset of,' that is, between '$a \in A$' and '$a \subset A$.' Peano first published his famous axioms of arithmetic in 1889 in *Arithmetices Principia*, a pamphlet written in Latin. There were nine axioms at first, but he later pared them down to five.

Russell met Peano and first learned of Peano's work in 1900, when both attended two back-to-back conferences in Paris—the International Congress of Philosophy and the Second International Congress of Mathematicians. Russell claims that meeting Peano there was the intellectual turning point of his life. Russell acquired all of Peano's works from Peano and studied them afterward. He attributes his turn to **logicism**—his attempt to reduce mathematics to logic—to witness-

ing Peano's report on his axiomatization at the Second International Congress of Mathematicians in 1900 and subsequently familiarizing himself with Peano's notation.

In a sense, Russell became Peano's disciple, for besides acquiring a notation, which according to Russell "afforded me an instrument of logical **analysis** such as I had been seeking for years" (*ABR* 1:219), and an axiom system necessary for his later reduction of mathematics to logic, Russell first learned of the work of **Gottlob Frege** from Peano. Yet Russell's own work is critical of Peano, especially with respect to **definition by abstraction**. Russell's study of Peano resulted in his 1903 ***Principles of Mathematics***, in which he introduces his definition of **number** and outlines his logicist program that was articulated in full in the 1910–1913 ***Principia Mathematica***.

PEARSALL SMITH, ALYS (1867–1951). Alys Pearsall Smith, Bertrand Russell's first wife, was an American born to evangelical Quakers and a graduate of Bryn Mawr College, where she had studied English and German literature. Her father was a famous evangelical preacher and her mother an author of inspirational best-sellers, such as *The Christian's Secret of a Happy Life* and similar works. Alys moved with her family to Great Britain in 1888, after a brief time there from 1873–1875, meeting Russell in 1889, when he was 17 and she was 22. After much opposition from Russell's family, they were married in 1894. It was to be Alys's first and only **marriage**.

A social activist and advocate of temperance, **women's rights**, **pacifism**, and **socialism**, which she believed to be the best means for attaining women's rights, Alys headed the Abingdon Women's Temperance Association in Britain and spoke at numerous campaigns and meetings for women's rights and, during World War I, against the war. She argued for free love in her youth and supported the use of contraceptives for **birth control** and control of disease. She also published a famous feminist tract, "A Reply from the Daughters" (*Nineteenth-Century Magazine*, March 1894), arguing that unmarried daughters need not devote themselves to the care of their parents, and a chapter in Russell's 1896 book *German Social Democracy*, "Social Democracy and the Woman Question in Germany." She supported Russell's stand for a seat at Wimbledon

in support of women's suffrage and accompanied him on trips to France, Germany, the **United States**, and elsewhere.

Russell's feelings for Alys began to cool as early as 1902, and they separated in 1911. Due to **divorce** laws at the time, which required the consent of both parties, their marriage did not end until 1921, after Russell had begun a relationship with **Dora Black**. They had no children. Alys continued to pursue social activism for some time and, among other things, supported relief measures for escapees of Mussolini's Italy. She died in 1951, never diminishing her regard and affection for Russell, despite the impossibility of their reconciliation. *See also MARRIAGE AND MORALS.*

PERCEPTION *v* SENSATION. In ***Problems of Philosophy*** (1912), sensation is a kind of **acquaintance** with or immediate awareness of colors, sounds, and other **sense data**. According to Russell at that time, a sensation conveys no propositional knowledge, that is, no knowledge of a **truth**, and amounts only to the awareness of a present sense datum. A sensation thus conveys no awareness of a sense datum as a **complex**; we may sense a patch of color as round and sense it as red without being aware that it is both. (*See* KNOWLEDGE OF OBJECTS *v* KNOWLEDGE OF TRUTHS.)

In other work in this period, Russell distinguishes between sensation and perception. In perception, he says, we experience data as complex. Though perception does not go so far as to judge or assert the complexity, it is the origin of judgments about present experience and the reason such judgments are **certain**. Indeed, in *Theory of Knowledge* (1913), Russell attempts to explain the connection between judging and perceiving by supposing a kind of complex perception whose logical form is very like judging. This is problematic, for as he admits in "The Philosophy of Logical Atomism" (1918–1919), the difficulties **Ludwig Wittgenstein** brought to his attention in 1913 concerning the role of the subordinate **relation** in a judgment apply equally to his theory of perceiving. (*See* MULTIPLE RELATION THEORY OF JUDGMENT.)

In *Analysis of Mind* (1921), where he introduces his metaphysics of **neutral monism**, Russell no longer assumes the existence of a **subject of consciousness** and no longer conceives of **consciousness** in terms of various kinds of **mental acts** (such as sensation) relating

a subject and objects. Rather, he defines perception as an appearance from a place (the place where a brain is) and as capable of being affected by **memory**, habit, and the like. He defines a sensation as the part of a perception not due to such phenomena. Yet he also no longer distinguishes a sensation from a sense datum but views a sensation as neutral material, neither mental nor material, so it therefore makes no more sense to say that sensation is cognitive than it does to say a sense datum is. *See also* ATTENTION; OBJECTIVITY AND SUBJECTIVITY.

PHILOSOPHICAL LOGIC. In 1914, Russell argues that logic has two branches: mathematical and philosophical. Mathematical logic contains completely general and **a priori** axioms and theorems as well as **definitions** (such as the definition of **number**) and the techniques of **construction** used, for example, in his theory of **descriptions**. Philosophical logic, which Russell sometimes simply calls logic, consists of the study of forms of **propositions** and of the **facts** corresponding to them. Russell does not mean by this pursuit a study of **grammar** or a meta-level study of a logical language; he has in mind the metaphysical and ontological examination of what there is. In his theory of **logical atomism**, for example, this study entails enumerating the forms of facts into **atomic and molecular**, general, **belief**, and so on. For a long time, it is logic in this sense that Russell values most and considers most important to the task of philosophy. *See also* EPISTMOLOGY, PSYCHOLOGY, AND LOGIC; NONEXISTENT COMPLEXES.

PHILOSOPHY, RUSSELL'S PRACTICE OF. Russell's practice of philosophy exhibits distinctive characteristics that go beyond what can be found in his explicit discussion of the nature and value of philosophy. (*See* PUBLIC PHILOSOPHY.)

His practice shows, for example, that he believes philosophy to consist of genuine questions about issues of ultimate importance. In this, he opposes **Ludwig Wittgenstein** and others, like **Rudolf Carnap**, who view philosophical problems as nonsensical pseudoproblems arising from a misunderstanding of **language**. Moreover, despite a reputation for making many lightning changes in doctrine, Russell's philosophical practice is in many cases cumulative and

slow. Like **Aristotle** surveying the pre-Socratics, Russell often assembles a doctrine that is distinctly his own only after surveying and appropriating data and methods from a variety of philosophical and scientific sources. In this way, his practice of philosophy differs from the solitary pursuit of philosophy associated (however unfairly) with René Descartes, but without consisting solely in conversation, in the way often associated with Socrates.

Because Russell assumes there is value in revising philosophical doctrines, his practice of philosophy resembles empirical **science**, though it differs in having philosophical and logical **analysis** as the main tool. Russell's philosophical practice assumes the value of change and **progress**—as opposed to the contemplation or description of reality—and conveys values made explicit by **John Stuart Mill**. Finally, Russell's practice implies that the philosopher ought not to be preoccupied (as is stressed in certain **religions**) with perfecting his or her character, but ought also to think about and act on issues that extend beyond the self, such as the improvement of **education** or the abolition of **war**. In this, Russell may be compared with Karl **Marx**, in wishing to bring philosophy from the realm of contemplation to the domain of concrete action. *See also* PUBLIC PHILOSOPHY; TRADITIONAL PHILOSOPHY.

POINCARÉ, HENRI (1854–1912). The work of French mathematician Henri Poincaré addresses the philosophical interpretation of logic and **mathematics**. Like **Immanuel Kant**, he thinks that arithmetic is synthetic and **a priori** but also dependent on thought or intuition. Since, again like Kant, he believes that logical truths are **analytic**, he concludes that mathematics cannot be reduced to logic, contrary to **Gottlob Frege** and Russell's **logicism**. Moreover, since mathematics, for Poincaré, is constrained by our intuitions or ways of knowing, he concludes that **definition** and **proof** must be constructive. A definition must give the entity in question, not merely lay out a list of essential properties. And a proof must not only show that no contradiction occurs in saying that an entity has some property but show how to find that entity.

Given these views, Poincaré does not believe that **Giuseppe Peano's axioms** define natural **numbers**; rather, he demands proof that some object satisfies the axioms. Yet he rejects as **circular** any

proof that employs the assumption that if a proof at stage *n* is consistent, a proof at stage *n* + 1 is too, which is the kind of reasoning that occurs in the last, so-called inductive axiom in Peano's system. Poincaré's limitation of mathematics to what can be intuited or thought also makes him suspicious of work in mathematics that deals with the **infinite**, such as **Georg Cantor**'s work in transfinite arithmetic, and makes him in general opposed to any use of **impredicative definitions**, as these define an object by reference to a set in which it already belongs and introduce entities incapable of definition in a finite number of words. Indeed, Poincaré argues that paradoxes stem from permitting impredicative definitions, and his **vicious circle principle** proscribes defining a thing in terms that presuppose it.

Poincaré's conception of mathematics, definition, and proof diverge sharply from Russell's logicism and from Russell's anti-Kantian views, and these differences become apparent very early in Russell's career. Like Gottlob Frege, Russell denies the role of intuition in mathematics, viewing it as comprised of objects that exist independently of the mind. In this connection, Russell sometimes objects that Poincaré demands definitions where none are needed, by failing to distinguish **philosophical versus mathematical definition**. Though the young Russell agrees with Kant and Poincaré that mathematical truths are synthetic and a priori, he sees no difficulty in reducing them to logic and so views logic as synthetic and a priori as well.

Despite these differences, Russell eventually accepts Poincaré's view that paradoxes are due to vicious circles, that is, to impredicative properties, and uses the vicious circle principle to explicate his **ramified theory of types**. In the 1920s, Russell decides that logic is analytic and that a **logical proposition** is nothing but a **tautology**, but this change does not signal a shift toward Poincaré's constructivist views.

POWER. For Russell, power is the fundamental concept of the social **sciences**, just as energy is for physics. The **laws** of social dynamics, he says, can only be stated in terms of the various forms of power. Russell defines power as the production of intended effects, and in *Power: A New Social Analysis* (1938), he presents the classic analysis of his particular conception of it. It is, more specifically, power over people that Russell investigates in his analysis: direct physical

power, rewards and punishments as inducements, such as giving or withholding employment, and influence on opinion, such as propaganda. For example, the army and police exert coercive power, corporations mainly use economic incentives, and schools, churches, and political parties rely on opinion and propaganda.

In human society, Russell finds that traditional power, as opposed to newly acquired power, relies on the force of habit above all, so it does not have to constantly justify itself or prove how powerful it is. Russell says that it is almost always associated with **religious** beliefs to the effect that resistance to this power is wicked. It can thus rely on public opinion to a greater degree than other forms of power and need not expend as much force as other forms of power on maintaining its power. At the same time, injustices of the system are more likely to be tolerated than is the case concerning other forms of power. Quite the opposite of traditional power is naked power, which Russell defines as power not based on assent or tradition. It is usually a military power, either an internal tyranny or foreign conquest. Military power, Russell thinks, particularly foreign conquest, has had more to do with the spread of **civilization** that any other force. He points out that military power is usually based on some other form of power, such as wealth, technical knowledge, or fanaticism.

When succeeded at all, traditional power is often succeeded by naked power, but sometimes by revolutionary power, which requires the willing assent of a majority or large minority of the population. More specifically, Russell views revolutionary power as dependent on uniting a large group by means of a creed, program, or sentiment, such as desire for national independence. As distinct from this, naked power (which is a matter of degree) results merely from the power-loving **impulses** of individuals or groups.

Russell also distinguishes between the power of organizations and the power of individuals, though the two forms of power are interrelated: for example, to become prime minister in Great Britain, a person must acquire power in his or her party, and the party must acquire power in the country. Different types of organizations produce different types of powerful individuals, Russell claims. Hereditary power produces a class of gentlemen, though the power of this type of person varies from the magic of chieftains and divinity of kings to the chivalry of knights and the breeding of aristocrats. (*See*

ARISTOCRATIC VIRTUES.) Individuals who gain power through learning (real or supposed) typically have the virtue of wisdom as opposed to the gentleman, who has the virtue of honor. Economic organizations have produced a new type of powerful person—the business executive. Such individuals must be ruthless in competition with others and skillful at concession in negotiations, something like a cross between a general and a diplomat. Political organizations produce still another type of person—the politician, who must be able to win the confidence of his or her party and the enthusiasm of a majority of the electorate (*P* 10, 35–41). *See also* CAPITALISM, THE DANGERS OF.

PRAGMATISM. *See* JAMES, WILLIAM.

PRIMARY *v* SECONDARY LANGUAGE. In *An Inquiry into Meaning and Truth* (1940), Russell notes that Alfred Tarski has shown that 'true' and 'false' can only be defined in a **language** higher than the one containing the sentences to which 'true' and 'false' are being applied, and he then compares the notion of a hierarchy of languages to what is involved in his **theory of types**. (*See* OBJECT LANGUAGE *v* META-LANGUAGE.) Russell then describes his conception of the levels of language. At the lowest level—the primary (or object) language—there are object **words**, like 'dog,' whose meanings are learned ostensively in the presence of objects and which are used either as one-word assertions to demonstrate present objects or in combination in basic propositions that describe experience. At this level, there are no logical words (i.e., no **logical constants** like 'or,' 'not,' and 'all'), nor are there any semantic or intentional words (like 'true' and 'believes'). Hence assertions in the primary language have no antitheses or denials. The next level, the secondary language, presupposes the sentences of the primary language and contains logical, semantic, and intentional words, which apply to sentences in the primary language. It therefore contains assertions that have antitheses or denials.

The contrast between the primary and secondary language allows Russell to give a psychological account of the meaning of logical words like 'or' and 'not' and the sentences containing them in terms of experiences of choice and rejection. (*See* EXPRESSING *v* INDICATING.) The distinction between the primary and secondary

language is itself partly psychological, since by primary language assertions Russell means those that do not refer to or presuppose any other sentences, and this is often less a matter of the external form of an assertion than of our intentions. For example, we may reassure ourselves by saying 'this is sugar,' meaning 'this is not salt,' and in that context what we utter is a denial applied to a sentence and occurs in the secondary language. In other cases, the same form of words might be in the primary language.

In *Human Knowledge* (1948), Russell distinguishes between two uses of a sentence: a primary use in which words denote what is present, and a secondary use in which words are about a sentence, as in "the sentence 'it is raining' is false." In this text, as in *An Inquiry into Meaning and Truth*, his concern is to determine how evidence bears on the truth of sentences of various kinds. (*See* VERIFICATION AND REFUTATION.) Running throughout Russell's account is the assumption that it is important and meaningful to ask about the relation of language to experience. In this, his view is opposed to **Rudolf Carnap**'s contention that a language is a system of conventions serving some end, and our investigations into it are always relative to some linguistic framework. *See also* MEANING, CAUSAL THEORY OF; 'THIS,' HERE,' NOW.'

***PRINCIPIA MATHEMATICA*, FIRST EDITION.** Over a period of a decade, from 1903 to 1913, Russell and **Alfred North Whitehead** produced the three volumes of *Principia Mathematica* (1910, 1912, 1913), anticipating a fourth volume, which was never completed. This work was Whitehead and Russell's most complete statement of their **logicist** program. In it, they argue, through a series of **proofs**, for the thesis that all mathematical terms can be defined in terms of logical ones and all mathematical truths deduced from logical truths.

Volume 1 opens by explaining the goal of the text as the reduction of **mathematics** to logic. In subsequently presenting the notation, Russell lays out the basic terms of the system, including the primitive notion of **ambiguous assertion** and the distinction between **real and apparent variables**. The introduction then explains the various doctrines needed to prevent contradictions like **Russell's paradox** and the **liar paradox** from undermining the goal of the work. These

doctrines include the theory of **descriptions** and **no-classes theory**, which eliminate **classes** by defining them in terms of **propositional functions**, the **vicious circle principle** and **ramified theory of type**s, and the **multiple relation theory** of judgment.

Aside from the introduction, volume 1 consists of two parts. Part 1 presents various primitive ideas, **definitions**, axioms (such as *1.11, the axiom of **identification of type**), and rules of deduction of the logical system of the *Principia* that are necessary to the rest of the work. An account of the nature of **quantification in the *Principia*** follows this, and part 1 ends with the theory of classes. Part 2 turns to the basic ideas involved in cardinal arithmetic (e.g., the notion of a unit) and prepares the ground for the discussion of cardinal **numbers** opening volume 2. Volumes 2 and 3 use the logical apparatus of the first volume in addressing the theory of cardinal numbers, **relations**, ordered series, ordinal numbers, **Georg Cantor**'s theory of transfinite numbers, and so on.

Though all three volumes contain numbered proofs in logical notation, the difficulty of the text is less mathematical than interpretive and philosophical, and many of the debates concerning it therefore center on Russell's discussion in the introduction. Some of these difficulties are caused by textual disparities. For example, Russell suggests in chapter 2, section 3, and in *9 that the orders of **propositions** turn on the number of quantifiers contained in them, so that propositions with unequal numbers of apparent variables are of different orders. (In *12 he seems to suggest that propositions within one order may contain different numbers of quantifiers and are differentiated into different types accordingly.) Later in chapter 2, however, he appears to base the orders of propositions on the kinds of things, individuals, functions of individuals, and so on, that may be significantly substituted for its variables. These differences are reflected in Russell's discussion of generality in *9 and again in *10.

Because of these disparities, and because Russell's presentation of key terms is ambiguous, many interpretive difficulties center on the intended **ontology of *Principia Mathematica***, that is, on the intended status or nature of propositional functions and propositions according to the ramified theory of types. Questions of this kind are often intertwined with debates about the nature of logic, the feasibility of

logicism, and the appropriateness of Russell's and Whitehead's axioms and general approach.

For example, the text of the *Principia* does not express an **extensional** approach to logic, for in it, extensionally equivalent propositional functions (i.e., propositional functions true of the same individuals) may differ in meaning (i.e., in intension). Yet in actual practice, the first edition proceeds as if it were an extensional system, since it invokes an axiom of **reducibility** that provides higher-order propositions (and the intensional distinctions of meaning involved in them) with extensionally equivalent ones. This fact led to the observation, by **Frank P. Ramsey** and others, that Russell would not have needed the axiom of reducibility or the axiom of **infinity** had he simply kept to an extensional logic, and that in so doing he could have additionally ignored **semantic** or epistemological paradoxes as irrelevant to logic—and that he ought to have, as such axioms are in tension with the nonempirical, **a priori** character of logic. Such a view assumes a view of logic that Russell did not hold—at least, not for some time. Russell's own disquiet with these axioms and his changing views on the nature of logic lead him to add a set of appendices and a new introduction to ***Principia Mathematica,* second edition**. In these new sections, he lays out how to read the *Principia* as wholly extensional and truth-functional, treating propositional functions as shorthand for classes of propositions and not as what language is about.

***PRINCIPIA MATHEMATICA*, SECOND EDITION.** In the second edition of *Principia Mathematica*, begun in 1923 and complete by 1927, Russell adds a new introduction and several appendices in which he both outlines a simplification of the system and responds to his unease about certain features of the first edition, especially the axiom of **reducibility**. (*See* INFINITY, AXIOM OF.) From Henry Sheffer, he takes the single logical indefinable sentence connective 'not both *p* and *q*' (called the **Sheffer stroke**) and replaces his 'not-*p*' and '*p* or *q*' with it. From Jean Nicod, he takes the result that the primitive **propositions** in the first five numbers of the *Principia* (*1–*5) can be reduced to two propositions, or using Sheffer's stroke notation, to one. This, he says, plus the rule of implication, suffices to prove whatever needs to be proved about elementary propositions (i.e., **atomic and molecular** propositions of propositional logic).

Russell also adopts ideas defended by **Frank P. Ramsey**, many of which were originally promulgated by **Ludwig Wittgenstein**. In the view of logic he adopts, functions of propositions are always truth functions and definable with stroke notation. Thus, in appendix A, Russell says that any proposition whatsoever may be defined in terms of a stroke matrix (a group of propositions combined by the Sheffer stroke, such as '$p \mid q$') and then explains how general propositions, that is, propositions containing apparent (bound) variables, arise from elementary ones. General propositions arise, he says, by taking elementary propositions formed from propositional functions, such as 'ϕa,' replacing the individual constants with variables, attaching a quantifier (or in more complex cases, quantifiers) to the propositional function 'ϕx,' thereby binding the quantifier to the variable, as in '$(\forall x)\phi x$.' By replacing a propositional constituent of the matrix (e.g., 'p' in '$p \mid q$') with a propositional function (e.g., with 'ϕx') and then attaching a quantifier, we arrive at stroke functions containing general assertions '$(\forall x)\phi x \mid q$.' This approach is detailed in number *8, which replaces *9 of the first edition. (*See* QUANTIFICATION IN *PRINCIPIA MATHEMATICA*.)

Since statements of **belief** and other **propositional attitudes** cannot be defined in this way, they are no longer treated as functions of propositions in the sense relevant to logic. The revised edition therefore contains only **extensional** functions, which can be defined as sets of ordered pairs, so that there is no important difference between propositional functions and **classes**. Now, propositional functions made true by the same class of objects (i.e., extensionally equivalent functions) can be substituted for each other as arguments of stroke functions, where the results will be true of the same objects. In short, all functions of functions are extensional. In this way, the revised edition of the *Principia* contrasts with the first edition, where two extensionally equivalent propositional functions can have distinct meanings, a position that has led many to view the logic of the first edition to be intensional and the original **ontology of the *Principia*** as committed to the **existence** of propositional functions.

