MATERIAL FOR “YOU MUST REMEMBER THIS”

Abraham (“Abe”) Edel (6 December 1908 – 22 June 2007)

“Twenty-Seven Uses of Science in Ethics,” 7/2/67

Abraham Edel, In Memoriam, by Peter Hare and Guy Stroh

Abraham Edel, 1908-2007

Abraham Edel was born in Pittsburgh, Pennsylvania on December 6, 1908. Raised in Yorkton, Canada with his older brother Leon who would become a biographer of Henry James, Edel studied Classics and Philosophy at McGill University, earning a BA in 1927 and an MA in 1928. He continued his education at Oxford where, as he recalled, “W.D. Ross and H.A. Prichard were lecturing in ethics, H.W.B. Joseph on Plato, and the influence of G. E. Moore and Bertrand Russell extended from Cambridge. Controversy on moral theory was high. The same was true of epistemology, where Prichard posed realistic epistemology against Harold Joachim who was defending Bradley and Bosanquet against the metaphysical realism of Cook Wilson.” He received a BA in Litterae Humaniores from Oxford in 1930. In that year he moved to New York City for doctoral studies at Columbia University, and in 1931 began teaching at City College, first as an assistant to Morris Raphael Cohen. F.J.E. Woodbridge directed his Columbia dissertation, *Aristotle’s Theory of the Infinite* (1934). This monograph and two subsequent books on Aristotle were influenced by Woodbridge’s interpretation of Aristotle as a philosophical naturalist. Although his dissertation concerned ancient Greek philosophy, he was much impressed by research in the social sciences at Columbia, and the teaching of Cohen at City College showed him how philosophical issues lay at the root of the disciplines of psychology, sociology, history, as well as the natural sciences.

As Edel’s former student sociologist and political scientist Irving Louis Horowitz has noted, in the 1930s City College was “a special kind of environment, where radical ideas were fought over bitterly, but where the center of gravity was so different from anywhere else in America. The arguments that raged were among varieties of socialist doctrines and varieties of radical theory and not between liberalism and conservatism.” Active in establishing the College Teachers Union, Edel was called before the Rapp-Coudert Committee, a New York State forerunner of HUAC and McCarthy’s Senate committee. His account of this radical movement was published as *The Struggle for Academic Democracy: Lessons from the 1938 “Revolution” in New York’s City Colleges* (1990).

The Rapp-Coudert investigations and the subsequent Board of Higher Education trials lead to the dismissal, non-reappointment or resignation of over fifty faculty and staff at CCNY-the largest political purge of a faculty in the history of the US. CCNY loses many outstanding teachers; most never work in academia again. The purge ends when the US enters World War II as an ally of the Soviet Union in the fight against fascism.

The techniques pioneered by the Rapp-Coudert Committee -- private interrogations, followed by public hearings for those individuals named by the committee's "friendly" witnesses -- become the model for the McCarthy investigations of the 1950s.
“The reign of terror that this investigation unleashed in the city colleges is part of the history of the early 1940s in New York. It has well been described as a dress rehearsal for the McCarthyism of the 1950’s on the national scene.”
--Abraham Edel, The Struggle for Academic Democracy, 1990 .

Kenneth B. Clark (July 14, 1914, Canal Zone – May 1, 2005, Hastings-on-Hudson, NY)

“Individual, Community and Change: Community Pathology and Personal Effectiveness,” 13/11/69