According to this interpretation of the first edition of the *Principia* as intensional, Russell introduces higher types, that is, propositional functions as entities, by treating the function as a variable. If function variables can take different propositional functions as values,

then propositional functions must themselves be something like entities; we can quantify over them. In contrast, in the second edition of the *Principia*, the **values** of a function variable such as 'ϕx' in '$(\exists\phi)(\phi$Socrates)' do not differ in kind from the values of a function constant 'Fx': they are simply elementary propositions, though in a disjunction, such as 'Socrates is wise v Socrates is happy v . . . ' A function variable appearing in a quantifier (e.g., '$\forall\phi$' or '$\exists\phi$') of some general proposition is just an abbreviation of a disjunctive or conjunctive string of the propositions containing that propositional function. Or as Russell puts it, a propositional function can now only enter into a proposition through its values; for example, the predicate 'red' can only enter into those propositions ('this is red,' etc.) which assert of some individual that it is red.

Functional variation is involved in **impredicative** propositional functions, that is, in those that refer to a totality of propositional functions. But as a result of the view sketched above, in the second edition of the *Principia*, such propositional functions become mere abbreviations of elementary propositions. And since the **semantic** paradoxes whose solution required order distinctions are no longer thought to belong to logic, the **theory of types** of functions no longer needs to be further **ramified** into orders, leaving no need for the axiom of **reducibility** to postulate a predicative first-order function that is extensionally equivalent to a function of arbitrary order.

In the first edition, thinking that functional variation introduced higher types, Russell introduced the primitive notion of **asserting a propositional function** to refer to all types, in order to have statements, such as those of the theory of types, not restricted to type. (*See* REAL AND APPARENT VARIABLES.) His decision in the second edition to treat functional variables as merely abbreviating elementary propositions allows him to eliminate the primitive notion of asserting a propositional function. Rather than rewrite the original text to reflect this change, Russell adopts the convention that wherever a propositional function is joined to the assertion sign in the *Principia*, as in '$\vdash \phi x$,' instead of reading it as an unrestricted generalization over entities of any type, we are to read it as the assertion of a quantified proposition '$(\forall x)\phi x$,' with a quantifier restricted to type. As a result of these changes, there is also no need for the axiom of

identification of type, which was necessary in the earlier edition for handling derivations involving assertions of propositional functions.

In appendix C, Russell distinguishes between **talking about and asserting a proposition**. He marks the contrast (related to the **object language versus meta-language** distinction) in terms of his analysis of **words and sentences** as classes.

Russell's attempt to revise the *Principia* in the ways mentioned above does not satisfy the very critics whose urging led him to undertake the task. In particular, Ramsey objects to what he sees as the unduly metaphysical way in which Russell understands the principle that a function can only occur through its values, which in Russell's hands is attached to a theory of **symbols** and a doctrine of **universals**. *See also PRINCIPIA MATHEMATICA*, FIRST EDITION; SEMANTIC *v* LOGICAL PARADOXES.

PRINCIPLES OF MATHEMATICS. Along with "On Denoting," *The Principles of Mathematics* (1903) is Russell's most important early work. It introduces his **logicist** thesis that mathematics is a branch of logic: that the **concepts** of mathematics are definable in terms of logical concepts and its axioms derivable from logical axioms. But in its first draft, in 1897, arithmetical concepts are taken as fundamental rather than being defined in terms of logical ones, for the plan of the book predates Russell's logicism, arising in his **idealist** phase. In this idealist period, his ambition was to write a series of books illustrating the interrelation of the **sciences** by showing how one science emerges from the limitations and contradictions of another—for example, how geometry emerges from the limitations of the science of **number**.

In later drafts of the book, Russell rejected the idealist views of his teachers on the nature and contents of logic, especially with respect to the nature and status of **relations** (including identity and diversity) and the **analysis** of **propositions**. For example, by 1899 Russell had defined **asymmetrical relations** as primitive elements in his ontology and logic, arguing against **Francis Herbert Bradley** that there are **external relations** between objects (e.g., 'A is to the left of B'), that is, relations irreducible to properties of objects, and that asymmetrical relations are like this. He thereby rejected the idealist

tendency to analyze all propositions, even relational ones, in terms of subject-predicate form. (*See* GRAMMAR AND ANALYSIS.)

Likewise, in his study of the relation of quantity and number, Russell had begun to zero in on specific antinomies, such as the one that in 1899 he called the antinomy of **infinite** number (there is and is not a totality of numbers). In the process, his earlier idealist reliance on contradictions came to be replaced by an abhorrence of paradox. (In a logical system, the presence of a contradiction means that the system is unacceptable, as anything whatsoever may follow from a contradiction.) Meanwhile, he had begun to adopt the new doctrines present in the final version of the book: for example, that position in **space** is absolute, that '**class**' (or 'set') and 'proposition' are logical primitives, and that a variable in a proposition is **unrestricted** and can range over anything at all. As he later found out, contradictions arise from the notions 'class' and 'proposition,' but many of these portions of the final version of the book were written before this discovery.

Russell learned of **Giuseppe Peano**'s work in the foundations of mathematics at the Paris Congress of Philosophy in August 1900. By September 1900, Russell had mastered the work of Peano's school as well as Peano's symbolic notation, extending the notation to describe his emerging logic of relations and crediting Peano's notation with permitting him to describe and solve what had previously seemed to be intractable problems in the foundations of mathematics. In this process, he came to define the cardinal number of a class as the class of all classes similar to it, adopting a view rejected by Peano (and which Peano may well have learned from **Gottlob Frege**), and further paving the way for the final, logicist version of the book.

But problems multiplied even as the book took final form. By 1901, Russell's acceptance and formulation of **Georg Cantor**'s analysis of cardinal numbers had led him to his discovery of the paradox of a set of all sets that are not members of themselves (i.e., **Russell's paradox**). Since the discovery of contradictions threatened the intended point of the *Principles*—the reduction of mathematics to logic—it was necessary for Russell to defend his approach to logicism by appending explanatory sections to the text. In the first appendix, he addresses the paradoxes, the differences between his own conception of a **propositional function** and Frege's notion of

a function, and Frege's **concept/object** distinction. In the second, he sketches a **theory of types** of variables (i.e., variables restricted to different ranges of objects) intended to avoid the paradoxes.

A sequel to the *Principles* had originally been planned, which would contain the actual derivation of mathematics from logic. After a decade of hard work on a more complete solution to the paradoxes, what emerged instead were the three volumes of ***Principia Mathematica*** (1910, 1912, 1913).

PRIVATE *v* PUBLIC. In Russell's early work, minds exist in a way that is distinct from the material world. (*See* MIND/MATTER DUALISM.) In this period, a mind is assumed to have privileged access to its own contents, in the sense that its own ideas, **beliefs**, and so forth are inherently private and inaccessible to other minds. Hence Russell treats privacy as an intrinsic property of mental reality. When he adopts **neutral monism**, Russell understands the distinction between private and public experience in a different way, that is, in terms of whether something can occur under physical as well as psychological **laws** or only under one and not the other. Certain **images**, for example, never occur except under psychological laws and therefore are wholly private. Since he thinks there are wholly private mental states, Russell therefore rejects classical **behaviorism**, which attempts to reduce private mental states to publicly observable acts. *See also* OBJECTIVITY *v* SUBJECTIVITY; WATSON, JOHN B.

***PROBLEMS OF PHILOSOPHY, THE* (1912).** Russell's 1912 introduction to **philosophy**, *The Problems of Philosophy*, was intended as a popular book for the nonphilosopher, meant to acquaint the reader with standard issues in metaphysics and **epistemology**. In writing the book, however, Russell found himself propounding his own views more often than not and leaning decidedly more toward epistemology than metaphysics. The book thus combines discussion of certain stock problems in the theory of **knowledge** (e.g., what, if anything, is known with **certainty**) with Russell's distinctive philosophical doctrines from that period.

The book opens with the problem of what we know, moves to the **existence** and nature of **matter**, discusses and rejects **idealism**, and then, in chapter 5, begins grounding knowledge in Russell's

distinction between knowledge by **acquaintance** and knowledge by **description**. **Induction**, which proceeds by means of inductive principles that cannot themselves be inductively known from experience and so must be **a priori**, presents the next stage of the text: the defense of a priori general principles. Since, Russell says, a priori knowledge is knowledge of the relations of **universals**, a priori knowledge requires the existence of universals, which may be known either by acquaintance or by description. In discussing the self-evidence of general principles, Russell notes that there are also self-evident **truths** of **perception**, and in general that knowledge of truths is distinct from **knowledge of objects**. His **multiple relation theory** of **belief** and his theory of truth and falsity follow. The book closes with a chapter on the value of philosophy. (*See* PUBLIC PHILOSOPHY.)

Some of the material in the last chapter is taken from the manuscript "Prisons" (*CPBR* vol. 12) that Russell co-wrote with Ottoline Morrell in 1911. At the time, his student **Ludwig Wittgenstein** objected strongly to Russell's account of the value of philosophy, or perhaps to giving any account of its value at all, but the book, which Russell called his "shilling shocker," proved a best-seller and is still often used as an introductory book in philosophy. *See also* CONSTRUCTION *v* INFERENCE; SKEPTICISM AND SOLIPSISM; SUBJECT OF CONSCIOUSNESS *or* SELF.

PROGRESS. While all things change over time, it is not clear that they progress or get better, claims Russell. This is as true of **human** society as anything else. Thus, the conservative ideal of an unchanging society, such as Plato's *Republic*, is unrealistic, because change is inevitable. Moreover, human **happiness** requires change (*UE* 8).

Progress is not a scientific concept, says Russell, but a concept belonging to **ethics**. Historical theories of progress, such as Georg Hegel's necessary unfolding of the Absolute, Karl **Marx**'s **socialism**, Herbert Spencer's social evolutionism, **John Stuart Mill**'s utilitarianism, or **Henri Bergson**'s creative evolutionism, which all postulate an inevitable or at least very likely improvement in human life, are not based on any scientific evidence or scientific **laws**. For example, the undeniable progress of scientific **knowledge** has inspired the belief that a continued advance in knowledge is inevitable,

but it is just as likely that we will slip back into a dark age as continue advancing technologically.

Those theories that see a progression in the evolution of life to higher and higher forms, such as a progression to greater and greater **intelligence**, especially have no bearing in fact. While one branch of life has evolved slowly into humans, others have evolved into amoebas and other microorganisms, which are as highly evolved and well adapted in their own way as we humans are in ours. Furthermore, since each evolutionary change is just an adaptation to a particular set of conditions that are likely to change in time, there is also no particular direction to evolution, because there is no constant situation to which life is adapting (*HWP* 727).

Still, though progress toward greater happiness is neither inevitable nor in Russell's view even likely, it is possible, and he hopes for it. Throughout the Cold War, Russell believed that if humans did not progress toward **world government**, the world would either descend into barbarism or else destroy itself with **nuclear weapons**. These last two possibilities would be produced, he thought, by another world **war**. Since there had just been two world wars prior to the Cold War, it seemed highly likely that another would follow and cause the last two options for humanity: barbarism or annihilation. Russell therefore thought it urgent that human society try to progress (*UE* 34).

PROOF OF AXIOMS. In ***The Principles of Mathematics*** (1903), Russell rejects the idea that the axioms of logic can be proved by *reductio ad absurdum*, since that method demonstrates the **truth** of a proposition by deducing a contradiction from its negation, but we must assume the basic principles of logic for any such proof. Similarly, it follows, he thinks, that in applying a basic principle of deduction to a particular case, we must simply perceive that the principle applies to it, as we can hardly deduce that a rule of deduction can or cannot be used in deductions. Thus, from Russell's perspective, the principles of logic are indemonstrable, and their truth is shown simply by their not giving rise to contradictions.

In ***Principia Mathematica*, first edition** (1910–1913), and in ***Problems of Philosophy*** (1912), Russell adds that the principles of logic are **inductively** (regressively) justified, saying that the reason for

accepting one as true is often that no false propositions follow from it, but that many true propositions do that could not if it were false. In these texts, Russell insists that self-evidence or **certainty** are qualities that are themselves applied only inductively to axioms, so that revision is possible concerning what we think is self-evident and certain. Such qualities may be misleading, he says, as is shown in the **comprehension axiom**, which has the appearance of self-evident truth, though it is shown to be in error by contradictions like **Russell's paradox**. *See also* LOGIC AS UNIVERSAL *v* LOGIC AS SCHEMATIC.

PROPOSITIONAL ATTITUDES. Propositional attitudes are **mental** states (e.g., believing, knowing, or desiring) that people have toward **propositions**. Propositions expressing propositional attitudes are those, like 'S believes that *p*,' or 'S desires that *p*,' or 'S knows that *p*,' that assert that a person S has a particular mental attitude toward a proposition *p*. Russell uses the expression 'propositional attitudes' (or 'psychological attitudes') in his 1918 lectures published as "The Philosophy of Logical Atomism," and his interest in **belief** is the original historical context of what has become a central topic of philosophy of **language**, sometimes called the problem of oblique contexts.

In "The Philosophy of Logical Atomism," Russell depicts propositions expressing propositional attitudes as one of two ways in which more complicated propositions can arise from one or more **atomic** propositions. That is, from the atomic proposition 'aLb' (e.g., 'Andrew loves Beth'), we may form 'S believes that aLb' (e.g., 'Seth believes that Andrew loves Beth'), which is nonatomic. Out of one or more atomic propositions and by means of **logical constants** such as 'not' and 'or,' we may alternatively form molecular propositions, as in 'aLb v bLc' (e.g., 'either Andrew loves Beth or Beth loves Carl').

Though Russell is willing to describe propositions expressing propositional attitudes as complications of atomic propositions, he thinks that a new **form of fact**, containing more than one **relation**, corresponds to such propositions, and that facts of this form cannot be obtained by substituting entities in atomic facts. He attributes the discovery of a new form of fact to **Ludwig Wittgenstein**. In his introduction to Wittgenstein's *Tractatus Logico-Philosophicus* (1922),

Russell concedes that it is necessary to distinguish between the sense in which a proposition occurs in '*p* v *q*' and the sense in which it occurs in 'A believes *p*.' In the ***Principia Mathematica*, second edition** (1925–1927), he discusses this in terms of **talking about versus asserting a proposition**. *See also* ATOMICITY, THESIS OF; EXTENSIONALITY, THESIS OF.

PROPOSITIONAL FUNCTION. In the introduction to ***Principia Mathematica*, first edition** (1910–1913), a propositional function is said to be an expression or statement containing a **real** (i.e., unbound) variable such that it becomes a **proposition** when a **value** is assigned to the variable. It is distinguished from a proposition on the grounds that, having no definite value assigned to the variable(s) in it, it makes no definite assertion. For example, '*x* is hurt' is not a proposition; it is, rather, an unspecified example of any one of the possible propositions that might result from determining the value of the variable. (*See* AMBIGUOUS ASSERTION; ASSERTING A PROPOSITIONAL FUNCTION.) But it must be possible to refer to the propositional function as something definite, for '*x* is hurt' is different from '*x* is happy,' despite the fact that they both ambiguously assert some undetermined proposition. With this in mind, Russell uses the **circumflex**, as in '$\hat{x}$ is happy,' to indicate a propositional function as a definite entity. Hence '*x* is hurt' is an ambiguous value of the propositional function '$\hat{x}$ is hurt.' More formally, the propositional function 'ϕx' is an undetermined value of '$\phi\hat{x}$.'

Russell's discussion of propositional functions is often accused of conflating or ignoring the **object language versus meta-language** distinction, and his treatment of propositional functions is at the center of debates over the **ontology of *Principia Mathematica***. *See also* RAMIFIED THEORY OF TYPES.

PROPOSITIONS AS ENTITIES. In ***The Principles of Mathematics*** (1903), Russell's rejection of **idealism** in favor of **mind/matter dualism** and **realism** leads him, like **G. E. Moore**, to view propositions as terms—that is, as entities that are independent of the mind and in no way created by it, but to which, in judging, minds are related. Since he thinks the sentence as a whole is built up out of the **words** and phrases in it, and that every word in a sentence means the object named by the

word, he is therefore committed to the view that a sentence denotes or means a **complex** object—the proposition—whose structure corresponds to the structure of the sentence. Despite having a structure, a proposition is a single entity, and in the *Principles of Mathematics*, Russell says that whatever can be thought or counted as one—things, **concepts**, and so on—is a 'term.' Thus propositions are terms, and since every term can be a logical subject in a proposition—that is, what the proposition contains and is about—a proposition can also be the logical subject of a proposition. (*See* LOGIC AS UNIVERSAL *v* LOGIC AS SCHEMATIC; UNRESTRICTED VARIABLE.)

Difficulties with the doctrine of propositions as entities and with the doctrine of logical subjects begin to accumulate within the *Principles* before and after its publication. For example, Russell is aware that his doctrine of propositions as objects appears to allow more propositions than **classes** (or, as Russell sometimes says, ranges) of propositions and therefore violates **Georg Cantor**'s proof that there are more classes of propositions than propositions. Though he mentions this problem in section 348 of the text and in appendix B of the *Principles*, Russell has no solution for it, and in subsequent years he attempts to address this and other **semantic** paradoxes of propositions—such as the **liar paradox**, which says 'there is a proposition *p* that I am asserting and *p* is false.' His solution is to eliminate the proposition as a single entity, so that it cannot be a value of a variable. (*See* MULTIPLE RELATION THEORY OF JUDGMENT.) Later, he also invokes the **vicious circle principle**, so that propositions (like the liar sentence) that contain propositional variables belong to a higher **type** than the values of their variables and therefore cannot take themselves as values.

Russell is aware that his doctrine of propositions raises other difficulties as well. One problem concerns his theory of **truth**, for by taking propositions to be entities, which may exist (and be true) or subsist (and be **false**), Russell commits himself to subsisting falsehoods, such as the false complex that Charles the first died in his bed. (*See* EXISTENCE AND SUBSISTENCE.) Besides coming to think this is too much to assume, Russell acknowledges that in his account, truth and falsity are reduced to indefinable properties of objects, which, like red and white, are simply different, leaving our preference for truth over falsity a matter of preference on a par with

an **ethical** judgment. (*See* ASSERTION IN *THE PRINCIPLES OF MATHEMATICS*.)

In 1904 Russell thinks the nature of propositions is a logical question and distinct from **epistemology**, but by 1910 he has shifted far from this position, removing propositions from the domain of logic and locating them in the theory of **knowledge**. *See also* KANT, IMMANUEL; SENSE *v* REFERENCE.

PSYCHOLOGISM. The rejection of "psychologism" was a prominent feature of philosophy when Russell was a young scholar. In general, psychologism is the view that the discipline of psychology provides the "foundation" (i.e., justification or explanation) of philosophy or logic, while antipsychologism is the view that this is not so. Attacks on psychologism began in Germany in the 1870s with Hermann Lotze, Hermann Cohen, and a little later, Franz Brentano, and they were popularized there by Wilhelm Windelband and later by **Gottlob Frege** and Edmund Husserl. Each had his own specific ideas of what psychologism was and what was wrong with it, as did many other philosophers of the period. By the early 20th century, antipsychologism had become a fundamental assumption of virtually all philosophy being done in the **United States**, Great Britain, and the European continent. Russell may have imbibed some of his antipsychologism from **Alexius Meinong**, who was a student of the realist Franz Brentano and whose work Russell had read as early as 1899.

In work such as his 1903 ***Principles of Mathematics***, Russell associates psychologism with attempts to explain logic in terms of the psychological **laws** governing human reason, a view he rejects. He associates psychologism with **idealism**, especially as it appears in the work of **Immanuel Kant**, and rejects this view as well. Russell objects to Kant's maintaining, as he puts it, that what we constitutionally must believe (such as the view that things are in **space and time**) is justified by our judgments that this is so. In other words, an idealist takes the **truth** to be what we perceive or judge things to be, while a **realist** insists that there is a difference between believing or knowing something to be true and it being true, and Russell maintains the latter view.

At still other times, Russell understands psychologism to involve taking the meanings of **words** to be **mental** entities, a view he rejects

in favor of his doctrine that meanings of words are the objects they refer to, not our psychological ideas of them. *See also* MEANINGS AS ENTITIES.

PUBLIC PHILOSOPHY. Russell is both a professional academic philosopher and a public philosopher. Professional **philosophy**, he says, has no cultural value and is of interest to the specialist only. Public philosophy, on the other hand, asks what the best goals are in life for individuals and society in general, and this is of great cultural importance. This sort of **knowledge** can be gained, if at all, only from a wide survey of past and present **human** life and the sources of misery and **happiness** for people. Such philosophy, he believes, should be a part of every person's general **education**.

There is also a sort of theoretical knowledge that public philosophy seeks, namely, answers to questions that do not fall within any scientific specialties at present yet are still of importance to humanity. This includes questions such as whether we survive death, and whether the universe has a purpose, is driven by a blind **necessity**, or is merely chaos with no real order. By framing large general hypotheses that **science** is not yet capable of testing, and clarifying questions of value—of what goals lead to greater happiness among people, and so what counts as **progress**—philosophy reminds us of the scope and limitations of scientific knowledge and of what we do not know.

Many people demand answers to these questions, but the results tend to be dogmas that divide the human race into rival groups that are at each other's throats. The demand for **certainty**, while natural to humans, is an intellectual vice, Russell says. To endure uncertainty is an intellectual virtue, and for every virtue, Russell asserts, there is an appropriate discipline. For learning to suspend judgment, philosophy is the best discipline. The uncertainty that philosophy teaches can prevent the clashes of rival dogmas by making their certainties apparent as the nonsense that they are.

However, Russell quickly adds, in order to serve a positive purpose, philosophy cannot *just* teach **skepticism**, for although dogmatism is harmful, skepticism is useless. Dogmatism and skepticism, Russell continues, are both absolute philosophies: one is certain of knowing and the other is certain of not knowing. Philosophy, he says, should reduce all certainty, both of knowledge and of ignorance.

While uncertainty about, say, **mathematics** is not important to learn, uncertainty about practical affairs is important for understanding our true position concerning them and also for disarming fanatics.

However, it is not enough to recognize that all of our knowledge is more or less uncertain and **vague**; we must also learn to act on the basis of the best hypothesis without dogmatically believing it. We must further learn to act on the basis of uncertain hypotheses with actions that will not be very harmful if the hypothesis turns out to be false.

Philosophy, then, if it is to contribute to the life of the nonspecialist, must not cease to advocate some way of life. (*See* GOOD LIFE.) And such philosophy first of all aims at **teaching** the intellectual virtue that knowledge is **good**, even if knowing certain things is painful. Individuals guided by the philosophic spirit will want their **beliefs** to be as true as they can be made; they will love to know and hate to be in error. This will lead them to carefully scrutinize the received truths and conventional wisdoms they have been taught since youth, and if they are wise, they will criticize them as fully as they can.

Philosophy also teaches the intellectual virtue of generality or impartiality. To help achieve this, Russell recommends an exercise: take a sentence of political opinion which contains words that arouse powerful emotions, replace those words with symbols (A, B, C, and so on), forget the significance of the symbols, and then judge the political idea. This is an example of what it is to think impartially and generally. Ethical generality can also be achieved, as in caring as much about the fate of strangers as we do intimate acquaintances, but this is difficult for most people to do.

Such a philosophy, Russell says, even when taught alongside the technical studies of narrow practical disciplines, gives students the habit of careful and exact thought, not just in mathematics and the sciences, but in practical human matters as well. It gives them a large and impersonal view of the goals that are good for society to strive for. It provides them with an objective picture of themselves in society in relation to the past, present, and future, and of the history of humanity in relation to the whole of the physical universe. It enlarges the perspective with which they think about themselves, and it provides an antidote to the anxieties and anguishes of the present, making possible the closest approach to serenity that an intelligent

and sensitive person can make in this uncertain and painful world (*UE* 21–33). *See also* ETHICS.

PUGWASH CONFERENCE. On 23 December 1954, 10 months after the **United States** exploded the first hydrogen bomb at Bikini Atoll, Russell delivered a dramatic speech on BBC radio entitled "Man's Peril from the Hydrogen Bomb," warning that **war** with **nuclear weapons** posed a threat to the **existence** of the human race. In that broadcast, Russell called for a conference of experts to draw up a report of the destructive effects to be expected from a nuclear war.

In 1955, Russell circulated a pared-down version of his speech to a number of eminent scientists. This manifesto contained a resolution that governments of the world publicly acknowledge the futility of a war in the nuclear age and work to find peaceful means for settling international disputes. Ten eminent scientists and Russell—a group which numbered nine Nobel Prize winners—eventually signed the manifesto, including Albert Einstein, who agreed to be a signatory just before his death. The manifesto came to be called the **Russell-Einstein Manifesto**. Like "Man's Peril," it called for a conference of scientists to address and evaluate the dangers of nuclear weapons. The manifesto was issued by Russell at a press conference in London on 9 July 1955.

In 1956, Russell set to work organizing the conference called for by the Russell-Einstein Manifesto. Not counting five of the original signatories of the manifesto (Leopold Infeld, Linus Pauling, Cecil Powell, Joseph Rotblat, and Hideki Yukawa), of the total of 35 scientists originally invited, 18 accepted. Not all of these individuals attended, however. At the invitation of India's Prime Minister Jawaharlal Nehru, the conference had been planned for New Delhi, India, in January 1957, but barely six weeks before it was to occur, lack of funding and political tensions led Russell, Powell, and Rotblat, who were in charge of arranging the conference, to cancel. The event was then rescheduled for July 1957 in Pugwash, Nova Scotia, following the earlier invitation and suggestion of Cyrus Eaton, a Canadian industrialist who had offered to pay for the conference. A new invitation was sent out to the original invitees as well as to additional ones. In its final composition, the first Pugwash Conference included 22 scientists representing Austria, Australia,

China, France, Japan, the United Kingdom, the United States, the Soviet Union, and Poland.

Pugwash conferences have continued to occur in locations that vary from year to year. Unlike the original event, which focused on the threat of nuclear weapons, these conferences often discuss a variety of forms of armed conflict along with the means to their peaceful resolution. The work of the conferences did much to bring about the Partial Test Ban Treaty of 1963 and also helped lay the groundwork for the Nonproliferation Treaty of 1968, the Anti-Ballistic Missile Treaty of 1972, the Biological Weapons Convention of 1972, and the Chemical Weapons Convention of 1993. *See also* INTERNATIONAL WAR CRIMES TRIBUNAL.

– Q –

QUANTIFICATION IN *PRINCIPIA MATHEMATICA*. Part 1, section A, of ***Principia Mathematica*, first edition** (1910–1913), presents the primitive ideas, axioms, and **definitions** of its system of logic and then proceeds to proofs of various logical theorems. The point of the section is to give a theory of deduction—of how one elementary **proposition** follows from another. Thus, in the first number (i.e., the chapter *1), 'elementary proposition' is a primitive idea meaning a proposition involving no words like 'all' and 'some'—that is, whose English equivalents are of the form 'Socrates is mortal.' In the same number, there are various axioms, such as *1.2: $(p \vee p) \rightarrow p$, which reads 'if either p is true or p is true, then p is true.' In numbers *2–*5 in section A, demonstrations occur with different combinations of elementary propositions, such as *3, which concerns the logical product of elementary propositions. But the propositions in section A are all elementary, and they neither contain quantifiers, nor are the **values** of their variables anything but individuals (i.e., things like 'Socrates').

The demonstrations in *1–*5 must eventually be shown to hold of general propositions, that is, those containing the words 'all' and 'some' or their equivalents. The theory of deduction for such propositions takes place in part 1, section B, in numbers *9 and *10. The reason for two treatments of the same issue is that **semantic**

paradoxes raise philosophical issues concerning primitive ideas like 'false,' 'true,' 'not,' and 'or.' (*See* 'TRUTH,' MEANINGS OF.) Specifically in section 3 of chapter 2 of the introduction, Russell denies that **concepts** like 'is false' and 'not' can take any proposition *p* as a **value**, since this would permit the formation of contradictions like the **liar paradox**. He therefore denies that there is a single function 'not'; rather, there are multiple functions 'not' (and 'or,' etc.), each corresponding to a proposition of a different kind. In this part of the text, the kind (or order) of a proposition is determined by the number of apparent variables, if any, it contains. (*See* RAMIFIED THEORY OF TYPES.)

Since 'not' and 'or' and other functions of propositions can only take certain kinds of propositions as values, the paradoxical formulations that refer to all propositions are excluded. But there is, in consequence, a different logical language, with concepts of negation and disjunction, for each kind of proposition, and it therefore must be shown that the primitive ideas of negation and disjunction applied in *1 to elementary propositions can be used to define negation and disjunction for propositions containing an apparent variable, that is, to first-order propositions. Because it is possible to give definitions of these primitive ideas in a systematic way for propositions of arbitrary order, Russell says that such ideas are '**systematically ambiguous**.' (*See* 'TRUTH,' MEANINGS OF.) Number *9 shows this for propositions of one variable.

In *9 (which opens section B and directly follows *5), Russell introduces the primitive ideas 'ϕx always' and 'ϕx sometimes' (or 'all' and 'some'). These ideas correspond to the quantifiers '$(\forall x)$' and '$\exists x$,' which contain what he calls 'apparent variables,' that is, variables bound to the quantifier. (*See* REAL AND APPARENT VARIABLES.) Number *9 then defines truth functions of quantified propositions in terms of quantifications of truth functions of elementary propositions. For example, in *9.7: '$(\forall x)\phi x \vee (\exists y)\psi y$' = '$(\forall x)[(\exists y)(\phi x \vee \psi y)]$'. That is, in *9.7, 'either every x is ϕ or some y is ψ' is defined by 'For all x, there is some y, such that x is ϕ or y is ψ.' Throughout, Russell shows how to use negation and disjunction as applied to elementary propositions to define negation and disjunction for propositions containing an apparent variable and how to give proofs of the analogs of the axioms in *1. Analogs of the proofs in

*2–*5 could be given in the same way but are not. Having done so, in *10, Russell continues his discussion of quantification theory using an alternate method, one that introduces negation and disjunction as new primitive ideas rather than by definition. This number also employs a different collection of primitive axioms.

In ***Principia Mathematica*, second edition** (1925–1927), Russell revises his approach to the theory of deduction for general propositions. In appendix A, he replaces *9 with a new *8, in which he defines general propositions by means of repeated applications of a truth-operation (called the **Sheffer stroke**) to an elementary proposition. *See also* ONTOLOGY OF *PRINCIPIA MATHEMATICA*; QUANTIFICATION, INTERPRETATIONS OF.

QUANTIFICATION, INTERPRETATIONS OF. Quantified sentences like 'all humans are mortal' and 'some roses are blue' assert a property of all members or some members of a **class** of *individuals*. We formalize them as '$(\forall x)(Hx \rightarrow Wx)$' and '$(\exists x)(Hx \,\&\, Wx)$' and can say that such sentences (called first-order sentences) have 'individual variables,' that is, variables that take individuals as **values**. But in other sentences, such as 'no property applies to everything,' symbolized by '$\sim (\exists P)(\forall x)Px$,' quantifiers have variables that take properties as values. These are higher-order sentences, quantifiers, and variables. But it is not always obvious what objects or conditions have to be supposed to make such sentences true.

One issue arises from considering what is involved in talking about all or some properties (e.g., mortality or redness or wisdom) as opposed to talking about all or some things. When we assert the first-order statement 'there is at least one wise person' (i.e., 'some humans are wise'), we commit ourselves to the **existence** of at least one wise human, but when we make what are called second-order claims about wisdom, do we likewise commit ourselves to an abstract entity or **universal**, that of wisdom? If quantifiers are seen as able to connect not only to individual variables, but to predicate variables like 'ϕ' (as in '$\forall\phi$' or '$\exists\phi$') or to propositional variables like 'p' (as in '$\forall p$' or '$\exists p$'), it seems the answer is yes, for we then suggest that the variable has entities—properties or **propositions**—as values.

Some logicians, however, such as W. V. O. Quine (in "Logic and the Reification of Universals," *From a Logical Point of View*), object

that this is a mistake, saying that if we assume that names are distinct from predicates and statements, and that names denote entities but that predicates and statements are not names, then we can allow there to be a variable '*x*' that replaces a name and has individuals as values while denying there is a variable 'ϕ' or a variable '*p*' that has values. For in that case, 'ϕ' and '*p*' are not variables for quantifiers but are something else: schemata that take the place of particular predicates or statements.

Though this view rejects predicate and propositional variables, it is compatible with higher-order quantification. For in an **extensional** system, we may, for example, construe '(∀ϕ)(. . . ϕ . . .)' or '(∃ϕ)(. . . ϕ . . .)' as shorthand, respectively, for the conjunction or disjunction of a series of specific statements '(. . . F . . .) & (. . . G . . .) & . . . ' or '(. . . F . . .) v (. . . G . . .) v . . . ' This must be made explicit, however, as it is not apparent to the eye. That is, in writing '∃ϕ' or '∀ϕ,' we do not thereby show whether we mean the quantifier to employ a predicate variable 'ϕ' or whether we mean the quantifier to denote a string of statements.

A related issue of interpretation turns on whether we read quantifiers substitutionally or objectually. On the substitutional reading, a sentence like 'all who are fair are good' is true when all the possible names that can be grammatically substituted for the variables produce true sentences. On the objectual reading, such a sentence is true when all the objects in a certain domain possess the properties in question. There is little difference in the two interpretations except when the list is **infinite**, and then the substitutional reading is a way of eliminating quantified sentences, and therefore quantifiers, in favor of strings of sentences containing no quantifiers. For those who view infinite sets with suspicion, this approach has advantages.

Though Russell's system of logic in ***Principia Mathematica*, first edition** (1910–1913), is clearly higher order, there is debate over how he understood quantifiers. To many, his use of the quantifier seems to involve commitment to independently existing universals ('**propositional functions**') and to assume the objectual reading. (*See* CIRCUMFLEX; RAMIFIED THEORY OF TYPES.) But some of Russell's concerns, such as his effort in early work to reduce contexts employing quantifiers to nonquantified contexts, suggest that he means to avoid higher-order quantification, or at least its ontological

commitments. (*See* SUBSTITUTIONAL THEORY; THEORY OF TYPES AND ORDERS, DEVELOPMENT OF.) There is thus little agreement among scholars on exactly how Russell meant quantifiers to be understood. Since the use of quantifiers is linked to the question of what entities a logical system is committed to, divergence on these interpretive issues is therefore connected with different ways of understanding the **ontology of *Principia Mathematica***. In reading the literature on Russell's technical philosophy, it is important to keep such questions of interpretation in view. *See also* NO-CLASSES THEORY; QUANTIFICATION IN *PRINCIPIA MATHEMATICA*.

– R –

RAMIFIED THEORY OF TYPES. A **theory of types** that distinguishes between individuals, properties of individuals, properties of properties of individuals, and so forth prevents logical contradictions, like **Russell's paradox**, but does not prevent the formation of **semantic** contradictions like the **liar paradox** that arise from **propositional functions** containing reference to some totality. (*See* IMPREDICATIVE DEFINITIONS AND PROPERTIES.) In ***Principia Mathematica*, first edition** (1910–1913), Russell therefore attempts to prevent both semantic and logical contradictions by means of a hierarchy of propositional functions (and **propositions**) that defines their order not only on the basis of the order of the arguments contained in the function but on the order of any objects in the range of a quantifier contained in the function (if any). Russell sees this ramified theory as following from the **vicious circle principle** that a propositional function presupposes the propositions that are its values.

A discussion of the theory appears in several places in *Principia* but the most complete presentation occurs at *12. The functional hierarchy described in *12 differs in certain respects from that described in the introduction, for example in what is included among first-order functions. Russell's discussion turns on the notion of a predicative function and a matrix. A predicative function, which may be of any order, is next in order to the order of its variable, or next in order to the highest order variable it contains, if it contains more than one. Predicative functions are indicated by the shriek sign

'!' preceding the variable. In general, a predicative function is a "well-ordered" one, one that conforms to the vicious circle principle and cannot take itself for a value, so that no paradox can arise from its use. A matrix is a function that contains no bound variables, and various kinds of functions within some order-type arise from them by generalizing some, not all, of their free variables.

In *12, first-order propositional functions, such as '$\phi!\hat{z}$' and '$\phi!\hat{z},$' are those whose arguments are individuals as well as functions derived from them by generalization as follows. A first-order matrix is a first-order propositional function with no variables other than individual variables, for example '$\phi!\hat{z}, \hat{y}.$' By binding some of the variables in a first-order matrix to quantifiers, other first-order propositional functions arise, for example '$(\forall x)\phi x, y.$' Binding all of the variables in a first-order matrix, for example '$\phi!\hat{z},$' gives rise to first-order propositions such as '$(\forall x)\phi x$' and '$(\exists x)\phi x.$' This corresponds to the move from '*x* is fair' (as in 'Andrew is fair') to 'everything is fair' and 'there is something that is fair.' Such first-order propositions contain only apparent variable(s) that range over individuals.

Second-order functions are those none of whose arguments are higher than first-order functions (though some may be lower: second-order propositional functions may have individuals among their arguments). A second-order matrix '$\phi!x$' contains a propositional function variable 'ϕ' as well as an individual variable, unlike a first-order matrix, hence the generalization can be over the function or the individual. Second-order matrices include those that arise by means of logical operations like negation and disjunction. Thus '$\phi!x \vee \phi y$' and '$\phi a \vee \phi a$' are second-order matrices. Second-order propositional functions include those formed from second-order matrices by generalizing over some propositional function variables, leaving others free. For example, '$(\phi x)\ \phi!x \vee \phi y$' is a second-order propositional function of 'ϕy.' Second-order propositions arise from generalizing over second-order matrices, leaving no free variables. Third-order (and higher-order) propositional functions and propositions are derived in the same manner.

Propositions of the same type might be of different orders. For example, a proposition such as 'Napoleon had all the properties of a great general,' if formulated simply as 'ϕn,' predicates something of an individual and thus is type-1. However, the predicate '*x* has all the

properties of a great general' contains a quantifier that takes properties (propositional functions) as arguments and so is second-order.

Russell acknowledges that because this hierarchy precludes reference to all properties, it makes it impossible to do **mathematics**, which requires such reference. He therefore concludes *12 with the **axiom of reducibility**. This axiom (or rather, axioms, as it occurs in *12.1 and *12.11 for functions of one or two variables) is used in the theory of classes and then again in the theory of relations. It asserts that for every function, there is a formally equivalent predicative one that can be used instead. By associating higher-order functions with predicative ones, the axiom allows the derivations in *Principia* to proceed as if the system of logic was extensional. The axiom has come under fire for several reasons, not least as an empirical, nonlogical principle. Urged on by **Frank P. Ramsey**, **Ludwig Wittgenstein**, and others, Russell adds an introduction and appendices to ***Principia Mathematica,* second edition** (1925–1927), in which he admits only **extensional** functions and thereby eliminates any need for the axiom of reducibility. *See also* EXTENSIONALITY, THESIS OF; QUANTIFICATION, INTERPRETATIONS OF.

RAMSEY, FRANK P. (1903–1930). A British mathematical logician and philosopher, Frank Ramsey contributed to the **science** of informatics and economics in addition to logic and philosophy before his death at age 26. An original thinker, he was also a highly original commentator, and his remarks on Russell's (and **Ludwig Wittgenstein**'s) work still influence current interpretations. A champion of Wittgenstein's conception of logic, Ramsey was among the first to translate the *Tractatus Logico-Philosophicus* from the original German into English. Many of Ramsey's papers combine original ideas with comments on both Russell's and Wittgenstein's works that cut to the core.

In particular, Ramsey is noteworthy for distinguishing paradoxes into **semantic**, or epistemological, and logical, the former type including those that, like the **liar paradox**, refer to meaning, thought, or mind. He argues that the misguided intermingling of logic with **epistemology** led Russell to believe he must resolve the epistemological paradoxes and to adopt a **ramified theory of types** and orders in order to do so (as opposed to a simpler theory including type distinctions only). Since

doing so made it necessary for Russell to adopt an axiom of **reducibility**, Ramsey concludes that Russell should not have attempted to resolve epistemological paradoxes and could just as well have adopted an **extensional** logic in which no such axiom is necessary.

Russell adopts some of Ramsey's and Wittgenstein's ideas in ***Principia Mathematica,* second edition** (1925–1927), in a new introduction and appendices that lay out how to read the text extensionally. He also argues that, in the decomposition of an **atomic** sentence, predicate symbols are incomplete symbols and require completion by a name, a point he connects with his claim that a **propositional function** occurs only in the propositions that are its **values**. (*See* DESCRIPTIONS, THEORY OF.) Against this, Ramsey argues that we may only call a propositional function an incomplete symbol in cases (e.g., '___ is wise or ___ is just') where, unless we give the individual variable(s) with the predicate variable, it is ambiguous whether or not we need to use different variables or the same variable twice. Russell's doctrine, he says, muddies our understanding of the legitimate sense in which a symbol is incomplete, and as a result, it obscures the relation between atomic and molecular propositions.

In his 1925 paper "Universals," Ramsey criticizes Russell for his attempt to analyze atomic propositions into different kinds of symbols—names and predicates—and to infer from them the **existence** of different types of things, that is, **universals** and **particulars**. In "The Philosophy of Logical Atomism" (1918–1919), Russell argues that there is a fundamental distinction in nature between universals and particulars, between what corresponds to the subject term and what corresponds to the predicate term or verb in a sentence. Since Russell distinguishes the elements of an atomic fact into universal and particular, he then must also explain their **unity**, and he does so in terms of a further relation of 'predication' holding between the universal and the particular.

According to Ramsey, Russell needs to distinguish entities into universals and particulars because of the assumption that propositional functions have a special role that names lack, the role, for example, of 'wise' in '*x* is wise,' which must be predicated of something else. But as there is no theoretic reason why a name like 'Socrates' cannot also be given such a role, there is no basis for the distinction between types of entities. Thus Ramsey denies there is any logical basis for

the distinction between the kind of entity meant by a name and the kind meant by a predicate. He thus also dismisses the need to explain the unity of an atomic fact (e.g., by means of a relation of predication), praising Wittgenstein's evident attempt to avoid doing so, a point he infers from Wittgenstein's cryptic remark in the *Tractatus Logico-Philosophicus* that, in a fact, objects "hang together" like links in a chain. *See also* EXTENSIONALITY, THESIS OF.

REAL AND APPARENT VARIABLES. In modern predicate logic, an open sentence like '$Hx \supset Mx$'—for example, 'if *x* is human, then *x* is mortal'—is said to contain variables that occur in it *free*, that is, not bound or linked to a quantifier. Russell calls these 'real variables.' In contrast, variables are said to be *bound* when they occur bound to quantifiers in sentences like '$(\forall x)(Hx \rightarrow Mx)$,' as in 'for all *x*, if *x* is human, then *x* is mortal.' Russell uses the term 'apparent variables' to refer to bound variables.

Besides this terminological difference, in Russell's work there is a use of real and apparent variables that is absent from the use of free and bound variables in modern predicate logic. In Russell's **ramified theory of types**, the difference between real and apparent variables is that between the **ambiguous assertion** of the propositional **values** of a **propositional function**, without restriction on type, and the assertion of *all* the values of some propositional function of one type. That is, when Russell asserts a propositional function using the assertion sign, as in '$\vdash \phi x$,' the function is said to contain a real variable and to assert any value of the function, unrestricted by type. The idea is roughly the same as that in modern logic of asserting '$(\forall x)\ \phi x$' when the variable in the quantifier is **unrestricted**. However, when Russell writes '$(\forall x)\ \phi x$' or '$(\exists x)\ \phi x$,' with an apparent (bound) variable, the variable '*x*' is restricted to type. *See also* THEORY OF TYPES AND ORDERS, DEVELOPMENT OF.