“What is progress” he asked me as a callow Stalinist-style Marxist

Kenneth Bancroft Clark (July 14, 1914 – May 1, 2005) and Mamie Phipps Clark (October 18, 1917 – August 11, 1983) were African-American psychologists who as a married team conducted important research among children and were active in the Civil Rights Movement. Kenneth Clark also was an educator and professor at City College of New York, and first Black president of the American Psychological Association.
They were known for their 1940s experiments using dolls to study children's attitudes about race. The Clarks testified as expert witnesses inBriggs v. Elliott, one of the cases rolled into Brown v. Board of Education (1954). The Clarks' work contributed to the ruling of the U.S. Supreme Court in which it determined that de jure racial segregation in public education was unconstitutional. Chief Justice Earl Warrenwrote in the Brown v. Board opinion, “To separate them from others of similar age and qualifications solely because of their race generates a feeling of inferiority as to their status in the community that may affect their hearts and minds in a way unlikely to ever be undone”.
In 2002, scholar Molefi Kete Asante named Kenneth Clark on his list of 100 Greatest African Americans.
Kenneth Clark was born in the Panama Canal Zone to Arthur Bancroft Clark and Miriam Hanson Clark. His father worked as an agent for the United Fruit Company. When he was five, his parents separated and his mother took him and his younger sister Beulah to the U.S. to live in Harlem in New York City. She worked as a seamstress in a sweatshop, where she later organized a union and became a shop steward for the International Ladies Garment Workers Union.

Clark attended Howard University, a historically black university (HBCU), where he first studied political science with professors includingRalph J. Bunche. He returned in 1935 for a master's in psychology. Dr. Clark was a distinguished member of Kappa Alpha Psi Fraternity, Incorporated.

While studying psychology for his doctorate at Columbia University, Clark did research in support of the study of race relations by Swedish economist Gunnar Myrdal, who

wrote An American Dilemma. In 1940, Clark was the first African American to earn a Ph.D. in psychology from Columbia University.

In 1942 Kenneth Clark became the first African-American tenured full professor at the City College of New York. In 1966 he was the first African American appointed to the New York State Board of Regents and the first African American to be president of the American Psychological Association.

Peter Havas (March 29, 1916- June 25, 2004)

"Relativity and Causality," 29/11/65

With the death of our colleague *Peter Havas* near Philadelphia, Pennsylvania, in June 2004, we have lost one of the renowned elder peers in the field of classical relativistic field and particle theory including Einstein's special and general relativity theories.
Of Hungarian origin, Peter grew up in Vienna, Austria, and spent his professional life in the United States of America; he reached an age of 88 years and three months.
Because of the unfavorable state of political affairs, in Europe, during his university education, he had to endure two abortive attempts at a Ph.D. until he finally could succeed. He started out at the Technische Hochschule in Wien (Vienna) as an *experimental* physicist, in nuclear physics, with *Josef Mattauch*. After the Nazi takeover of Austria, in 1938, he had to leave the country, because of both, his socialist activities resisting fascism, and his classification as being of Jewish descent by the infamous rules of the Hitler administration.
Starting afresh in Lyon, France, under the guidance of *Jean Thibault*, again in experimental nuclear physics, he there met theoretical physicist *Guido Beck*, also exiled, who convinced him to switch to theory. Peter's first scientific publications resulted from this interaction. After the outbreak of world war II, his stay in Lyon from 1939 to 1941 became marred by his internment, by the French authorities, as a "hostile" German–since Austria had become part of the German "Reich"–and by the subsequent occupation of (part of France) by German troops. He was lucky enough to get free from captivity and to receive an entry visa for the United States; he arrived in New York in June 1941. At Columbia University,under the formal guidance by *Willis Lamb* but more or less on his own, he wrote his thesis in the field of quantum electrodynamics still in its infancy. He believed that his resistance to weapons research during wartime had barred him from being accepted into the circle of theoreticians–many of them to become very famous–involved in the eventual development of quantum field theory.
Nevertheless, his original interest in *quantum* fields and elementary particles became a partial motivation for his subsequent research in *classical* theory: he aimed at a possible uncovering of the difficulties of quantum field theory through the study of its underlying classical basis. Thus, in the 50s and 60s, Peter Havas dealt with the classical scattering of *mesons*, and, in particular, with the equations of motion of point particles; in the 70s and 80s this included classical Yang-Mills-Higgs fields. In a well-known paper with Joshua Goldberg, Peter introduced the (relativistic) "fast-motion-approximation" for the alternate solution of field equations and equations of motion in General Relativity, a

much more convincing method than the one used in the famous EIH-(Einstein-Infeld-Hoffmann) paper. This problem of determining the motion of particles is relevant for the (approximate) calculation of gravitational radiation emitted by a point source and its back-reaction upon the source; the debate concerning a convincing theoretical fundament for Einstein's quadrupole formula lasted well into the 70s. In both fields, equations of motion and radiation reaction, Peter Havas wrote numerous papers and gave many lectures during summer schools and international conferences.
Conceptual clarity, curiosity as to where concepts came from, and simplicity in the representation of results were dear to Peter Havas. He also showed a keen interest in the philosophy and history of the field he was working in. He wrote about causality, determinism, and other concepts fundamental to relativity.
His historical papers are concerned with conceptual developments like in "the early history of equations of motion", and with prosopographical and biographical presentations. We could have expected many more interesting contributions had Peter Havas lived longer.
Peter was a prolific writer as a single author, as coauthor with well-known fellow physicists, and with his many doctoral students some of which have held, or are still holding respected university positions. He mastered several languages, and he strove for completeness both in solving the problems posed and in listing the previous literature on the subject. From some of the papers refered to, we note that he could revisit a problem after many years. At times, working with him could be rather demanding. More than once Peter Havas was annoyed by the level of linguistic, historical and cultural ignorance of some of his students and fellow physicists in the United States.
Politically, Peter was a liberal in the best sense of the word; he spoke up against violations of human and civil rights, and he worked for the implementation of social justice and the preservation of nature. My political education was essentially due to him. It happened during the Vietnam war and thus included, if necessary, the call for civil disobedience.
eter Havas first taught at Columbia University and, after he had obtained his doctoral degree, at Brandeis University. He then became professor of physics at Lehigh University in Bethlehem, Pa. (1946–1964). Starting with the term of 1964/65 he changed to Temple University, Philadelphia, Pa. He spent sabbatical leaves at the Institute for Advanced Studies, Princeton, the Niels Bohr Institute in Copenhagen, Argonne National Laboratory, and was a visiting professor at Birkbeck College, London and the University of G¨ottingen, Germany. After his retirement from Temple University in 1981 he continued his scientific work as an adjunct professor of physics at the University of Pennsylvania, Philadelphia (1982–1988), and at the University of Utah (1987–1992). His wife during 65 years, Helga Francis, n´ee Hoellering, a professor of microbiology at Temple University, not only shared his rewarding life–though at times uneasy and endangered–in Austria, France, and in the United States, but also was his equal in the political fight. She passed away only two months after her husband.

Peter G. Bergmann (Berlin, 24 March 1915 – Seattle, 19 October 2002)

“The Quantum State Vector and Physical Reality” 25/10/66

The New York Times
nytimes.com

October 23, 2002

Peter Bergmann, 87, Physicist Who Worked With Einstein, Is Dead

By DENNIS OVERBYE

Dr. Peter G. Bergmann, a physicist who worked with Albert Einstein and played a leading role in the advancement of Einstein's theories in the years after World War II, died on Saturday in Seattle. He was 87.

As a professor at Syracuse University from 1947 to 1982, Dr. Bergmann taught relativity to several generations of physicists and was a pioneer in efforts to reconcile Einstein's general theory of relativity, which explains gravity as the warping of space-time geometry, with the paradoxical quantum laws that rule atomic affairs. That quest is now at the center of modern physics.

Dr. Bergmann, born in Berlin, was only 21, with a fresh Ph.D. from the German University in Prague, when he joined Einstein at the Institute for Advanced Study in Princeton, N.J., in 1936 as a research assistant.

Peter Bergmann's association with Einstein began, without his knowledge, in 1933, when his mother, Dr. Emmy Bergmann, a pediatrician, sent a letter by courier to Einstein, who was then in Belgium hiding from the Nazis, extolling her son's virtues and asking if he could study with Einstein.

Einstein wrote back, again by courier, offering to bring her son to the Institute for Advanced Study, where Einstein had just accepted a position, once the young Bergmann had finished his work for a degree.

But Dr. Bergmann's mother never told her son of the correspondence. Two years later, Dr. Bergmann wrote of his own accord to Einstein, who in turn asked Dr. Bergmann's professor, Dr. Philipp Frank, for a character evaluation. Dr. Frank gave a glowing one.