REALISM. A technical term within philosophy, 'realism' has several different senses. It sometimes refers to the **belief** in an external reality distinct from the inner, mental reality of ideas and **perceptions**, and so to a philosophical position contrary to **idealism**, the belief that ultimate reality consists of ideas. Anti-idealist realism sometimes takes the form of naïve realism, the belief in the **existence** of ordinary

physical objects like tables and chairs. Russell, who defends the existence of an external world throughout his life, gradually relinquishes confidence in the existence of ordinary physical objects, as in his 1914 work *Our Knowledge of the External World* and later, when he defines them in terms of **classes** or series of **sense data**.

In some contexts, especially mathematics, 'realism' refers to the Platonist belief in the reality of mind-independent entities that either exist in **space and time** or else subsist and have being in some other way. These entities include **universals** (things like equality, which, unlike particular objects, can appear in multiple places at the same time) and abstract **particulars** (like the number 1). Platonist realism assumes that like other **words**, general words (e.g. 'redness' or 'equality') denote entities, and that without these denotations—without **meanings as entities**—general words could not be meaningful. Against it is the nominalist or conceptualist view that many, if not all, general words are conventional sounds that denote, at best, mental ideas with no other counterpart in a nonphysical reality.

Russell's ***Principles of Mathematics*** (1903) is realist philosophy in being committed to mind-independent abstract objects that subsist if they do not exist, but it does not employ the traditional distinction between universals and particulars. In later works like "On the Relation of Universals to Particulars" (1911), Russell's views more closely resemble traditional forms of realism in making prominent the distinction between universals and particulars. Now, though universals are said to subsist, he denies that there are any subsisting particulars. There are, however, existing particulars, such as **sense data**. Though he eventually abandons his Platonist conception of meanings as entities, Russell continues to argue until the end of his life for the need for at least some universals.

In his logical work, Russell's commitment to realism is a matter of debate. It has been standard to say that he is realist toward **propositional functions** in ***Principia Mathematica*, first edition** (1910–1913), but is nominalist in treating propositional functions as signs, not entities, when he revises the text in the 1920s for the second edition. *See also* EMPIRICISM, RUSSELL ON; ONTOLOGY OF *PRINCIPIA MATHEMATICA*.

REDUCIBILITY, AXIOM OF. The so-called **impredicative** property of having all of some set of properties is vulnerable, as Russell discovers, to paradox. ***Principia Mathematica,* first edition** (1910–1913), prevents the formation of impredicative properties (i.e., impredicative **propositional functions**) by dividing them into a hierarchy of orders, so that there is no property of having all of some collection of properties. (*See* RAMIFIED THEORY OF TYPES.) But important parts of **mathematics** require reference to all of some set of properties, which cannot occur if functions are divided into orders or levels. To make such references possible, *Principia* asserts that propositional functions of higher order can be reduced to equivalent ones of the lowest order. That is, it contains an axiom that for any higher order function there is an equivalent one of the lowest order, one that applies to individuals. The axiom of reducibility is therefore an **existence** claim, asserting the existence of (predicative) propositional functions.

Unlike impredicative functions, which are intensional, predicative functions can be treated as **extensional** functions. By finding extensionally equivalent forms for ramified propositions, the axiom of reducibility allows the first edition of *Principia* to proceed as though it contained only an extensional approach to logic. (*See* EXTENSIONALITY, THESIS OF.) As **Frank P. Ramsey** and others objected, in collapsing orders, the axiom made the whole system of orders unnecessary, and the *Principia* might just as well have avoided the theory of orders altogether and introduced only the **theory of types**. But it has also been noted that Ramsey can say this because he thinks that the kinds of paradoxes the theory of orders was intended to prevent are nonlogical. At the time he devised the theory of orders, Russell's more inclusive view of logic prevented him from sharing Ramsey's confidence in the distinction between **semantic and logical paradoxe**s.

Russell is less than sanguine about the axiom, which he admits is ad hoc. In ***Principia Mathematica,* second edition** (1925–1927), he implements **Ludwig Wittgenstein** and Ramsey's idea that all functions of functions are truth functions, and that a function can only occur in a proposition through its values. Since now all functions of functions are extensional, Russell is able to jettison the axiom of reducibility. *See also* VICIOUS CIRCLE PRINCIPLE.

RELATING RELATIONS. In ***The Principles of Mathematics*** (1903), Russell calls a **relation** that holds between terms in a **proposition** a 'relating relation.' He thereby distinguishes it from the same relation when it occurs as a term in a proposition. A relating relation gives a proposition its **unity**, and Russell sometimes associates it with the quality of **assertion** that distinguishes a proposition from a name. Like the quality of assertion, the relating relation is in tension with Russell's theory that any entity can be a logical subject in a proposition, for the relation no longer serves to relate terms when it occurs as a logical subject of a proposition.

Russell retains the idea of a relating relation even after he eliminates propositions as entities in 1910. The idea then occurs (in his 1913 *Theory of Knowledge*) in connection with his **multiple relation theory**, which explains the meaning of a sentence, such as 'Desdemona loves Cassio,' as a **belief fact** (e.g., that Othello believes that Desdemona loves Cassio) in which a **subject** (Othello) is related to multiple objects (Desdemona, love, and Cassio) by the **mental act** of his belief. In "The Philosophy of Logical Atomism" (1918–1919), Russell concedes to **Ludwig Wittgenstein** that his theory of belief is unable to account for the role of the relation in judgment—or rather, it treats the relating relation ('loves,' in the example) as a term, not as a relation. *See also* SENSE OF A RELATION.

RELATIONS, SYMBOLS FOR. In 1918, Russell begins to argue that **words** acquire meaning in different types of ways. (*See* 'MEANING,' THE MEANING OF.) But words as such are the same in type; for example, verbs, our **symbols** for relations, are as symbols no different from names. This fact, he thinks, is the source of considerable confusion, especially as regards the nature or status of relations. A relation symbol contributes to the meaning of sentences in which it occurs not by naming an entity but by creating a structure among names. Thus, in "Logical Atomism" (1924), Russell says that no single symbol (like 'red') but only a structure (like '*x* is red') can mean an attribute or relation. Since the objective reality that corresponds to a relation or attribute symbol can only be indicated by a structure and not named, such symbols cannot occur in subject position in a sentence; if they do, the sentence must be rephrased so that they no longer occur that way. This idea lies behind Russell's rather obscure

remark in "The Philosophy of Logical Atomism" (1918–1919) that to understand a word like 'red' is to understand propositions of the form that '*x* is red.'

In a more technical form, this amounts to the claim Russell makes in the ***Principia Mathematica,* second edition** (1925–1927), that a **propositional function** can occur only through its (propositional) **values**, that is, as a predicate in propositions. Russell's thought is here influenced by Ludwig Wittgenstein's **atomicity thesis**, but **Frank P. Ramsey**, a proponent of Wittgenstein's views, objects to the **realism** implicit in Russell's way of appropriating Wittgenstein's point, arguing that Russell arrives at a doctrine that relations and properties exist only attached to subjects, never as subjects, and so cannot be talked about, because he mistakes a feature of **language** for something about the nature of the world and the things in it. *See also* INEXPRESSIBILITY OF FACTS.

RELIGION. Fear, Russell says in his 1927 essay "Why I Am Not a Christian," is the basis on which religion is founded. Terror of the unknown—fear of the mysterious, fear of death, fear of defeat—is its cause. In the face of this fear, religion offers something like the idea of a big brother who will stand by you in all your troubles.

Fear is also the cause of cruelty, Russell says, and for this reason, religion and cruelty have always gone hand in hand. The more intense the religion of any period, Russell claims, the more dogmatic the religion and the greater has been the cruelty of that period. Thus, almost every moral advance the human race has made has been opposed by organized religion, for such advances are generally in opposition to cruelty. For instance, religion has opposed the improvement of the criminal **law**, the reduction of capital punishment, and the end of slavery. Also, moral advances are always in opposition to religious **beliefs** because the beliefs of religion are dogmatic, without justification, and therefore without regard for the effects of their practice in the world, while improvement in moral beliefs requires a consideration for the consequences of one's actions with an eye to increasing **happiness** in the world. All scientific advances of **civilization**, Russell says, have also been made in opposition to religious belief, and the increase of **human** happiness around the world has mainly been dependent upon this increase in

scientific **knowledge** (*WNC* 20–22). *See also* CHRISTIANITY; PROGRESS.

RUSSELL, ALYS. *See* PEARSALL SMITH, ALYS.

RUSSELL, DORA. *See* BLACK, DORA.

RUSSELL, EDITH. *See* FINCH, EDITH.

RUSSELL, PATRICIA. *See* SPENCE, PATRICIA.

RUSSELL AS A PUBLIC INTELLECTUAL. In addition to founding modern mathematical logic, for which he has been heralded as the greatest logician since **Aristotle**, and founding the technical "analytic" philosophy that dominated 20th-century philosophy, Russell was also a famous public intellectual. He wrote dozens of books and hundreds of essays, newspaper articles, and pamphlets on the moral, social, and political issues of the century, and he won a Nobel Prize for this sort of writing. Despite this, Russell is not always regarded as a great public intellectual, though he was clearly a famous one. Whether he was or was not a great public intellectual remains an open question.

If Russell was a great public intellectual, it would not be because he contributed especially original ideas to popular moral, social, or political philosophy. That is a standard used in judging academic or otherwise scholarly work, and when academics judge Russell's popular writings using this standard, as they usually do, they judge that his popular writings fall short of his technical work in originality. But this is not the only standard by which to judge public intellectual writing. Thomas Paine, for example, was a great public intellectual, not because his ideas were original but because his fiery oratory incited people to great deeds. However, looking at Russell's writings on public issues, you will not find the fiery oratory either. What one finds in Russell's public writings is quiet, clear, and carefully reasoned argumentation.

Russell was a philosopher who believed in addressing emotional issues rationally. This is at the very heart of his social theory. Most **human** evil, he believed, was caused by people acting irrationally, on

the basis of our not altogether admirable emotions and without much thought. He therefore believed that what was needed to improve the world was a more rational approach to its problems, so he wrote rationally about problems that others got swept up in irrationally and emotionally.

Russell also advocated taking a **skeptical** attitude toward the moral, social, and political beliefs of conventional wisdom. The particular form of his moral skepticism holds that the moral, social, and political opinions of most people are **illusions** that hardly correspond to facts at all. What most people's opinions are based on, he thinks, are simply their own desires, and the fact that they may conflict in many ways with reality seldom concerns people or causes them to change their beliefs. Thus the social worldview typically constructed by people—either individually or publicly as a community—in newspapers and other public venues or even among social scientists in scientific journals is merely a comforting illusion that people do not give up willingly, easily, or often (*SE* 26).

Russell came to his view that human moral, social, and political beliefs are essentially irrational after witnessing the emotion of nationalistic pride causing all of Europe to be swept up in World War I, when it was clear that there was no good reason for the **war**. Russell opposed the irrational **impulse** to kill others, arguing that it was unreasonable and immoral. By engaging in political activism against the war, he lost his job, went to prison for six months, and then was prevented by the British government from traveling outside the country to take another job.

In his rational approach to social and political problems viewed by most people irrationally, as well as in the practical solutions he sought, Russell most resembles the Enlightenment philosophers from whom he is philosophically descended. He is regarded by many, in fact, as the last great Enlightenment philosopher. *See also* GOOD AND EVIL; PUBLIC PHILOSOPHY.

RUSSELL-EINSTEIN MANIFESTO. The Russell-Einstein Manifesto is a document spelling out the danger of **war** with **nuclear** weapons, in particular the indiscriminate and lasting destructive effects of such warfare. Signed by a group of eminent scientists and intellectuals, it was announced to the world from London on 9 July

1955. Albert Einstein died shortly before the manifesto's public reading but had authorized his signature on the manifesto and agreed to the list of other signatories. Einstein and Russell had come to know each other's views in 1944, while both were at Princeton University. Both were profoundly worried about the degree of danger and the extent to which it was misunderstood or ignored.

It may be that the climate able to produce such a document was aided in late 1954 by 'Man's Peril,' Russell's electrifying radio broadcast on the dangers of nuclear war. He wrote a letter to Einstein in early 1955 suggesting, as Einstein had already proposed, that scientists write an authoritative letter about the effects of nuclear war. The signatories are Max Born, Percy W. Bridgman, Albert Einstein, Leopold Infeld, Frederic Joliot-Curie, Herman J. Muller, Linus Pauling, Cecil F. Powell, Joseph Rotblat, Bertrand Russell, and Hideki Yukawa.

Out of the manifesto grew both the **Pugwash conference**s on science and world affairs (held in Pugwash, Nova Scotia), which Russell chaired for five years, and the Campaign for Nuclear Disarmament. *See also* PACIFISM.

RUSSELL'S PARADOX. Some properties (i.e., **propositional function**s) apply to themselves and some do not. With this in mind, and inspired by **Georg Cantor**'s **analysis** of the difficulties connected with the property '*x* is the greatest cardinal,' Russell considers the property *R* 'of being a property that does not apply to itself.' Russell's paradox comes into view by asking whether *R* is one of the properties that do not apply to themselves, for if it does not apply to itself, then it is one of those that do not apply to themselves, and so it *does* apply to itself. Thus *R* both applies to itself and does not. If we replace the language of properties with that of sets and members and speak of the set of all sets that are not members of themselves, we arrive at the similar notion of a set that is and is not a member of itself.

Gottlob Frege learned of Russell's paradox when Russell wrote to him about it in 1902. He wrote back in consternation about the effects of the discovery on his logical system and on **mathematics** generally. Frege's system prevents a first-order predicate from applying to itself, thereby blocking the application of the paradox as one about

properties. But he associates each predicate with the **class** or set of those **values** (its course-of-values or **extension**) for which, assigned as an argument, the predicate yields a truth-value. Given the relationship between predicates and their extensions, his system is therefore vulnerable to Russell's paradox as expressed in terms of sets.

The discovery of this and other contradictions led Russell to present a **theory of types** as a tentative solution in appendix B of the 1903 ***Principles of Mathematics***. This early theory of types rests on the doctrine that every propositional function (or class, or relation) presupposes a range of significance, that is, a set of values for the variable that, upon substitution, yields significant **propositions**. This and other attempted solutions to the paradoxes involve attempts to limit the formation of sets, a development that marks the beginnings of **axiomatic set theory**. *See also* BURALI-FORTI, CESARE; COMPREHENSION, AXIOM OF; SEMANTIC *v* LOGICAL PARADOXES.

RUSSIA AND RUSSELL. Russell visited the Soviet Union early in its existence, in 1920. While there, he had a one-hour interview with Vladimir Lenin. Although Russell professed to be a **socialist**, he did not like what he saw in Russia and was a staunch anticommunist from then on. He was filled with horror, he says, by the cruelty, poverty, persecution, and constant spying that "formed the very air we breathed" (*ABR* 2:148). Idealists were regularly shot at night. He felt that "everything I valued in human life was being destroyed for a glib and narrow philosophy, and in the process untold misery was being inflicted upon many millions of people" (149).

Intellectually, Russell's principal complaint against communism is that it is not **democratic**, that it restricts liberty, especially intellectual liberty, more than any political system except **fascism**. He also holds that Marxist and communistic thought unduly glorifies manual **work**, that it is a doctrine full of hate, and that it is an attempt by a minority to mold a population by force according to a preconceived plan. (*See* ADMINISTRATOR'S FALLACY.)

Russell also opposes Soviet communism because of his disagreements with Marxist philosophy. Specifically, he does not agree with Karl **Marx**'s dialectical materialism, thinking it foolish to believe in the necessity of certain historical changes or that the changes occurring next would necessarily be progressive ones. He does not accept

Marx's labor theory of value nor his theory of surplus value, and he believes it dangerous to take any one person as infallible, whether **Jesus**, Marx, Hitler, Lenin, or Russell. He also believes that the Russian communist government holds a different conception of life than that found in the West. In Russia, he believes, the **individual** has no importance and is expendable, that what is important is the state, and that human dignity counts for nothing (*IPI* 125–38). *See also* PROGRESS.

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SCIENCE AND PHILOSOPHY. Throughout his writings, Russell views **philosophy** as analogous to science, often using scientific inquiry as a model for philosophical inquiry and comparing the methods of science to the methods he employs as a philosopher. Sometimes the science is astronomy. In his early logical work (e.g., the 1903 ***Principles of Mathematics***), the intellectual search for such logical indefinables as the concept of **class** is compared to Galileo scanning the heavens with a telescope in search of planets. At other times, philosophy is compared to the science of chemistry, as when Russell compares **analysis** to a kind of chemical decomposition.

Science occurs in his work not only as an analogy but as the actual source of methods and data. This is especially the case with psychology and physics. In the period of Russell's early work, the science of psychology was still emerging from philosophy, and when he uses **introspection**, he can for some time proceed as though doing scientific inquiry as much as a philosophical inquiry. Without abandoning introspection, Russell's later work increasingly employs the language and procedure of **behaviorist** psychology. Physics in particular also provides a constraint, for Russell believes that philosophical speculation and analysis must take account of scientific discoveries. This is evident, for example, in his work on **knowledge of the external world**, which in the 1920s takes account of Einstein's discoveries in physics. *See also* MATHEMATICS AND PHILOSOPHY.

SEMANTIC *v* LOGICAL PARADOXES. *Principia Mathematica*, first edition (1910–1913), aims to define mathematical **concepts**

in terms of logical concepts and to derive mathematical truths from logical truths. (*See* LOGICISM.) To do so, it must avoid a wide array of contradictions, and yet it is not obvious which ones it must solve and which are irrelevant to its purpose. According to **Frank P. Ramsey**, it need solve fewer contradictions than Russell supposed.

In Ramsey's view, some of the contradictions (e.g., the **liar paradox** and **Grelling's paradox**) involve reference to linguistic, **semantic**, or epistemological functions like 'is true' or 'believes' while others (e.g., **Russell's paradox** as well as **Cesare Burali-Forti**'s and **Georg Cantor**'s) require only logical or set-theoretic concepts like '**class**' and 'membership.' The linguistic paradoxes, Ramsey says, fall outside the domain of logic. Since the **theory of types** alone (i.e., as first developed and without order distinctions) cannot resolve the linguistic contradictions, it is the conviction that these paradoxes belong to logic that led Russell to employ a more complex **ramified theory of types**, supplemented by the axiom of **reducibility**.

Ramsey's distinction is not without detractors, who, among other reasons, find semantic notions mingled into some of the so-called logical paradoxes and therefore judge the two types to be more closely connected than Ramsey's **analysis** suggests. *See also PRINCIPIA MATHEMATICA*, SECOND EDITION.

SENSE DATA. In ***Problems of Philosophy*** (1912) Russell concludes that we do not directly experience ordinary objects like tables and chairs but infer them from our immediate experience of patches of color, tones, and the like, which he calls sense data. In works like *Our Knowledge of the External World* (1914) and "The Relation of Sense Data to Physics" (1914), Russell replaces the idea that ordinary objects are inferred from sense data with the claim that they are **constructions** out of **classes** of sense data. He views a sensation, such as the sensation of redness, as distinct from a sense datum, such as a red patch, and as having an external **cause**. However, Russell does not intend to commit himself to phenomenalism, that is, to the view that sensations constitute objects. In his view, objects are logical fictions, and in speaking about them, we are really using shorthand for something more complicated. (*See* DESCRIPTIONS, THEORY OF.)

Thus, Russell argues that, at a particular moment, apart from the perspective a mind may have and the sense data comprising that perspective, there are also perspectives that no one holds but which, had they been held, would comprise sense data seen from that perspective. The perceived sense data and the unperceived *sensibilia* are related by laws of perspective and form a class (and a series of classes, if considered at different moments), which has the properties we attribute to an object. Thus what we experience is public, even though each single perspective is **private** and unique to the perceiver.

His goal in this and later work is to interpret the laws of physics in the **language** of immediate experience. In the 1921 *Analysis of Mind* and 1927's *Analysis of Matter*, Russell adopts **neutral monism** in place of **mind/matter dualism** and rejects the distinction between sensations and sense data. Constructions are then carried out in terms that do not suppose sensations and sense data to be ultimately distinct. Despite these changes, Russell continues to assume, as **Rudolf Carnap** and others will not, that there is a single, correct language of **science**. *See also* MACH, ERNST.

SENSE OF A RELATION. In Russell's **multiple relation theory**, the **mental act** of judging or believing collects the **subject** (i.e., the believer) and the objects constituting the content of his or her **belief**—for example, that this pen is to the left of this paper—into a belief **fact**. Since facts of belief are, therefore, determined solely by the objects they contain, Russell must explain the difference between the belief that this pen is to the left of this paper and that this paper is to the left of this pen.

To do so, Russell says in 1910 that the **relation** (e.g., *to the left of* above) enters into the belief fact with a sense, that is, it enters in a way that leads from one term to another. In ***Problems of Philosophy*** (1912), he rejects this tactic, arguing that it is the act of believing or judging that distinguishes between the possible cases. His unpublished *Theory of Knowledge* (written in 1913) returns to the question, rejecting the 1912 position, on the grounds that if belief organizes objects in a certain way, it cannot be **false**, as then the objects constituting the content of the belief will be related as they are in the belief fact. Russell's conversations in 1913 with **Ludwig Wittgenstein**, who was highly critical of his theory of belief, led Russell to

abandon the *Theory of Knowledge*; he eventually rejects the multiple relation theory of belief because of problems related to the difficulty of explaining the role of a relation in a belief. *See also* RELATIONS, SYMBOLS FOR.

SENSE *v* REFERENCE. Originating with **Gottlob Frege**, the sense/reference distinction is a theory of meaning that attempts to overcome difficulties in understanding sentences like 'the evening star is the morning star' that assert identity. Frege argued that such assertions require explanation, for in saying 'the evening star is the morning star,' we are not simply identifying the phrases 'evening star' and 'morning star' as signs that have the same meaning—as we do, for instance, when we say that 'lawyer' is the same word as 'attorney.' That is, we are trying to say something that is not merely about how we use words; we are trying to convey something about the world, something about the object meant by the words.