In five years at the Institute for Advanced Study, Dr. Bergmann collaborated with Einstein on attempts to construct a so-called unified field theory to explain all the forces of nature. Among the attempts was a 1938 paper, building on a notion developed by the mathematicians Theodor Kaluza and Oskar Klein, that suggested that space-time was not four-dimensional, but had a fifth dimension that was not ordinarily perceived because it was very small.

Although Einstein and his collaborators subsequently turned to other ideas, the notion is now at the center of modern attempts to create a theory of everything.

"Bergmann and Einstein were the first to explain how the fifth dimension could be real and on a par with the others but just smaller," said Dr. Edward Witten of the Institute for Advanced Study. "It is a very modern idea."

While he was in Princeton, Dr. Bergmann also wrote the first textbook about general relativity, "Introduction to the Theory of Relativity." Einstein wrote the introduction.

"For a long time it was the book everyone read when they were studying general relativity," said Dr. Steven Weinberg, a physicist and Nobel laureate at the University of Texas in Austin.

After leaving Princeton, Dr. Bergmann taught at Black Mountain College in North Carolina and at Lehigh University in Pennsylvania as well as working for the Navy doing research on underwater sound at Columbia University and at the Woods Hole Oceanographic Institute in Massachusetts.

In 1947, when Dr. Bergmann joined the faculty at Syracuse, the study of general relativity was nearly dormant, said Dr. Engelbert Schucking, a physicist and longtime friend at New York University, because it was thought to be mathematically abstract and difficult to test experimentally. Over the years Dr. Bergmann created a center for the study of relativity, particularly its mathematical foundations, at Syracuse, guiding 32 students to their doctorates, and organizing visits of outside scholars.

"In those days, Syracuse was the place to be if you wanted to do general relativity," said Dr. Clifford M. Will of Washington University in St. Louis, "because no one was doing it anyplace else."

In the 1960's, a second center for relativity studies arose at Princeton under Dr. John Archibald Wheeler. This month, Dr. Bergmann and Dr. Wheeler were named winners of the American Physical Society's newly inaugurated Einstein Prize in Gravitational Physics.

Throughout his career at Syracuse, Dr. Bergmann commuted weekly from his apartment on Riverside Drive in Manhattan.

His wife, Margot Bergmann, who died three years ago, was a physical chemist at the Polytechnic University in Brooklyn.

After retiring from Syracuse in 1982, Dr. Bergmann took a post as a research professor at New York University. This year, he moved to Seattle to live with his son John, who survives him along with his son Ernest, of Bethlehem, Pa., and five grandchildren.

Philip Morrison (7 November 1915, Somerville, New Jersey – 22 April 2005, Cambridge, Massachusetts)

Philosophical Foundations of Science (joint session with AAAS) "Current Problems of Cosmology" 29/12/69

Morrison grew up in Pittsburgh and graduated from its public schools. He earned his B.S. in 1936 at the Carnegie Institute of Technology and in 1940 he earned his Ph.D. intheoretical physics at the University of California, Berkeley, under the supervision of J. Robert Oppenheimer.

In 1942 he joined the Manhattan Project as group leader and physicist at the laboratories of the University of Chicago and Los Alamos. He was also an eyewitness to the Trinity test, and helped to transport its plutonium core to the test site.

After surveying the destruction left by the use of the atom bomb in Hiroshima, Morrison became a champion of nuclear nonproliferation. He helped found the Federation of American Scientists, wrote for the Bulletin of Atomic Scientists, and helped to found the Institute for Defense and Disarmament Studies. He was also a vocal critic of the Strategic Defense Initiative.

In May 1953 Dr. Morrison testified before the Subcommittee to Investigate the Administration of the Internal Security Act. When asked if he had ever been a member of the Communist Party (CPUSA), Morrison replied: "I joined the Young Communist Leaguewhen I was 18, and when I was 21 (1936) I did become a member of the Communist party in Berkeley. I don't remember precisely which branch."

Morrison joined the physics faculty at Cornell University in 1946 and would move on to MIT in 1964. In 1959, Morrison and Giuseppe Cocconi published a paper proposing the potential of microwaves in the search for interstellar communications, a component of the modern SETI program.