But in saying 'the evening star is the morning star,' we are also not merely talking about the identity of an object to itself, as we do when we say '1 = 1' or 'the evening star is the evening star,' for though 'the evening star' and 'the morning star' both denote the planet Venus, different **concepts**—the first star to rise at night and the last star to set in the morning—underlie them, and these differences are part of what we mean when we say that the evening star is the morning star, so that we are not merely saying that Venus is identical to itself.

Frege concludes that it is only possible to explain sentences like 'the evening star is the morning star' by distinguishing between the sense (*Sinn*) of a singular term and its reference (*Bedeutung*). The reference of a singular term is the object; its sense is the way the term describes that object. Both 'the evening star' and 'the morning star' refer to the same thing, the planet Venus, but they do not have the same sense, as different ideas (rising at night, setting in the morning) go into them.

Frege further extends the sense/reference distinction to sentences, which, if they have sense, refer to one of two objects, the true or the false. In ***The Principles of Mathematics*** (1903) and later work, Russell conceives of **meanings as entities** in a way that is roughly equivalent to Frege's notion of reference, but he denies that there is a dimension of meaning apart from reference, rejecting Frege's notion

of sense. Instead, Russell eventually responds to the various difficulties posed by singular terms like 'the morning star' with his theory of **descriptions**, which shows that such **denoting** phrases may be broken down and expanded into more complex phrases or sentences containing referring terms.

SEXUAL ETHICS. Sex, Russell says, is viewed irrationally by many, according to moral codes established in ancient times. However, industrialization is changing the public attitude toward sex, creating the need for a new sexual **ethic**. In particular, he believes that modern life makes it harder for people to be monogamous in **marriage**, since people are not as **religious** as in the past and are not living in as much isolation as before, but in large communities where no one knows what his or her neighbor does. More importantly, the claim of women to equality with men also makes a new sexual ethic necessary. Equality between the sexes can be achieved either by exacting the same monogamy from men that was formerly exacted from women or by relaxing the demand for fidelity from women, as is already done for men. The latter approach, says Russell, has the most adherents. Finally, the scientific outlook, he says, is increasingly weakening the taboo, or sense of **sin**, associated with sexual **knowledge** and activity.

Whether something is **good** or bad is the same as whether it promotes human **happiness** or unhappiness, according to Russell. But the difficulty in constructing a workable sexual ethic for a new age lies in the conflict between the **impulses** to **jealousy** and to polygamy. Jealousy, while in some part **instinctive**, is also in large part conventional, and where faithfulness is not expected, jealousy can be greatly diminished. However, says Russell, there is some rational justification for jealousy, namely, the desire in men for some assurance that they are the fathers of their wives' children. Thus, if marriage and paternity are to survive as institutions, which for the present Russell thinks necessary, sexual ethics must find a compromise between complete promiscuity and lifelong monogamy.

On other issues, Russell believes that sexual experience is necessary for young people to learn to distinguish between mere sexual lust and the sort of congeniality necessary for a successful marriage, so that young unmarried people should have considerable sexual

freedom. He thinks, though, that it is better for women both physiologically and educationally to defer having children until after the age of 20. Where people are married, he says, **divorce** should be easily obtainable, at the request of either party if there no are children, and by mutual consent if there are children, with a year's notice in either case. Furthermore, to remove the economic taint from love, society should strive to free women from economic dependence on men. A more complete political, economic, and legal emancipation of women, that is, greater equality between women and men, is likely to increase happiness in sex, **affection**, and marriage, Russell believes. (*See* WOMEN'S RIGHTS.)

The **education** of children in sexual matters is essential to the overthrowing of ancient and religious sexual moralities and the establishment of a more modern one that allows greater sexual happiness among people. Here, it is a matter of answering children's questions and satisfying their curiosity in exactly the same way as with any subject. Nothing should be concealed from them. They should also be allowed to see their parents naked. There are no excuses, Russell says, for deceiving children. As for adult sexual behavior, especially concerning the balance between jealousy and sexual variety, greater experience in various systems is needed before anything more positive can be said (*WNC* 168–78). *See also* BIRTH CONTROL; BLACK, DORA.

SHEFFER STROKE. Named for the Harvard University logician Henry Sheffer, the Sheffer stroke (sometimes called the nand operator) is symbolized by '$|$' and **denotes** the logical operation 'not both ___ and ___' of propositional logic. Systems of logic may be based on different kinds and numbers of operators, so long as they include either the negation/disjunction pair or the negation/conjunction pair. Since the Sheffer stroke combines both negation and conjunction, it allows a system of logic to build up molecular propositions from **atomic** ones on the basis of a single operator. In ***Principia Mathematica*, second edition** (1925–1927), Russell stipulates that any proposition whatsoever may be derived from a stroke matrix (a group of propositions combined by the Sheffer stroke, e.g., '$p \mid q$') by the substitution of the **values** of propositional functions (e.g., 'ϕa,' 'ϕb,' etc., where 'ϕ' is some propositional function and 'a' and 'b' are

individual constants), or by replacing the individual constants 'a,' 'b,' and so on with variables, '*x*,' '*y*,' and so on, and quantifying over them. *See also* LOGICAL CONSTANTS.

SIMPLES. *See* COMPLEXES AND SIMPLES.

SIN. To a utilitarian, avoiding needless suffering is a **good** thing, not a bad thing. From his largely utilitarianism perspective, Russell finds the **Christian** idea of sin difficult to understand. If by 'sin' is meant the *causing* of needless suffering, it would make sense to him, but he finds that the church often means by 'sin' the *avoidance* of needless suffering. As an example, he mentions a bill to make euthanasia legal that was once introduced to the English House of Lords. The bill required the patient's consent as well as those of attending physicians, but the archbishop of Canterbury informed the Lords that this would make euthanasia suicide and that was a sin. Russell reports that the Lords listened to authority and rejected the bill (*UE* 76). Russell thinks it irrational to disapprove of most of what is called 'sin.' Activities like drinking, smoking, and swearing are called sins, yet all are things that give pleasure. In particular, Christianity's disapproval of **sexual** matters causes a great deal of unhappiness, Russell thinks.

In addition to enforcing unhappiness over **happiness**, Russell thinks the Christian concept of sin does a great deal of harm by giving people a way of expressing their sadism that allows them to believe it is legitimate and even noble to be cruel to others. Russell points out that at the time of his writing (1930), syphilis could be easily prevented by the use of a condom, but numerous churches opposed spreading even **knowledge** of this fact on the grounds that it is good for sinners (and their wives and children) to be punished. Opposition to the dissemination of or promotion of the use of condoms to prevent pregnancies and the spread of disease he thus finds bizarre and sadistic (*WNC* 8).

The sense of sin in itself causes unhappiness quite apart from the unhappiness it causes by preventing people from doing innocent things that give them pleasure. It is a sense of guilt based on, first, the sense of being discovered doing something of which your group disapproves; second, the **fear** of becoming an outcast from the group; and third, the uneasiness that arises from doing something

you were taught to regard as wrong, which is now embedded in your unconscious. Moreover, in creating a sense of guilt, a morality of sin causes people to be inward looking. But, for Russell, happiness in life requires having an outward-looking personality, so as to enjoy the world outside oneself. *See also* ETHICS; RELIGION.

SKEPTICISM AND SOLIPSISM. Skepticism, in the broad philosophical sense, is the belief that no **knowledge** or **certainty** about the world is possible. There are several related ways of arriving at modern philosophical skepticism: for example, we may begin, like **David Hume**, with an analysis of the nature of **induction**, by emphasizing the **empiricist** belief that what we know are our sensations, not the things presumed to **cause** them. But how then do we know our sensations have any causes at all? This line of questioning may result in **idealism**—the belief in the reality of the psychical or **mental** as opposed to the physical world—or in solipsism, the belief that only I and my sensations exist.

We cannot completely refute the skeptics, Russell thinks, since skeptics will accept no grounds on which their opponent might build an argument against them, but give what might be called pragmatic, moral, or aesthetic reasons for rejecting it. Unlike his own **practice of philosophy**, which is bent on arriving at answers to substantive questions, Russell views philosophical skeptics as engaged merely in a process of endless and pointless questioning. This attitude is unsatisfying to most philosophical minds, and this puts the skeptic at a disadvantage. By refusing to commit to any philosophical judgments, Russell believes, skeptics must endorse a life without the discipline provided by reason, and their lives must be governed, as animals' lives are, by **impulses** and **instincts**.

Russell thinks he must protect his own doctrine of knowledge by **acquaintance** from leading to skepticism, as at first glance it may appear to do. In that theory, we can know and be certain of only those things we are presently experiencing. For example, while they last, we can be sure of the sounds we hear. We cannot be certain of their cause. The skeptic insists that present experience is the limit of our knowledge, but this cannot be so, Russell argues, since we transcend it in our grasp of general truths and in our understanding of **descriptions**. For example, **mathematical** knowledge exceeds the boundary

of present experience, as when we know there is no greatest prime number, though of all the primes we will ever live to think, there is a greatest prime. Similarly, we have descriptive knowledge that exceeds the boundaries of our present experience, as when we know there is a thing called 'the father of Jones' by virtue of acquaintance with Jones, the **universal** *paternity*, and the belief that every person has a father. In these cases, we can describe objects and facts that lie outside our experience by means of terms within our experience.

The term "skepticism" also occurs in Russell's work in a positive way, particularly in his moral, social, and political writings, where it denotes not philosophical skepticism but the general habit of refraining from judgments for which there is insufficient evidence. In this use of the term, Russell in fact embraces skepticism (see, for example, his papers "On the Value of Skepticism" and "Dreams and Facts"), that is, he endorses the habit of employing reason and accepting as true only what one has adequate evidence to believe is true.

What is unique about Russell's form of social skepticism is that while philosophical skepticism typically doubts everything all at once, as in the problems of our **knowledge of the external world**, of induction, and of other minds, Russell's social skepticism is a local rather than global skepticism. In philosophical "global" skepticism, all beliefs, especially those about the natural world that are based on experience, are doubted at once. This prevents a resolution of that doubt by appeal to facts about the natural world based on experience, so only some sort of appeal to an unnatural realm of facts beyond experience or unnatural way of knowing can resolve the doubt, if anything can. Russell's social skepticism, on the other hand, doubts particular claims about types or groups of people and social or political institutions, but at the same time admits well-established empirical claims as a means of calling other beliefs into doubt. As Russell would have it practiced, social philosophy is involved in factual questions in the social **sciences**, rather than remaining aloof from them. *See also* ILLUSION AND PHILOSOPHY; RUSSELL AS A PUBLIC INTELLECTUAL.

SOCIALISM. Throughout his life, Russell advocates socialism, but because he also seems to propose nonsocialist solutions to political problems, he is sometimes thought not to have been serious or

steadfast in his advocacy of socialism. At least some of this apparent inconsistency can be explained. Russell is a passionate advocate for individual liberty and **democracy** as well as for **world government** and the abolition of **war**, and he sees socialism as a way to achieve these other things—in fact, as necessary to achieve them. Thus at times when he appears to be advocating greater liberty, democracy, or world government, he has not dropped his advocacy of socialism.

Any socialism Russell would advocate would have to be consistent with these other beliefs; he would prefer individual liberty and democracy without socialism to socialism without individual liberty and democracy. But in actual practice, he thinks socialism is the only way of achieving these ideals in the modern world. Thus Russell's interest in socialism is not for reasons of social justice; rather, he is at bottom a utilitarian and views socialism as the best way of making the most people happy, the best way to defend individual liberty and democracy and promote world government and the abolition of war.

Capitalism, he thinks, has become an impediment to individual liberty and democracy by becoming an alternative form of **power** to democracy that democracy cannot control. An alternative economic system to capitalism is thus needed that the state can control, so the state can better protect democracy and liberty. And the best alternative economic system for this, Russell thinks, is state-owned business. Even more important for Russell, however, is his belief that socialism is the most likely system to allow the formation of a world government leading to the abolition of war.

Socialism, he thinks, is also more efficient than capitalism, and as a result affords the best possibility for more leisure time, which—since the economy is not controlled by capitalists—will get distributed more equally among the members of society. Longer periods of leisure will permit more people to pursue interests in arts, **education**, or other areas (thereby encouraging **individualism)**, provide more opportunities for people, and create a society where there is less waste of talent. Due to economic democratization, Russell asserts, socialism would also best aid the economic emancipation of women. And as it is the system most likely to provide universal day care for working women, it further aids their economic emancipation. Russell therefore views socialism as the system most likely to produce the

greatest **happiness** for everyone but a few people—those who are already very wealthy.

What Russell does not like about **Marxist** socialism is that it appeals to the anger that working people feel toward the wealthy. His reasons are practical: a theory that preaches anger is likely to cause a bigger counterreaction than one that justifies itself by appeal to fairness or to the utilitarian principle that tries to make the most people happy. He is therefore not a *Marxist* socialist, though a socialist nevertheless (*IPI* 81–106). *See also* DEMOCRACY AND CAPITALISM; GOOD LIFE; RUSSIA AND RUSSELL; WOMEN'S RIGHTS.

SOUL. *See* MENTAL ACTS AND CONTENTS; SUBJECT OF CONSCIOUSNESS *or* SELF.

SPACE AND TIME. The concepts of space and time enter into Russell's work in several ways. In "Is Position in Time and Space Absolute or Relative?" (1901) and ***The Principles of Mathematics*** (1903), Russell considers whether space is nothing more than the relations of objects to one another or whether there is space in which objects occur. He rejects the relational view of space and adopts the latter (Newtonian) view of absolute space, rejecting a relational view of time as well. In the same period, Russell defends the reality of space and time in light of the **analysis** of the **infinite**, noting that **Georg Cantor**'s work in transfinite arithmetic shows that the supposed contradictions involved in the infinite collections or divisions of space and time are not really contradictory at all. (*See* ZENO'S PARADOXES.) In middle and late work such as *Our Knowledge of the External World* (1914) and *Analysis of Matter* (1927), Russell uses the techniques of logical **construction** to define 'space' and 'time' in terms of our spatial and temporal data. For example, he constructs spatial points and temporal moments in terms of classes of similar classes of *sensibilia* or percepts. In *Inquiry into Meaning and Truth* (1940), the details of his construction of space and time are influenced by his analysis of an object as a **bundle** of co-existing properties, since in this theory, spatial and temporal relations do not imply the diversity of objects. But from the 1920s on, his work on physical concepts also accepts and takes account of the work in relativity theory and quantum theory. *See also* SENSE DATA.

SPENCE, PATRICIA HELEN (1910–2004). A 20-year-old Oxford undergraduate student in history when she met Russell, Patricia Spence (commonly called Peter, but born Marjorie), began working at the **Beacon Hill School** in July 1930 as a governess to Russell's two children, John and Kate. She became Russell's lover shortly thereafter. They began living together in 1932 and were married in 1936 after Russell's **divorce** from his second wife, **Dora Black**.

Patricia assisted Russell in writing several historical works, including *Freedom and Organization* (1934), *Power: A New Social Analysis* (1938), and *The History of Western Philosophy* (1945), where her training as a historian was quite useful. She apparently did much of the research in these cases, as well as some of the planning, writing, and editing. One of these works, *The History of Western Philosophy*, was probably more than any other the work for which Russell was awarded the Nobel Prize in Literature in 1950. She also assisted with *Authority and the Individual* (1949) and was co-editor with Russell of *The Amberley Papers* (1937), the papers of Russell's parents, Lord and Lady Amberley.

Patricia moved with Russell to the **United States** and was with him during his dismissal from City University of New York and from the Barnes Foundation in Pennsylvania as well as during the period of his acquaintance with **Albert Einstein** while they lived in Princeton, New Jersey. Separated in 1949 and divorced in 1952, they had one son, Conrad (1936–2004), who later became the fifth Earl Russell.

S**UBJECT OF CONSCIOUSNESS *or* SELF.** In Russell's early and middle work, the terms 'subject' and 'self' denote that component in a mind that thinks and experiences, whereas the term 'mind,' though it includes the subject, usually indicates the whole collection of both conscious and unconscious **mental acts**, cognitive states, present experiences, **instincts**, desires, habits, the contents of **memory**, and so forth. In ***The Principles of Mathematics*** (1903), Russell takes for granted the existence of a subject of **consciousness** that experiences the world by means of an act of mind called **acquaintance**. In ***Problems of Philosophy*** (1912), he asserts, somewhat tentatively, that **introspection** gives us acquaintance with the subject. A year later, in *Theory of Knowledge***,** he decides that introspection fails to reveal any

such entity, though he continues to believe that it exists. In doing so, he moves closer to **David Hume**'s view that we never observe such a particular self or "I" or the "ego" or "soul." Instead, all we observe is the collection of causally related sensations which are assumed to belong to the self as properties. (*See* CAUSALITY.)

Hume concluded from this that it is illicit to infer from sensations to the **existence** of a self. Yet for a while, Russell does not draw Hume's conclusion with respect to the subject of consciousness. Though he is willing to say that the notion of *mind* may be explicable as a **construction** of sensations, he denies any similar elimination of the so-called bare subject. He accepts that our **knowledge of objects** does not extend to it, so that we cannot know anything about it, even whether it is the same from one experience to the next. Still, he thinks introspection shows us that consciousness emanates from a center, even if it does not show us what that center is, and our experience of consciousness as radiating out from such a point of origin is, he concludes, what gives meaning to words like 'this,' 'here,' 'now' and 'I.' In 1913, Russell therefore defends his **mind/matter dualism** against **neutral monism**, which reduces mind and **matter** to something more fundamental than either.

In 1918, however, Russell abandons his doctrine of the bare subject. Thereafter, he agrees with David Hume that there is no object referred to as 'I,' such as the self or soul or personality or ego or mind, over and above the succession of thoughts, **beliefs**, impressions, memories, and emotions that have causal relations among themselves of the sort that collectively make up our "biography." *See also* BEHAVIORISM; 'THIS,' 'HERE,' 'NOW'; WATSON, JOHN B.

SUBJECTIVITY. *See* OBJECTIVITY *v* SUBJECTIVITY.

SUBSTITUTIONAL THEORY. Between 1905 and 1908, Russell moves away from the **type theory** given in appendix B of the 1903 ***Principles of Mathematics*** to a different solution to paradoxes. He experiments with an approach suggested by the technique of contextual definition he used in the 1905 "On Denoting" to show that descriptive phrases are incomplete **symbols**. As he there showed, statements seemingly about, for example, the present king of France only have meaning when they are analyzed into quantified sentences

about other entities. It is in this sense that descriptive phrases like 'the present king of France' are incomplete symbols, for they have meaning only by being given it by a context not containing them.

Such an **analysis**, besides showing that the logical form of sentences superficially containing such a description is not what it appears to be, also shows that we need not assume there is an entity corresponding to the description; in this case, we need not assume there is a present king of France. Russell uses this tactic in order to address paradoxes in a theory whose versions appear in "On the Substitutional Theory of Classes and Relations" (1906), in "On 'Insolubilia'" (1906), and in numerous unpublished notes. The theory is also noted in "Mathematical Logic as Based on the Theory of Types" (1908). An important motive behind the doctrine is Russell's conviction that the variables of logic must be **unrestricted**, that is, allowed to range over whatever there is rather than be divided into types. Yet the versions of the theory differ from each other in important ways, despite the fact that they prove equally unsuccessful in eliminating paradoxes.

In "On the Substitutional Theory," Russell applies the technique of contextual **definition** just noted to show that classes and relations are "false abstractions"—that is, sentences about classes or relations are meaningless until they are translated into language not containing reference to them. (*See* NO-CLASSES THEORY.) Because the class of all classes is not an entity, the method avoids such paradoxes of the transfinite as **Cesare Burali-Forti**'s and **Georg Cantor**'s. Russell employs the operation, not of determining the value of a variable, but of substituting constants for other constants. To express what formerly had been expressed using notation for classes and relations, he introduces a particular notation. In this notation, for example, '$p(x/a)!q$' says 'q results from p by replacing x for a in all those places (if any) where a occurs in p.' Using this approach, he can, for example, define '$x = y$' as '$x(y/x)!x$.'

The matrix 'p/a,' used in different ways, expresses whatever was formerly expressed in terms of class notation about classes. But 'p/a' is only a *matrix*, an incomplete symbol that means 'the result of replacing a in p by . . . ' It stands for nothing and has no meaning except as part of a larger expression that completes it. Using it, however, Russell can define class membership by taking 'x is a member of the class p/a' to mean 'the result of replacing a in p by x is true.'

In this way, classes, classes of classes, classes of classes of classes, and so on, can be defined, as well as their analogs for relations. Since Russell defines class membership in terms of some entity *x* such that the result of substituting it for *a* in *p* is true, it becomes impossible to define '*x* is an *x*,' and he therefore avoids **Russell's paradox**, the class of classes that are not self-members.

As they occur, matrices like '*p*/*a*' are mere abbreviations that are defined by and can be eliminated from some context. In being eliminated, different numbers of substitutions are required, and these form types. For example, the phrase 'the result of replacing *a* in *p* by . . .' requires only one substitution, unlike a matrix of the form *p*(*a*,*b*), which requires two. A definition that eliminates a matrix of the form *p*/*a* is of the first type, and a definition of a matrix of the form *p*(*a*,*b*) is of the second type. Moreover, in the process, either a statement containing only names is reached or what is reached is meaningless. A sentence like '*p*/*a* = *q*/*b*,*c*' is meaningless because it contains an incomplete phrase, 'the result of replacing *c* in *p* by.' It says something like '*p* and *q* are equivalent for any substitution of *a* and *b* and . . . ' Russell views it as a decided advantage that meaninglessness results automatically from the process of substituting names, since it follows that no explicit principle of significance—that is, no rule about types—is necessary.

It is noteworthy that the substitutional theory relies on the notion of *truth*, that is, on contexts that give rise to **semantic** paradoxes. And Russell's 1906 paper "On 'Insolubilia'" addresses the **liar paradox**, a semantic paradox, along with several of the logical contradictions already noted. In order to address both kinds of paradox, the paper interweaves a theory of matrices and a doctrine of types, explicitly noting the **vicious circle principle** that "whatever involves an apparent variable must not be among the possible values of the variable." Yet there is little agreement on the details, especially whether he allows types of **propositions** above the level of individuals.

Russell denies that a proposition (an entity) can contain a bound (i.e., apparent) variable. Thus whatever contains them, such as 'for *x*, *x* = *x*,' is said to be not a proposition but a *statement*. Statements, however many quantifiers they contain, can be reduced to expressions of quantifier-free propositions. Since propositions cannot contain apparent variables, the liar paradox interpreted in terms of

propositions as 'it is not true for all propositions *p* that if I affirm *p*, then *p* is true' (or 'there is a proposition *p* that I affirm and *p* is false') is nonparadoxical and simply false, for whoever asserts it is not stating a proposition. Moreover, it is impossible to interpret the liar paradox in terms of statements, Russell says, because there is no way of referring to all statements.

In explaining what he means by saying that statements about all statements are impossible, Russell treats the liar paradox, which already contains an apparent variable ('there is a . . . , such that I affirm . . . and . . . is false') as requiring mention of the number of apparent variables it contains, as in 'there is a . . . , such that I affirm. . . . containing one apparent variable . . . and . . . is false.' (He expressed this as 'there is a propositional function ϕx such that I assert ϕx is true for all values of *x*, and this is false.') Since in saying what it says the liar paradox contains one more variable than what it says, it belongs to a higher type than what it says, so it cannot apply to itself. This is what is enjoined by the vicious circle principle and the **theory of types**. But a statement about all types is also meaningless, Russell suggests, because the substitutional process of defining such a statement so as to eliminate its quantifiers by replacing its variables with names will introduce another variable, so that no such expression can be given a complete meaning. As in the earlier paper, this is an attempt to have significance imposed by grammar so that principles of significance need not be stated.

Though a version of the substitutional theory is mentioned in section 4 of the 1908 paper "Mathematical Logic as Based on a Theory of Types," that paper introduces a **ramified theory of types** prefiguring what is contained in ***Principia Mathematica*, first edition** (1910–1913), and therefore is often said to shift away from a substitutional doctrine to a more complex version of the view appended to the 1903 *Principles*. But traces of the substitutional theory appear even in the *Principia*. *See also* GRELLING'S PARADOX.

SYMBOLS, THEORY OF. According to Russell's view of **language** in "On Propositions" (1919), "Logical Atomism" (1924), and other writings from the 1920s, a symbol is anything that represents or has meaning: a map, a tune, or a **word** (a series of sounds or marks). The study of symbolism asks what makes it physiologically, formally,

and psychologically possible for a symbol to represent. In Russell's view, each of these is a genuine question belonging to a study distinct from both the study of objects (**ontology**) and the theory of **knowledge** (**epistemology**).

Russell examines the physiology of representation (which is ultimately a matter for physics) when, in "Vagueness" (1923), he argues that our physiological limitations make it uncertain when and where and to what a particular word applies, so that vagueness permeates language. He engages in the formal study of symbols when he addresses what it is about the structure of language that allows it to represent things and events. A formal discussion of symbols occurs, for example, when Russell discusses the **bipolarity** of propositions in "On Propositions," and the different ways in which words and symbols possess meaning. (*See* 'MEANING,' THE MEANING OF.) Another example of this aspect of Russell's theory of symbolism is his claim that the formal basis on which sentences can symbolize **facts** is that, as facts themselves, they resemble what they represent. Russell engages in the psychological study of representation, for example, when he turns to a **causal theory of meaning**, using **laws** of association and habit to explain how we come to use and understand words and sentences.

Ideally, the formal and the psychological account of symbolism would not be intermingled, but Russell thinks the two cannot be separated, at least in actual languages. (*See* LOGICALLY PERFECT LANGUAGE.) For example, he argues that we cannot imagine **negative facts**, so the issue of the logical form of negations is intermingled with questions of **human** psychology. Thus Russell explains negation in terms of a feeling of rejection toward some positive image, a view culminating in *Inquiry into Meaning and Truth* (1940) in his distinction between a **primary language** and a secondary language. *See also* BEHAVIORISM.

SYMPATHY *or* BENEVOLENCE. Russell defines 'sympathy' or 'benevolence' as a desire for the welfare of others, and he says that a person must possess this feeling to live the **good life**. Russell's maxim, that the good life is one inspired by love and guided by **knowledge**, is a utilitarian maxim: it assumes that the right thing

to do in any case is whatever creates the greatest **happiness** for the group. Without knowledge, a person cannot achieve the goal of the greatest happiness for the whole, but without love or sympathy or benevolence, a person will not aim at helping others. For Russell, the idea of taking delight in the things around oneself is included in the concept of love, along with the idea of sympathy or benevolence. It, too, is necessary for utilitarianism, for there is no happiness where there is no ability to enjoy things in the world.

Russell argues further that love, in the form of sympathy or benevolence, cannot exist in an **aristocratic** society, or exists in such a society at best in an extremely limited form. This is because an aristocratic society must be founded on slavery (in the ancient world) or the exploitation of **workers** (in the modern world), and aristocrats must convince themselves that these people are inferior to them. This limitation of sympathy, he says, is the condemnation of aristocracy. Benevolent love thus seems most widely achievable in a **democratic** society. Thus a democratic society, assuming it is also successful at achieving knowledge, is the one that will lead to the greatest happiness (*WNC* 58). *See also* AFFECTION; BENTHAM, JEREMY; ETHICS.

SYSTEMATIC AMBIGUITY. In ***Principia Mathematica,* first edition** (1910–1913), there is no single **propositional function** $\check{p}$ 'is false'; rather, the meaning of p 'is false' depends on the type of the proposition (i.e., judgment) it takes as a **value**. Since that meaning is correlated in a systematic way with the kind of judgment involved, propositional functions like $\check{p}$ 'is false' are therefore called systematically (or typically) ambiguous, as are disjunction, negation, and **words** like '**complex**,' 'part,' 'in,' 'about,' 'exists,' 'object,' and '**relation**.'

Since $\check{p}$ ' is false' is not a single propositional function, it is impossible to join it to a quantifier and form a general assertion about it such as 'all propositions are false,' that is, '$(\forall p)$ p is false.' As a result, contradictions (like the **liar paradox**) that result from referring to all propositions are avoided. Russell rejects the notion of systematic ambiguity in ***Principia Mathematica,* second edition** (1925–1927). *See also* CIRCUMFLEX; RAMIFIED THEORY OF TYPES; 'TRUTH,' MEANINGS OF.

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TALKING ABOUT *v* ASSERTING A PROPOSITION. In the early 1920s, Russell begins to stress the difference between using a sentence to assert something about the world and using a sentence to talk about (i.e., to mention) another **word** or sentence. This distinction bears on what kinds of **propositions** are taken to belong within logic. Propositions occur as asserted in truth-functional compound statements like '*p* or *q*,' and they occur as talked about in statements expressing opaque contexts such as 'A believes *p*' or '*p* is about A.' Influenced by **Ludwig Wittgenstein**'s theses of **extensionality** and **atomicity**, which do not apply to opaque contexts, Russell now denies that non-truth-functional propositions occur in logic.

In ***Principia Mathematica*, second edition** (1925–1927), Russell admits that the distinction between talking about and asserting a proposition raises a problem of **analysis** and makes a great deal of philosophical talk impossible. This is because these two ways in which propositions occur are quite distinct; in one we assert a **fact** (or name an object), and in the other we talk about a proposition (or a word) as a **symbol**, but in neither case do facts or objects occur as subjects of our talk. Thus we cannot really say, as above, that 'in neither case do facts or objects occur as subjects of our talk.' *See also* INEXPRESSIBILITY OF FACTS; 'MEANING,' THE MEANING OF.

TAUTOLOGY. In modern logic, the word 'tautology' refers to a compound sentence that is always true, such as 'either it is raining or it is not raining.' If the sentence is represented symbolically, as in '*r* v ~*r*,' the word 'tautology' may refer to a sentence that is true regardless of the meaning we assign to its nonlogical symbols. (Thus, 'r v ~ r' is a tautology because however we understand the '*r*'—as 'it is raining,' for example, or 'Edward is rich'—the sentence '*r* v ~*r*' is always true.) A tautology understood this way is a logical truth of propositional (sentence) logic, that is, in truth-functional logic. Though predicate logic contains logical truths—propositions that are always true—these are not usually called tautologies.

Since Russell is concerned primarily with predicate logic, his discussion of tautology uses the notion in a way somewhat different from the textbook approach just described. Though in his early work

Russell is well aware that the axioms or basic truths of a system of pure logic are tautologies or logical truths, he nevertheless conceives of such **logical propositions** as very like the propositions of a **science**, only more abstract and general. Logic, as he understands it, is about the world in its most general features.

When Russell becomes convinced by **Ludwig Wittgenstein** that the axioms of logic are (generalizations of) tautologies, that is, uninformative and empty combinations of symbols, he adopts the view that logic, as a system of tautologies, is a matter of manipulating meaningless symbols rather than a system of meaningful though general truths about the world.

Russell first uses the word 'tautology' in "The Philosophy of Logical Atomism" (1918–1919) to describe logical propositions. Though he describes them as propositions containing nothing but **logical constants** and forms, he admits that his account is inadequate, since an extra-logical sentence may contain nothing but logical constants and variables. In his 1931 introduction to ***The Principles of Mathematics***, he adopts the view that logical propositions or tautologies are **analytic** propositions: propositions true in virtue of their syntax or form. *See also* CARNAP, RUDOLF.

TEACHING VIRTUES. Russell favors great freedom in **education**, believing that it is necessary to allow intellect to develop freely according to a child's natural curiosity. However, he understands that such freedom has many limits, one of them being the problem of teaching virtues to children where those virtues are not natural to children (or to adults, either). Russell's example of such a virtue is respect for the property of others, which he thinks is not a natural disposition of humans.

When training children, Russell says, one should try to temper their tendency to appropriate whatever property they can with a sense of justice, that is, with the idea that everyone is entitled to a certain amount of room in the world and that it is acceptable to stand up for what is due a person. Russell thinks that in many cases when there is competition for a pleasure that can only be enjoyed by one at a time, such as a ride in a wheelbarrow, children easily understand the concept of justice. While their **impulse** is to demand the pleasure for themselves, this impulse is quickly overcome when grown-ups introduce the system of

a turn for each. Though Russell does not believe that the idea of justice is innate, he finds that children learn it quickly (*OE* 117–9). *See also* ARISTOCRATIC VIRTUES; BEACON HILL SCHOOL; BLACK, DORA.

THEORY OF TYPES AND ORDERS, DEVELOPMENT OF. When he began writing ***The Principles of Mathematics*** (1903), Russell had evidently conceived of **logic as universal**, that is, as consisting of **propositions** whose variables are **unrestricted** and range over everything. Yet his discovery in 1902 of various contradictions (including **Russell's paradox)** made it necessary for him to present a tentative solution in appendix B to the *Principles*. In this part of the text, he tries to block the contradictions by denying that variables can range over everything; he restricts **propositional functions** and relations to those things for which the propositional function or relation yields a significant proposition. Specifically, in appendix B, every propositional function has a type, that is, a range of objects that yield significant propositions when taken as **values** for its variables. These types or ranges of significance consist of individuals, ranges of those individuals, ranges of ranges, and so on. Thus, for example, 'x is wise' is a function whose variable '*x*' takes individuals like Socrates and Plato as values, and 'ϕ is a property' is a function whose variable 'ϕ' takes properties like *wise* and *brave* as values. Since Russell views **relations** as logical primitives, types also include individuals, relations between individuals, relations between relations, and so on.

Though Russell already sees that his doctrine of propositions as entities makes them vulnerable to logical paradoxes, in the *Principles* he does not extend the type theory to propositions, though he assumes propositions to exist and to be values for variables. He also does not eliminate **classes**, despite the difficulties posed by them. But he realizes that by restricting the ranges of variables, type theory makes it impossible to assert logical laws unrestrictedly, including the theory of types itself, and he is unwilling to give up his conviction that logic employs unrestricted variables. Hence, in his post-1903 period, Russell attempts to solve the paradoxes of propositions, propositional functions, relations, and classes without injury to the unrestricted nature of logic. His development of the **theory of descriptions** in the 1905 "On Denoting" gives him the means to address

the paradoxes, and his discovery that his conception of propositions is also vulnerable to the **liar paradox**, a **semantic** paradox, gives him an additional motive.

In 1905 and 1906, Russell therefore employs a theory that purports to prevent paradoxes, not by distinguishing types, but by defining expressions for classes and relations (and sometimes propositional functions) by means of the substitution of constants within propositions. This so-called **substitutional theory** is thus an early kind of **no-classes theory**, on which such purported entities as propositional functions, classes, and relations (and sometimes, in order to resolve the liar paradox, general propositions) are not considered entities at all. In this period, Russell also first expresses the **vicious circle principle**, which is, roughly, that whatever is about all of something cannot be one of the things it is about. (*See* POINCARÉ, HENRI.)

For reasons that are much contested, in "Mathematical Logic as Based on the Theory of Types" (1908), Russell returns to an approach resembling his earlier rudimentary theory of types. In "The Theory of Logical Types" (1910), and again in ***Principia Mathematica,* first edition** (1910–1913), this tactic continues. In *Principia*, furthermore, classes are contextually defined in terms of propositional functions and propositions as entities are eliminated by a **multiple relation theory**. Whether Russell's attempt to eliminate propositions is compatible with other aspects of his overall doctrine and whether he assumes the **existence** of propositional functions are matters of debate.

In recognition of the fact that propositional functions may contain quantifiers and give rise to paradoxes like the liar, the theory of types now occurs as a **ramified theory** and is significantly more complex. That is, to prevent propositional functions from introducing paradox, they are ramified into distinct orders (order-types). Russell discusses the hierarchy of orders in *12 and in the introduction in ways that vary somewhat in detail, but the general idea is to distinguish propositional functions like '*x* is brave,' which contain nothing but individual variables, from functions like '*x* has all the properties of a great general,' which refer to a totality of properties. A hierarchy of propositions is a further extension of the functional hierarchy.

On the hierarchy of orders, no summary assertion, for example of *all* propositional functions, is possible, and so paradoxes involving

impredicative properties (propositional functions) cannot occur. But impredicative properties are needed to define many mathematical notions, such as mathematical induction, and Russell therefore introduces an **axiom of reducibility**, postulating the existence of a first-order predicative propositional function for any propositional function containing quantifiers above first-order. It is this ramified theory and the axioms associated with it that Russell abandons in ***Principia Mathematica*, second edition** (1925–1927).

According to **Frank P. Ramsey**, the first edition of the *Principia* wrongly attempted to resolve extra-logical (semantic) paradoxes alongside logical ones, thereby necessitating an axiom of reducibility it could otherwise have avoided. Certainly, the theory of types in *Principia* contains doctrines that serve different purposes. In part because of its inclusiveness, there is no consensus whether to read *Principia* as containing primarily a theory of orders responding to semantic paradoxes, as primarily a nonramified hierarchy of types of individuals, functions, functions of functions, and so on responding to nonsemantic paradoxes, as combining both elements from the outset, or in some other way. *See also* EXTENSIONALITY, THESIS OF; ONTOLOGY OF *PRINCIPIA MATHEMATICA*.

THEORY OF TYPES, INTERPRETATIONS OF. *See* ONTOLOGY OF *PRINCIPIA MATHEMATICA*.

'THIS,' 'HERE,' 'NOW.' Russell observes that **words** like 'here,' 'there,' 'now,' and 'then,' along with other "egocentric **particulars**" like 'this,' 'that,' 'I,' 'you,' 'past,' 'present,' 'future,' 'near,' and 'far,' all have meanings that are context-dependent: they mean something different every time they are uttered and every time someone different utters them. However, Russell claims that 'here' and 'now,' along with all other egocentric terms, can all be defined in terms of 'this.' For instance, 'here' can be defined as 'the place of this,' 'now' can be defined as 'the time of this,' 'I' can be defined as 'the person experiencing this,' and so on. Russell argues that the **meaning** of 'this' could be defined as 'the object to which I now attend,' except that having already been used to define all other egocentric particulars, including 'I,' other egocentric particulars cannot be used to define it, as doing so is tantamount to defining 'this' with itself.

(*See* CIRCULAR DEFINITIONS.) This issue is not unique to 'this,' of course, but would apply to any egocentric particular that is used to define all the rest.

In early work like the ***Problems of Philosophy*** (1912), Russell thinks that while some of these words may be defined in terms of others, at least one must get its meaning by standing for a **subject of consciousness** or some other **mental** entity or event. The irreducibility of all egocentric terms to nonegocentric ones shows, he thinks, that at least some mental entities or events are fundamental objects in the universe. This view therefore supports **mind/matter dualism** against the **neutral monist** doctrine that mental and physical events are constructed from some more fundamental, common substance.

In works like *Inquiry into Meaning and Truth* (1940) and *Human Knowledge* (1948) written after accepting neutral monism, Russell denies any need for egocentric particulars in either a physical or a psychological description of the world. Such terms are also undesirable in such a description. As he says in *Human Knowledge*, "One of the aims of both science and common sense is to replace the shifting subjectivity of egocentric particulars with neutral public terms. 'I' is replaced by my name, 'here' by latitude and longitude, and 'now' by date" (*HK*, 101). Thus, 'I am here' is replaced by 'At time *t*, A was at latitude B, longitude C.' In such seemingly objective statements, however, an element of egocentricity remains, for our knowledge of the **facts** that make up this statement will always be based on our own experiences. We are, however, able to define 'this' noncircularly, that is, without using any other egocentric terms, by means of an ostensive **definition** of 'this' that points to the thing meant. 'This' denotes, says Russell, whatever occupies the center of **attention** of the user at the moment the word is used (*IMT* 108–15; *HK* 100–1).

TRADITIONAL PHILOSOPHY. In *Our Knowledge of the External World*, Russell refers to the philosophies growing out of the works of **Immanuel Kant** and G. W. F. Hegel as the "classical tradition," for they adopted the methods and results of constructive philosophers from Plato on and based their own philosophies on the ancient Greeks' faith in the **power** of reasoning. This is also commonly called 'traditional philosophy.' The discovery of geometry "intoxicated" the Greeks, Russell says, and they took the **a priori** method of

deductive reasoning to be universally applicable. By this means, they proved such strange things as all reality is one, that nothing changes, that the world we sense is a mere **illusion**, and so on. The peculiarity of their thoughts did not bother them, he thinks, because they trusted the correctness of their deductive reasoning. Thus, they came to believe that many interesting and important truths about the whole of reality could be established with **certainty** by pure thought. This approach, adopted in the Middle Ages by theologians, was important to systematic theology. Modern philosophers from René Descartes on continued to believe that secrets of the universe could be discovered by pure reason, and that reality was quite different from what it appeared to be.

The sort of scientific philosophy that Russell endorses rejects this classical tradition of philosophy. Russell does think that **logic** is important to philosophy—not as the classical tradition thought, to discover grand **truths** about reality, but in order to analyze supposed **facts** and propose logical alternatives to them. Logic, he argues, cannot say what the world is like, but it can liberate the imagination to say what the world might be like. By this he means that a careful **analysis** of some presumed fact shows what must be true if the fact is true, even if it cannot tell you whether the fact is true. For example, **Gottlob Frege**, **Giuseppe Peano**, **Alfred North Whitehead**, and Russell analyzed **mathematics** and discovered a new form of logic—the logic of relations—that is necessary for there to be the mathematics that we have (*OKEW* 14–5). *See also* LOGIC, ARISTOTELIAN; SCIENCE AND PHILOSOPHY.

'TRUTH,' MEANINGS OF. In chapter 2, section 3, of the introduction to ***Principia Mathematica,*** **first edition** (1910–1913), Russell arranges judgments into a hierarchical series and argues that the functions $\check{p}$ 'is true' and $\hat{p}$ 'is false' vary in meaning **systematically**, depending on the type of judgment to which they are applied. The most basic kind of judgments are elementary ones like 'Andrew is fair,' symbolized 'Fa,' which contain no **logical constants** or quantifiers but only names and predicates (or verbs). An elementary judgment like 'Andrew is fair' is therefore true if the object (Andrew, in this case) possesses the relevant property (fairness). Such a judgment exhibits what Russell calls first-order (or elementary) truth. A

second-order judgment like 'everything is fair,' symbolized '$(\forall x)$ Fx,' is true if each elementary judgment ('Andrew is fair,' 'Beth is fair,' . . . , etc.) has first-order truth. It follows that first-order truth defines second-order truth: a judgment '$(\forall x)$Fx' has second-order truth if and only if all those judgments that result from replacing the variable in 'Fx' with a name have first-order truth.

Some scholars view this hierarchy of judgments as evidence that Russell is committed only to the existence of entities (**particulars** and **universals**) involved in elementary judgments and not to entities of higher types, since all other judgments are defined in terms of elementary judgments. Others note that though Russell ramifies **propositions** in terms of the number of quantifiers and steps in generalization in this section of *Principia*, in the next he does so in terms of types of objects—that is, in terms of the permissible arguments to a **propositional function**—thus seemingly postulating existing entities at higher levels. For this and many other reasons, the **ontology of *Principia Mathematica*** is a matter of ongoing debate. *See also* QUANTIFICATION IN *PRINCIPIA MATHEMATICA*; RAMIFIED THEORY OF TYPES.

TRUTH, THEORY OF. Except during his brief early flirtation with **idealism**, Russell has no sympathy for the idealists' coherence theories of truth in which truth exists for a whole system of **propositions** but not for individual propositions independently of the other propositions of the system. But he is also at first reluctant to adopt a correspondence theory of truth: that propositions are true if they correspond to **facts**. In ***The Principles of Mathematics*** (1903), propositions are mind-independent objects consisting of **concepts** and objects made into a **unity** by means of their **external relations**. As a complex object, a proposition either exists in **space and time** or merely subsists; it is called true in the first case, false in the second. Russell sees that his view cannot account for the difference between truth and falsehood, yet he resists explaining truth in other ways, again, for example, in terms of a proposition's correspondence with fact. In his view, a fact is nothing but a true proposition, and in "The Nature of Truth" (1905), he therefore argues that it is a **tautology** to say that a proposition is true if it corresponds with a fact.

Worries about the **liar paradox** and other paradoxes besetting propositions lead him in 1906 to try replacing them with a theory of a **belief** as a complex of ideas, true by corresponding with a fact. Yet he rejects the plan because he fears he cannot establish the correspondence between ideas and objects. By 1910, however, Russell has come to view propositions as logical fictions and has replaced them with a **multiple relation theory** of judgment (or belief). On this account, a belief is a fact consisting of a **subject of consciousness** that is related by belief to various objects of **acquaintance** constituting what he or she believes. Unlike the 1903 theory, this doctrine explains how truth differs from falsity: a proposition is true if there is a complex, false if there is not. Moreover, it explains how truth is objective—that is, based on fact, because the fact, if any, is part of the belief—while avoiding the problems of correspondence faced by the 1906 version. Finally, unlike pragmatist accounts of true, it gives the meaning of the word 'true' rather than a criterion by which we judge truth.

Yet Russell's theory is still vexed by the problem of **false belief**, among other reasons, because if what it asserts is not true, there is no **relation** at all, hence there is nothing to give any unity or significance to what is meant. In the 1920s, he thus rejects it in favor of a theory of word- and **image-propositions**. A proposition is true when the same relation holds among the objects corresponding to the images as holds among the images themselves. Ideally, the constituents of a proposition and the corresponding fact ought to correspond one to one. The inability to realize this ideal led him in 1906 to reject a theory of propositions as **complexes** of ideas, and Russell acknowledges this problem now. Yet unlike 1906, he views the failure to achieve exact correspondence as evidence that any discussion of propositions inevitably involves psychology and **epistemology**.

For example, since we can only imagine positive facts, the correspondence underlying truth breaks down in the representation of **negative facts**. To explain truth in these cases, we must understand what occurs in terms of psychological feelings of disbelief toward positive images. Likewise, in written propositions, we often must **symbolize** relations by words rather than by relations, so that our sentence contains more terms than the fact it represents. Yet the ideal correspondence occurs in the case of positive image propositions,

for in that image everything is, he says, as it occurs in the fact itself. *See also* ASSERTION IN *THE PRINCIPLES OF MATHEMATICS*; LOGICALLY PERFECT LANGUAGE.

TYPES. *See* IDENTIFICATION OF TYPE, AXIOM OF; THEORY OF TYPES AND ORDERS, DEVELOPMENT OF.

– U –

UNITED STATES AND RUSSELL. Russell visited the United States nine times in his life and wrote numerous articles on American political, economic, and religious institutions and traditions. He argues that by the beginning of World War II, the great corporations of America had **powers** almost equal to that of the U.S. government and that they resembled the Catholic church in having an authoritarian form of government that is not hereditary. (*See* CAPITALISM, DANGERS OF.) Furthermore, Russell claims, those made rich by these corporations were also patrons of the arts and letters in the United States, so Americans who may have regretted the great inequality of income nevertheless avoided taking measures that might prevent it, because they thought that the production of culture is largely dependent on the rich, in particular on the means and leisure necessary for producing culture that an inequality of income creates. Russell agrees that social injustice often furthers **civilization** in just this way and says this fact is what is most respectable about conservatism.

America's tradition of **individualism**, Russell points out, is to some extent also responsible for its tolerance of social injustice. Early liberalism, exemplified by the political philosophy of John Locke, which is individualistic in intellectual and economic matters, dominated 18th-century England, the founding of America as expressed by the U.S. Constitution, French Enlightenment thought, and elements of the French Revolution. However, he claims that liberalism's greatest success has been in America, where it was unhampered by feudalism or a state church and has been the dominant form of American thought from 1776 to the present. Throughout Europe, liberalism developed and evolved in various ways, frequently in response to struggles with the **aristocracy** and with state **religions**.

Because the United States was not involved in such a struggle for existence, Russell thinks it has not developed beyond the ideas in Locke.

It is, surprisingly, in **democracy** that Russell finds much of the conservatism of the United States. The majority of the people, he says, tend more often than not to elect officials to defend traditional religious and **ethical** dogmas. Thus there arises a tendency in North America to persecute the more enlightened individuals of the nation. (*See* HERD INSTINCT AND THE INDIVIDUAL.) Another cultural force that works against the individualism of liberalism is romanticism, says Russell, and he sees Herman Melville, Henry David Thoreau, Ralph Waldo Emerson, and Nathaniel Hawthorne as representative of North American romantics. Russell also notes that communism never took root in American politics the way it did in the politics of many European countries. Although he does not say it, this is no doubt another sign of America's strong liberal tradition.

Religion in the United States, Russell points out, is more like that of the early Christian church than the church after the infusion of the philosophy of Plato and **Aristotle**. Like primitive **Christianity**, American religion, Russell says, is innocent of metaphysics and less concerned with transcendental **hopes** than with duties here on earth (*HWP* 74–75, 285, 599–600, 622, 637). *See also* RUSSIA AND RUSSELL.

UNITY OF THE PROPOSITION. In ***The Principles of Mathematics*** (1903), Russell distinguishes between a **relation** occurring in the way that corresponds to a verbal noun (as in '*loves* is a relation') and in the way that corresponds to a verb (as in 'Amy loves Ben'). In the former position, a relation is merely a term; in the latter position, it is the unifying tie among terms that gives rise to an **assertion**, that is, an asserted **proposition**, as opposed to a mere group of unrelated terms. Though these are two positions of one and the same entity, not two entities, Russell admits that what characterizes a relation in the context of **relating** terms—hence what characterizes a propositional unity—cannot be made into a subject term, contrary to his doctrine that any object can occur as the subject in a proposition. In the *Principles*, Russell concludes that the essential difference between a proposition and a list of terms is lost in **analysis**.

The general problem of accounting for propositional unity occupies Russell's thought throughout his career, appearing in his later work as a problem for his **multiple relation theory** of judgment, and resulting, in the late 1910s and early 1920s, in new doctrines concerning the nature of **symbols**, especially symbols for relations. *See also* CONCEPTS *v* OBJECTS; INEXPRESSIBILITY OF FACTS.

UNIVERSALS. Russell's distinction between **concepts** and things in ***The Principles of Mathematics*** (1903) is not the same as his later distinction between universals and particulars, and the latter distinction does not at first appear in his work. But in the 1911 essay "On the Relations of Universals and Particulars," Russell defends a **realist** or Platonist doctrine of universals, describing them as mind-independent entities (properties or **relations**) that may exist in more than one place at any time—as redness seems to do, by existing in this and that red thing. Universals are therefore contrasted with particulars, with those entities bound to the particular portions of **space and time** that exemplify the universal.

These psychological and epistemological investigations emerge in and after 1904 as Russell begins to classify various different **mental acts**, including the special kind of **acquaintance** that we have with abstract entities and universals and by which we account for our grasp on the meaning of predicates, verbs, and logical terms. Emerging alongside the doctrine of universals is the eliminative technique Russell applies to **descriptions** in "On Denoting" (1905) and the concomitant desire to eliminate unnecessary entities by means of that technique. Hence even as the doctrine of universals becomes full blown in his work, Russell is developing techniques that will enable him to dramatically reduce the number of universals whose **existence** he thinks he needs to accept.

Russell is adamant till the end of his life that there must be at least one universal (e.g., similarity). In the 1920s, for example, he argues that we have no **images** of universals but can intend or will that an image, which is always a particular, "mean" a universal. From the 1930s to 1950s, Russell emphasizes the importance of universals to the possibility of **knowledge**. In this period, Russell asserts that (some) relations are nonlinguistic, arguing for the existence of universals against what he sees as Rudolf Carnap's overly syntactical

view of **language**, which denies the existence of such entities. *See also* BUNDLE THEORY OF OBJECTS; LOGICAL POSITIVISM.

UNRESTRICTED VARIABLES. Logicians typically assume that the variables in expressions like '*n* is greater than five' are restricted to a specific group of entities, such as **numbers**. Thus in modern predicate logic, a universe of discourse—a set of **values** for the variable—is chosen in light of the interpretation of the predicates in question, and in that context, variables are assumed to range over only them and no others. In ***The Principles of Mathematics*** (1903), Russell rejects the notion of a universe of discourse because he conceives of **logic as universal** in scope and as having nothing that falls outside of it. In this view, variables must be unrestricted, since logical truths are true for anything whatsoever. (*See* LOGICAL PROPOSITIONS.) When the discovery of **Russell's paradox** and other contradictions force him to consider a **theory of types** restricting variables to different domains or types, it is not surprising to see Russell resist that approach in an effort to retain the unrestricted variable.

When Russell abandons the unrestricted variable is a matter of debate. In some accounts, he retains that view even in ***Principia Mathematica,* first edition** (1910–1913). *See also* NO-CLASSES THEORY; REAL AND APPARENT VARIABLES.

USE *v* MENTION. *See* OBJECT LANGUAGE *v* META-LANGUAGE.

– V –

VAGUENESS. In his 1923 paper "Vagueness," Russell explains the vagueness of **language** in physiological terms. In the case of sensible predicates like 'is blue' or 'is born,' we do not always know with **certainty** when it is correct to apply them, because our senses are only sufficiently acute to ascertain their attribution in a narrow circumference of cases. But the fact that we do not know with certainty whether or not a word applies means that it is unclear in those cases whether or not a sentence is true. Russell thus concludes that the words 'true' and 'false' are themselves vague, in so far as we do

not always attribute them with certainty. Put another way, due to the vagueness of the **words** in it, the meaning of a **proposition** is always to a certain degree vague, so that what can make the proposition true is a shifting region of facts. Since the meaning of **logical constants**—words like 'and' and 'or'—turns on the notions of **truth** and falsity, even these logical words are vague, though they are less vague than other words. Since **knowledge** is formed by or through language, it follows that all our knowledge is vague.

Russell contrasts natural language, which is always vague, with a **logically perfect language**, which is precise but exists only as an ideal. *See also* SYMBOLS, THEORY OF.

VALUES OF *v* VALUES FOR PROPOSITIONAL FUNCTIONS. In ***Principia Mathematica*, first edition** (1910–1913), Russell says that to assert a definite, true or false **proposition**, the names which replace the variables in a **propositional function** cannot be any kind whatsoever. They have to be restricted to a certain set of arguments for which the propositional function in question yields a significant proposition. (*See* VICIOUS CIRCLE PRINCIPLE.) These values *for* a propositional function define the range of significance—the type—of the propositional function. (*See* THEORY OF TYPES AND ORDERS, DEVELOPMENT OF.) A propositional function thus presupposes some class of propositions (more properly, some class of judgments) which are values *of* the propositional function. This use of terms is not always embraced by Russell. *See also* RAMIFIED THEORY OF TYPES; 'TRUTH,' MEANINGS OF.

VERIFICATION AND REFUTATION. From the 1920s through the 1940s, Russell examines the formal basis of verification and refutation in terms of the relation of **propositions** to what constitutes their **truth** or falsity. In the *Inquiry into Meaning and Truth* (1940), for example, he argues that experiences are a subset of facts, so that a basic proposition is verifiable if it corresponds to experience (i.e., the present testimony of our senses and **memory**) and true if it corresponds to a **fact**, which may not be an experience. (Nonbasic propositions are true in virtue of their syntactic relations to basic ones.)

For Russell to define truth in terms of the correspondence of such propositions with facts is to allow the **existence** of events that no

one experiences and of propositions that are true even if there is no way of verifying them in experience. One reason for distinguishing between verification and truth in this way is to permit certain statements, for example many in physics, to remain within the domain of what we call **knowledge**. Another reason is that knowledge is impossible, Russell says, unless we accept the truth of principles of inference that are neither demonstrated nor derived from experience. By denying that propositions are true or false only if they are verifiable and by accepting such principles, Russell readily admits that he rejects **empiricism** (which he never accepted in the first place) and diverges from **logical positivism**.

Throughout this period, Russell also considers the psychological experience of verifying or refuting **beliefs**, that is, our subjective, emotional response when confronted by data bearing on the truth or falsity of our beliefs. Psychologically, the verification of a belief (e.g., 'this is sugar') involves a feeling of an event or fact having been expected (e.g., that this is sugar), while the refutation of a belief consists of experiencing a feeling of surprise toward an event or fact that was unexpected (e.g., that this is salt). *See also* CARNAP, RUDOLF; VERIFICATIONIST THEORY OF MEANING.

VERIFICATIONIST THEORY OF MEANING. Some **propositions** are meaningful and others not. But apart from grammar and vocabulary, what is necessary for a proposition to be meaningful? Philosophers like A. J. Ayer, Moritz Schlick, and **Rudolf Carnap** provide an answer in the criterion of verifiability and its corresponding theory of **meaning**, both of which emerged from within **logical positivism**. On the criterion of verifiability, a statement that is not a mathematical or logical one is meaningful (or "cognitively significant") if its **truth** or falsity is empirically testable, that is, if observations confirm or refute it. On this criterion, apart from the propositions of **mathematics** and logic, which are analytically true, only those statements are meaningful whose truth or falsity is verifiable, that is, for which observations could exist that would confirm or refute them. (*See* ANALYTIC *v* SYNTHETIC PROPOSITIONS.) Having established this as a criterion of meaning, the verificationists then assert that the meaning of a statement is the method of confirming or refuting it.

The criterion of verifiability—and the theory of meaning—is unsympathetic to many claims made in **philosophy**, **religion**, **ethics**, and certain **sciences**, that is, claims about **God** or the soul or unconscious motives, since even in principle there exist no observations that could confirm or refute them. Statements like 'God is good' are therefore considered factually meaningless by verificationists, even though they appear to be saying something. Proponents of the verificationist principle account for this in different ways, most frequently by explaining such cases as expressions of emotion.

Russell's long-standing **belief** that we know some logical principles independently of sense prevents him from accepting verificationism, as does his conviction, shared with Karl Popper, that metaphysical statements are meaningful. Russell also argues against the verificationists that the belief that the starry heavens exist at all times and the belief that they exist only when I perceive them are equally unverifiable yet mean different things, if only because their emotional consequences are different. Of course, the logical positivists could reply that, in postulating their verificationist criterion, they are not concerned with such differences of emotive meaning but only with the nature of cognitive significance. *See also* EMPIRICISM, RUSSELL ON; VERIFICATION AND REFUTATION.

VICIOUS CIRCLE PRINCIPLE. Henri Poincaré argued that **impredicative definitions**—those that define properties by reference to a totality of properties that includes the one being defined—are viciously **circular definitions**. As early as his 1906 essay "On 'Insolubilia,'" Russell adopts this idea in connection with certain contradictions, coining the phrase 'vicious circle principle.' (*See* LIAR PARADOX.) Russell most often presents the principle as stating that the totality of **propositions** that are the **values** of a **propositional function** (property) must be well defined for the propositional function to be meaningful. Since a class of propositional values is not well defined so long as it keeps expanding, as it does if an assertion about the totality is a new member of the totality, it follows that no such assertion can be a new member of that totality. Rather, such an assertion must belong to a higher **type**. It is not altogether clear whether the principle is intended to describe a fact or lay down a rule, and Russell's various ways of expressing it have led to considerable

debate as to its intended meaning. Aside from this, as Russell acknowledges, this principle, which might better be called the principle of types, is difficult to express in a way consistent with itself. (*See* AMBIGUOUS ASSERTION; ASSERTING A PROPOSITIONAL FUNCTION.)

The vicious circle principle appears in a slightly different guise in some of Russell's early work, or something like it appears. For example, in "On Some Difficulties in the Theory of Transfinite Numbers and Order Types" (1905–1906), Russell denies that a totality always increased by new members is an entity. (*See* NO-CLASSES THEORY.) In this instance, the principle does not seem to imply the adoption of a **theory of types**, as it later does.

VIETNAM. *See* INTERNATIONAL WAR CRIMES TRIBUNAL.

– W –

WAR, THE EVILS OF. Russell is a conditional **pacifist**—one who thinks that most wars are unjustified and should be opposed, but that some wars are **justifiable**. The reasons for opposing wars are obvious, he thinks, but humans are usually so irrationally exuberant at the prospect of war, and even during it, that it is necessary to remind them of the evils of war.

The most obvious evil, says Russell, is that large numbers of a nation's most courageous and healthy young people die. (*See* COURAGE.) The annihilation of these youths brings great sorrow to their friends and families as well as loss to the nation. The costs of war are also measured by how many are injured and maimed, which in most wars far exceeds the number killed. Others, as a result of the experience, become nervous wrecks and useless derelicts, and almost all are brutalized and morally degraded by killing, which "lets loose the wild beast" in combatants in ways they cannot face or dwell on later.

Graver than these evils, Russell thinks, are those that befall noncombatant populations living in the combat regions. Many noncombatants are killed or maimed, often more of them than combatants.

Women are raped. People have property stolen from them and are humiliated in various ways. Many are also impoverished. Outside the areas of military operations, more economic damage is done. Material advantages for people vanish, so the poorer classes lack the materials necessary for spiritual or material improvement and become stunted by the war. And on a larger scale, economic **progress** is halted for most, both by diminishing the resources necessary for the social progress of wage-earners and by distracting people from the political task of improving the conditions of their lives.

Wars also introduce spiritual evil by the infliction of hatred, by injustice, by the repudiation of truth through the lies necessary for most nations to justify war, by artificial conflict, and by embedding antisocial interests into the experiences and values of a society. However, the greatest evil of war to Russell is the actual and potential damage to **civilization** it produces. Long before the invention of **nuclear weapons**, Russell concludes that the proper response to warfare in the modern world is nonresistance, since civilization is too important to risk destroying in war. In *Justice in War-Time* (1915), his position concerning World War I is to strive to achieve peace as soon as possible, even if it means accepting defeat, since European civilization, at risk in the war, is more precious than the pains of defeat are severe (*JWT* 19–57). *See also* AGGRESSION; COLONIZATION, WARS OF.

WATSON, JOHN B. (1878–1958). The American psychologist John Broadus Watson was the founder of the school of psychology known as **behaviorism**, which he based on his studies in animal research. Watson's approach rejected **introspection**, turning instead to an external, objective standpoint as a means to predict and control behavior. **Images**, **beliefs**, thoughts, and other **mental acts** were reduced to observable behavior, such as the use of written or spoken **words**.

Watson's school of behaviorism influenced Russell in the early 1920s, though Russell is also highly critical of several of its doctrines. Russell is unwilling to accept the view, attributed to Watson, that **knowledge** is nothing but word-behavior, of words causing other events to occur. Russell reasons that if some phenomena—such as

images and **sense data**—are **private** but can be known by introspection, then knowing is not wholly externally observable, not wholly oriented toward causing outward effects and practical matters, and not wholly behavioristic. Some experiences are internal and private, Russell thinks, and introspection is a means of acquiring knowledge of such experiences. *See also* MEANING, CAUSAL THEORY OF; NEUTRAL MONISM.

WHITEHEAD, ALFRED NORTH (1861–1947). Alfred North Whitehead, a British mathematician and philosopher, taught at Cambridge University from 1885 to 1910. Apart from ***Principia Mathematica*, first edition** (1910, 1912, 1913), his technical work is mainly concerned with applied **mathematics**. Originally Russell's teacher and mentor, Whitehead collaborated with Russell on drafting the three volumes of *Principia*, and his degree and kind of contribution remain a matter of conjecture. Russell and Whitehead appear to have shared the technical work by checking each other's derivations, sending them back and forth by mail. But there is no doubt that the philosophical portions of the *Principia* fell to Russell, and Whitehead's early letters to Russell sometimes press the younger man to get clear on such issues as the nature of the variable.

In 1910, Whitehead took a position teaching mathematics at the University of London, staying there until 1924. However, his work in this period is less in mathematics than in the philosophy of **science** and **education**. Consistent with his interest in science in this period, Whitehead defines particles of **matter** and instants of time in terms of sets of events. In 1914, he volunteered to share the ideas with Russell, who gives Whitehead credit for them in *Our Knowledge of the External World* (1914), where he makes extensive use of them. But Whitehead's dislike of Russell's way of using the ideas—in the book Russell gives **constructions** of matter from classes of **sense data**—seems to mark the close of their relationship. Their personal relationship, however, was already strained, and Whitehead's disapproval of Russell's **pacifism** during World War I, a war that cost Whitehead his youngest son, could not have helped. Despite these tensions, Russell extended considerable financial support to Whitehead's family in this period, at the request of Mrs. Whitehead and without Whitehead's knowledge.

In 1924, Whitehead accepted a position at Harvard University and began developing what is called process philosophy, which appears in *Process and Reality* (1929) as the attempt to show that reality is constituted not by things but by processes and change. He retired from Harvard in 1937. *See also* SPACE AND TIME.

WIENER, NORBERT (1894–1964). The founder of the discipline of cybernetics, Norbert Wiener was also known for many other accomplishments. In 1912, at the age of 18, he received a PhD in **mathematics** from Harvard University. With a one-year traveling fellowship, he went to Europe, visiting Russell in England and writing a four-page communication to the Cambridge Philosophical Society on the results of his dissertation. Wiener was at Harvard in 1914 when Russell was there, and he studied with Russell then.

Wiener's dissertation, published in 1914, defines the notion of an ordered pair in terms of set theory, by treating an ordered pair as a set or **class**. Since relations can be defined extensionally in terms of ordered pairs, this allows the theory of relations to be reduced to set theory. Formally, his **definition** reads: $(x,y) := \{\{\{x\},\{\}\}, \{\{y\}\}\}$. In 1921, Kazimierz Kuratowski gave an even simpler set-theoretic definition of the ordered pair.

By showing that we can explain relations of order in terms of set theory, Wiener eliminated the need to treat relations as a logically fundamental category by means of a theory of relations, as in ***Principia Mathematica*, first edition** (1910, 1912, 1913).Though Russell was aware of Wiener's set-theoretic definition of order, he remained convinced of the need for a theory of relations as entities independent of sets. *See also* ASYMMETRICAL RELATIONS; EXTERNAL RELATIONS.

WITTGENSTEIN, LUDWIG (1889–1951). The youngest child of a wealthy Austrian industrialist, Ludwig Wittgenstein became interested in **philosophical logic** while a student of aeronautical engineering at Manchester University in 1908. His interest in the foundations of **mathematics** was inspired by reading Russell's 1903 ***Principles of Mathematics***, and perhaps in particular by **Russell's paradox** and its solution, the **theory of types**, discussed in appendix B to that book. Wittgenstein claims he met with **Gottlob Frege** in 1911

and was encouraged by Frege to travel to Cambridge to study with Russell, who, with **Alfred North Whitehead**, was then engaged in writing ***Principia Mathematica*, first edition** (1910, 1912, 1913). Wittgenstein's arrival at Cambridge began a period of close interaction with Russell. That led (with Russell's help) to the transcription of Wittgenstein's "Notes on Logic" in the autumn of 1914, notes he then further developed while in self-imposed isolation in Norway.

World War I severed his ties with Russell until 1919. Wittgenstein served in the Austrian-Hungarian navy during the war and in other military roles, all the while working on further notes. These were published in German in 1921 as the *Logisch-Philosophische Abhandlung*, and in English in 1922 as the *Tractatus Logico-Philosophicus*. In this cryptic and self-conscious text, and in the notes preparatory to it, Wittgenstein forwards a conception of a **logical proposition** as an empty **tautology**, and he distinguishes at the same time between what can be said and what can only be shown (the latter being whatever enables **language** to be about the world). It follows from this distinction that we speak nonsense when we attempt to speak about what can only be shown, that is, about what enables us to make sense. Since **traditional philosophy**, and certainly Russell's **practice of philosophy**, is, according to Wittgenstein, largely an attempt to say what can only be shown, it follows that philosophy engaged in this way is nonsensical.

These views began to emerge even as Wittgenstein was working with Russell. Their divergence on the nature and value of philosophy, coupled with Wittgenstein's harsh criticisms of a book Russell had in progress, to be called *Theory of Knowledge*, had already caused tension between them by the end of 1913, but Russell valued Wittgenstein's ideas and notes enough to refer to them repeatedly in lectures in 1914 and 1918. In 1919, Russell appears to have been very relieved to find Wittgenstein still alive though imprisoned in Italy. The differences between them had become stark, but after the war, Wittgenstein's writings continued to affect Russell's views on logical propositions and **belief**. In ***Principia Mathematica*, second edition** (1925–1927), Russell revises his system of logic along lines recommended originally by Wittgenstein and then taken up by **Frank P. Ramsey**.

After the war, Wittgenstein left the study of philosophy, working in various capacities, including gardener and grade school teacher in

Austria. In the meantime, his work in the *Tractatus* was having a profound impact on the emerging school called **logical positivism** associated with the Vienna Circle—among other things, in its views on **analytic propositions** and its embrace of the **verificationist theory of meaning**. The stimulation of conversations in Vienna with Moritz Schlick and other members of the Vienna Circle, plus the interest of young scholars like Ramsey, eventually persuaded Wittgenstein to return to academia. In 1929, he traveled to Cambridge, received his doctoral degree for the *Tractatus* the same year, and began teaching as a fellow, continually writing and revising his philosophical notes over the ensuing years. Throughout this period, though Russell remains unimpressed with Wittgenstein's increasing interest in language use, and Wittgenstein is unimpressed with Russell's growing interest in the relationship between **science and philosophy**, it is unlikely that the two ever stopped meditating on each other's philosophical work.

From 1939 to 1947, Wittgenstein served as chair of philosophy at Cambridge, resigning in order to work on philosophy undisturbed. He lived another four years—the last two of them diagnosed with prostate cancer—and continued working on notes until his death. Many of these have been published posthumously, for example, in the *Philosophical Investigations*. *See also* CARNAP, RUDOLF.

WOMEN'S RIGHTS. Russell views the rights of women in terms of the domination and disrespect in human **sexual** and marital relations that he thinks is an example of the general tendency by some humans to deprive other humans of liberty and self-determination. He compares the question to the issue of **democracy** itself, arguing that men stand in relation to women much as the **aristocracy** does to the lower classes, and that the same problem exists: they do not have to suffer the injuries of the other party and therefore do not bother to take care that those injuries do not occur. Issues that would be made political were they to occur to men continue to be called private because they occur only to women ("Liberalism and Women's Suffrage" 11–16).

On the issue of the vote (granted in 1918 in Britain to women over 30 years of age), Russell argues that it is by voting that one receives a political **education**. He therefore dismisses the objection that women's

enfranchisement must wait till they become politically educated. He also dismisses the argument that to give women the vote will bring disunion to the family, saying that the former argument implies that **marriages** can endure only if husbands and wives speak in trivialities. To the argument that the country might be run by women if women vote, Russell says that if the unlikely scenario occurred, there is no reason to think it would be any worse than a country run by men.

Against the objection that women are too emotional and not rational enough to govern, Russell says that this only means you think they will not agree with you, and he compares the objection to the attitude of the higher classes, who call the lower classes irrational for not seeing the desirability of, say, raising rents. Russell notes that the right to have a part in choosing who will govern you is independent of the right to be one of the governing (to run for office), but he believes, too, that no harm comes from women's leadership, and that given the paucity of female leaders, there has been a disproportionate number of very good ones. On many of these issues, Russell is influenced by **John Stuart Mill**'s *Subjection of Women*.

Though Russell campaigned for women's suffrage (e.g., from 1906 to 1910), he was later bitter about the political reasons women received the vote. He says that men in **power**, eager to enter into World War I, enfranchised women as a reward for their aggressively pro-war attitudes—attitudes Russell found sickening in both sexes. (*See* PEARSALL SMITH, ALYS.)

On the issue of women and work, in the *Conquest of Happiness*, Russell sees a direct connection between the easing of moral demands on women and their freedom to work outside the home. That is, parents and clergy cannot burden women with moral restrictions on dress, attitude, **belief**, or conversation if women are not around to listen and do not need to live at home in any case. He believes that women who work outside the home have a better quality of life than those who stay home to bear and raise children. Unless those who stay at home are quite wealthy, they will not be able to find adequate assistance in the care of the home and children, and because such work in the home is boring and degrading, Russell says, they make themselves bores to their husbands and to themselves.

On the issue of **sexual ethics** and **sin**, Russell does not believe that sex is a sin or that sin is a useful concept. He argues (e.g., in ***Mar-***

riage and Morals) that **Christianity** has been profoundly debasing to women, and that it is only in the 20th century that their rights have begun to approach what they had in certain places before the advent of Christianity. The Christian debasement of women has stemmed in large part from the church's preoccupation with sex, since men who deprive themselves of sex have made women out to be temptresses who must be contained and controlled.

The church has in the past thus often chosen to protect the virtue of men by removing women—keeping them at home, in the company of other women, and labeling them as whores if they break the rules—rather than by teaching men and women inner mechanisms of rational self-control. When the church has chosen something like this latter option, it has not done so equally or moderately but has chosen to ignore the boys and focus only on the girls, teaching girls to view sex with disgust and as a duty to be endured in marriage.

Such inhibitions, Russell thinks, became loosened during World War I, as did the custom of controlling women's finances and opinions by preventing them from working outside the home. Russell does not see how there can be a return to the old degree of control over women's happiness (i.e., their financial liberty, level of education, and sex lives) without a tremendous effort at censorship and other means. *See also* BIRTH CONTROL; BLACK, DORA; DIVORCE.

WORDS AND SENTENCES AS CLASSES. In his early work, Russell assumes that words are single things, or **particulars**, that acquire their **meanings** by being related to entities of various kinds. In 1918, this view begins to break down, and he subsequently distinguishes between an instance of a word and the word as the class of similar instances. As spoken, an instance of a word is a series of movements in the mouth; as heard, a series of sounds; and as written, a series of marks. The spoken, heard, or written word is the class of such series of similar instances. For a variety of reasons, however—such as accented speech or bad handwriting—it may be difficult to ascertain whether an instance of a word has occurred, that is, whether it is sufficiently similar to other instances of the word. This is one factor contributing to the pervasive **vagueness** of **language**.

Since words are classes, sentences—at least those that are series of words—are classes of series of classes. But some sentences involve

only a single word. In *Analysis of Mind* (1921), Russell gives the example of hearing 'Car!,' which may cause us to move out of the way quite as well as seeing a car. (*See* CAUSAL THEORY OF MEANING.)

Russell sometimes refers to the class of instances comprising a word as a **universal**, but in doing so, he does not advocate a **realist** theory of universals. In his view, words as classes exist only in their instances, the particular movements, sounds, or marks used; this is another way of saying that a word is not a single thing. As Russell explains in *Inquiry into Meaning and Truth* (1940), we are apt to infer the existence of universals independent of their instances if we mistakenly assume that words are single things—for example, that there is one word 'dog' which applies to the many dogs there are, since then the meaning of the word appears to be a universal, a canine essence.

The distinction between the word as a class and as an instance of a class helps Russell to clarify what he sees as the important difference between **talking about** and asserting a **proposition**. In talking about a proposition—for example, 'this is blue' contains three words—what occurs is the proposition as a class of similar instances, whereas in asserting that something is blue, what occurs are the particulars forming the assertion. *See also* OBJECT LANGUAGE *v* META-LANGUAGE; PRIMARY *v* SECONDARY LANGUAGE; SYMBOLS, THEORY OF.

WORK ETHIC. The work **ethic** is the belief that work is a virtue and a duty. In contrast, Russell believes there would be more **happiness** if society were so organized that people worked less. For him, idleness, not work, is a virtue. (*See* ARISTOCRATIC VIRTUES.) Russell argues that in pre-**industrial** times, through much hard work, a family could produce little more than was necessary to survive. What small surplus was created was appropriated by the **aristocracy** (warriors and priests), and when the harvest was poor, the aristocrats took their share anyway. In consequence, as many as 5 percent—at times even 10 percent—of the peasants of some country in pre-modern Europe could starve to death during a bad winter. At first, Russell says, force was required for the peasants to part with their surplus, but eventually the fiction was created that work is a duty, and this ethic made it

easier to separate peasants from the products of their labors. Yet this is the morality of slaves, Russell says.

Today, slavery is not essential to production. In fact, Russell argues, since it is now possible to produce enough for everyone to live comfortably without having to work hard and continually, it is also possible for everyone to have far more leisure time than in the past. Still, primarily because of the persistence of the work ethic, most of us work as hard as ever. This ethic persists not only where **capitalism** reigns, where it is useful for bringing the owners of capital greater profits than they would otherwise receive, but it also persisted in communist **Russia**, where "the dignity of labor" was preached more earnestly than elsewhere, with the result that manual labor was honored more there than anywhere else (*IPI* 1–9). *See also* DEMOCRACY AND CAPITALISM.

WORLD CITIZENSHIP. A **pacifist**, Russell frequently argues that the only way to stop **war** is to form a **world government**. He also argues that the need for a world government is greater than ever before because modern technology has made warfare so destructive. Indeed, after the creation and spread of **nuclear weapons**, he says world government is essential for the very survival of the human race. With this need in mind, Russell asks, what sort of citizen would a world government need? Since he believes that a nation's government commonly controls its system of **education** so as to produce the sort of citizen that is most useful to it, his question becomes, what sort of person would a world government want to have its school system produce?

Russell believes that what is needed by a world government is a citizen who is more rational and more sympathetic to **individualism** than the sort that national governments currently produce. A world government would therefore need to provide the sort of education most beneficial to an individual rather than to a state. It would not be in the interest of a world government, for example, to teach militant nationalism to students. Thus, history would be taught more impartially than it is by most governments today, for most governments present a partial and even falsified picture of the world, or one so biased that the student comes to favor that particular state, its **religion**, and its ideals (e.g., that it is best to favor the rich). A more impartial

and less biased education would make it less necessary to teach children to respond emotionally rather than rationally, for emotional rather than rational methods are necessary to teach superstition and false and biased beliefs, but not to teach more accurate and unbiased beliefs. Teaching children to be rational is, for Russell, teaching them to accept beliefs on the basis of evidence. *See also* BEACON HILL SCHOOL; TEACHING VIRTUES.

WORLD GOVERNMENT. Russell believes that the only way to end **war** and achieve world peace is by establishing a world government that holds a monopoly on the most serious weapons of war. The military force of this world government would have to be strong enough to settle by **law** all disputes between nations. In particular, this means that international control over atomic energy must be established, though Russell realizes that it will not be easy to convince countries with **nuclear weapons** to give them over to international control. A second condition necessary for establishing world government, he thinks, is that there should be a general distribution of prosperity among countries in order to prevent envy of one part of the world by another. A third condition would be a low birthrate everywhere, so world population is nearly steady. A fourth condition would be a maximizing of individual initiative and the greatest diffusion of **power** possible while still maintaining this political and economic world structure. These conditions are especially necessary if a world government is to be stable.

In the absence of a world government meeting these conditions, Russell believes that the human race is in some danger of extinction and in even greater danger of descending into **anarchy** or at least into a general lowering of the level of **civilization**. Any of these likely outcomes will increase suffering across the globe through violence or starvation. Reasonable people, he thinks, must therefore desire to see a movement around the world toward fulfilling the conditions necessary for world government. Russell believes that with the advent of nuclear weapons, the possibility of a worldwide disaster by way of war is much greater than had been the case before their advent (*HSEP* 228–9).

In addition to an international military power, a world government would need legislative and judicial institutions, but these, Russell

thinks, would follow naturally if the military power were established. While it would be desirable if this government were established by consent, Russell does not believe that the human race has the capacity for mutual forbearance to establish a world government solely by consent. Thus at least some of its parts would have to be established by conquest and would have to be maintained by force for at least some years. In this case, the world government would clearly be neither a **democracy** nor liberal, but it would have to develop in that direction to achieve stability (*NH* 98). *See also* WORLD CITIZENSHIP.

– Z –

ZENO'S PARADOXES. Zeno of Elea (ca. 490–430 BCE), a student of the philosopher Parmenides, articulated a number of related paradoxes of motion (hence of **space and time**), including Achilles and the Tortoise, the Arrow in Flight, and the Dichotomy, that all turn on the concept of **infinity**. Achilles and the Tortoise consists of an imagined race between the two, with the tortoise given the lead, and argues that Achilles can never quite catch up to the tortoise, since as he moves ahead during a period of time, so does the tortoise, if only by a very little. On the dichotomy argument, to get to some point, you must first reach the halfway mark, and thus halfway to the halfway point, and so on. Since this infinite series of steps can neither be completed nor even begun, it follows that motion is an **illusion**. The point of the Arrow in Flight is also that motion is an illusion, for it can only occur in the present, but at any instant a thing presumed in motion (the arrow in flight, for example) must occupy a definite point in space, that is, a fixed point.

In ***The Principles of Mathematics***, Russell argues that we can escape Zeno's paradoxes without denying the reality of motion only if we analyze a finite space and time into infinite **numbers** of points and instants, so that, for example, a finite sequence cannot be said to consist of finite, consecutive instants. He introduces the topological property of compactness—that is, the property that between any two numbers in a series there is another number, so that no two are consecutive—and he argues that what we mean by motion is that, at

different instants, any moving object occupies different positions at those instants but that intermediate positions are occupied at intermediate instants. In other words, there are no next points or instants. *See also* TRADITIONAL PHILOSOPHY.

ZIGZAG THEORY. The discovery of **Russell's paradox** and other contradictions shows Russell the danger in assuming that any property or **propositional function** defines a **class** of entities possessing that property. Like other strategies for coping with paradoxes, Russell's zigzag theory is an attempt to limit or qualify this assumption (i.e., the **comprehension axiom**).

Russell pursues the zigzag theory in "On Some Difficulties in the Theory of Transfinite Numbers and Order Types" (1905) in order to address his admission in appendix B of ***The Principles of Mathematics*** (1903) that he has yet to eliminate paradoxes that concern his conception of **propositions as entities**. Instead of controlling the formation of properties and sets by means of a **theory of types**, the zigzag theory employs the notions of a **complex** and a constituent of a complex, attempting to discriminate between those complex objects (i.e., **propositions**) that are functions of their constituents and those that are not. Classes exist, he says, only if we can understand and assert the corresponding complex (i.e., the proposition), and we can only do so when the complex is such that its constituents could be laid out in a finite list. His core idea is that paradoxes result from properties that are too complex, which he defines by reference to what is thinkable.

Russell eventually sees that he cannot circumscribe the axiom of comprehension in the right way—or circumscribe it enough to prevent paradoxes and leave intact important parts of set theory, such as **Georg Cantor**'s theorem and the **Frege**-Russell **definition** of number. Thus, in this year and the next, he tries to constrain paradox by means of the **substitutional theory**, before turning in 1907 to the **ramified theory of types**. *See also* NO-CLASSES THEORY.

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INTRODUCTION

Bertrand Russell was the greatest logician since Aristotle and the greatest philosopher of the 20th century. He published over 100 books,

political pamphlets, and collections of essays, and well over 2,000 articles, in addition to writing hundreds of letters to the editors of various newspapers around the world and tens of thousands of private letters to his friends and acquaintances—all while leading a busy life as a political activist and, for many years, running and teaching at his own school with his second wife, Dora.

Because he was such a prolific writer, this bibliography cannot pretend to be a complete listing of even Russell's own writings, much less the thousands of books, articles, editorials, and the like that have been written about him. It is thus a selective bibliography of his best writings and of the best that has been written about him. A *complete* listing of Russell's books, articles, collections of essays, pamphlets, reviews, public statements, interviews, reports of speeches, and even blurbs can be found in the magisterial three-volume *Bibliography of Bertrand Russell* by Kenneth Blackwell, Harry Ruja, and Sheila Turcon.

Nearly all of Russell's private papers and manuscripts, and most of his letters, can be found at the Bertrand Russell Archive at McMaster University in Hamilton, Ontario. An index to his letters, called BRACERS, can be found online at bracers.mcmaster.ca. Catalogues of the Bertrand Russell Archive collections are listed in this bibliography. The Bertrand Russell Research Centre at McMaster is in the process of producing an edition of the complete papers of Russell in the series *The Collected Papers of Bertrand Russell*. These too are listed in this bibliography.

Nothing exists that is close to being a complete bibliography of the secondary literature about Russell, though in addition to this bibliography there is a large bibliography of the secondary literature in the first volume of the four-volume *Bertrand Russell: Critical Assessments*, edited by Andrew Irvine. Additional materials on Russell can be found in the two scholarly journals dedicated to publishing articles on Russell's writings and ideas; these are *Russell: The Journal of Bertrand Russell Studies* and the *Bertrand Russell Society Quarterly*. Each may be found online at the URL listed for them in this bibliography. There is also an active Bertrand Russell Society in North America. Its website can be found at users.drew.edu/~jlenz/brs.html. A lively online discussion group, russell-l, can be found at mailman.mcmaster.ca/mailman/listinfo/russell-l.

For readers new to Russell and interested in knowing more about his philosophy, "My Mental Development" and *My Philosophical Devel-*

opment are two good introductions to it by Russell himself. Russell also presents his early philosophical views in a clear and popular fashion in *Problems of Philosophy* and gives an extremely clear and accessible account of his technical views in philosophy of mathematics in *Introduction to Mathematical Philosophy*. For further reading in his academic philosophy and logic, his collections of essays are important, in particular *Logic and Knowledge*, *Essays in Analysis*, and *Mysticism and Logic*, while other important academic books by him are *Our Knowledge of the External World*, *Philosophy of Logical Atomism*, *The Analysis of Mind*, *Inquiry into Meaning and Truth*, and *Human Knowledge*.

For readers interested in Russell's meta-ethics, his 1910 essay "The Elements of Ethics" (*PE*) contains a statement of his early objectivist ethics, and the 1915 essays "The Ethics of War" and "The War and Non-Resistance" (*JWT*) contain early statements of his subjectivist ethics. Chapter 22 of his 1927 book *Outline of Philosophy* presents a later statement of his subjectivism. For Russell's emotivism, see chapter 9 of his 1935 book *Religion and Science*.

In addition to academic philosophy, Russell also wrote many popular works of philosophy on the moral, social, and political issues of his day. For his views on religion, see *Why I Am Not a Christian* (1957); for war, *Justice in War-Time* (1915); for education, *Education and the Social Order* (1932) and particularly his 1934 essay "Education and Discipline" (*IPI*); for women's suffrage, *Anti-Suffragist Anxieties* (online at the Bertrand Russell Society website and in *CPBR* 12); for sexual morality, *Marriage and Morals*; for science and society, *The Scientific Outlook*; for the dangers of nuclear weapons, "Man's Peril from the Hydrogen Bomb"; for his political activism, *Yours Faithfully, Bertrand Russell: Letters to the Editor, 1904–1969*. Russell's general views on popular philosophy are expressed in the first two essays in *Sceptical Essays* and the first two in *Unpopular Essays*.

For the reader new to philosophy—and for Russell's perspective on the history of philosophy—the *History of Western Philosophy* is highly recommended. For readers new to Russell and interested in his life, his three-volume autobiography is the best introduction.

Within the secondary literature on Russell, see A. J. Ayer's *Bertrand Russell* for a good survey of his thought. For more recent and detailed studies of Russell's philosophical development, see the collection of essays in *The Cambridge Companion to Bertrand Russell*. Though few

studies of Russell's logic and technical philosophy are geared to the casual reader or popular audience, the following are recommended: Alonzo Church's "Russellian Simple Type Theory," Kurt Gödel's "Russell's Mathematical Logic," Warren Goldfarb's "Logic in the Twenties: The Nature of the Quantifier," Nicholas Griffin's "Russell on the Nature of Logic (1903–1913)," Peter Hylton's "Logic in Russell's Logicism," Bernard Linsky's *Russell's Metaphysical Logic*, Peter Strawson's "On Referring," and W. V. Quine's "On the Theory of Types." Two good biographies of Russell are provided by Ronald Clark and Ray Monk.

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