Morrison was also known for his numerous books and television programs, including*Powers of Ten* (1977) and the 1987 PBS series *The Ring of Truth: An Inquiry into How We Know What We Know*, which he also hosted. In addition, he was a reviewer of books on science for *Scientific American* starting in 1965.

Morrison was a fellow of the American Physical Society and chairman of the Federation of American Scientists from 1973 to 1976. The Astronomical Society of the Pacific gave him the Klumpke-Roberts Award in 1992.

Karl Popper (28 July 1902 – 17 September 1994)

University Centennial Symposium on "The Open Society & The Logic of Scientific Discovery" 11/12/69

Austro-British philosopher and a professor at the London School of Economics. He is widely regarded as one of the greatest philosophers of science of the 20th century; he also wrote extensively on social and political philosophy.

Popper is known for his attempt to repudiate the classical observationalist / inductivist account of scientific method by advancing empirical falsification instead, for his opposition to the classical justificationist account of knowledge which he replaced with critical rationalism, "the first *non justificational philosophy of criticism* in the history of philosophy", and for his vigorous defense of liberal democracy and the principles of social criticism that he came to believe made a flourishing "open society" possible.

Karl Popper was born in Vienna (then in Austria-Hungary) in 1902, to upper middle-class parents of assimilated Jewish origins, both of whom had converted to Christianity. Karl's father Simon Siegmund Carl Popper was a lawyer from Bohemia, and mother Jenny Schiff was of Silesian andHungarian descent. After establishing themselves in Vienna, the Poppers made a rapid social climb in Viennese society: Simon Siegmund Carl became a legal partner of Vienna's liberal mayor Raimond Grübl and, after his death in 1898, took over the firm (Karl received his middle name from the mayor).

Popper received a Lutheran upbringing and was educated at the University of Vienna. His father was a doctor of law at the Vienna University and a bibliophile who had 12,000–14,000 volumes in his personal library. Popper inherited from him both the library and the disposition.

In 1919, Popper became attracted by Marxism and subsequently joined the Association of Socialist School Students. He also became a member of the Social Democratic Workers' Party of Austria, which was at that time a party that fully adopted the Marxist ideology. He soon became disillusioned by what he saw to be the philosophical restraints imposed by the historical materialism of Marx, abandoned the ideology and remained a supporter of social liberalism throughout his life.

In 1928, he earned a doctorate in Philosophy, and then from 1930 to 1936 taught secondary school. Popper published his first book, *Logik der Forschung* (The Logic of Scientific Discovery), in 1934. Here, he criticised psychologism, naturalism, inductionism, and logical positivism, and put forth his theory of potential falsifiability as the criterion demarcating science from non-science.

In 1937, the rise of Nazism and the threat of the Anschluss led Popper to emigrate to New Zealand, where he became lecturer in philosophy at Canterbury University College New Zealand (at Christchurch). In 1946, he moved to England to become reader in logic and scientific method at the London School of Economics. Three years later, he was appointed as professor of logic and scientific method at the University of London in 1949. Popper was president of the Aristotelian Society from 1958 to 1959. He was knighted by Queen Elizabeth II in 1965, and was elected a Fellow of the Royal Society in 1976. He retired from academic life in 1969, though he remained intellectually active for the rest of his life. He was invested with the Insignia of aCompanion of Honour in 1982. Popper was a member of the Academy of Humanism and described himself as an agnostic, showing respect for the moral teachings of Judaism and Christianity.

Popper won many awards and honours in his field, including the Lippincott Award of the American Political Science Association, the Sonning Prize, and fellowships in the Royal Society, British Academy, London School of Economics, King's College

London, Darwin College Cambridge, and Charles University, Prague. Austria awarded him the Grand Decoration for Services to the Republic of Austria in Gold.
Popper died in Croydon, UK at the age of 92 on 17 September 1994. After cremation, his ashes were taken to Vienna and buried at Lainzer cemetery adjacent to the ORF Centre, where his wife Josefine Anna Henninger, who had died in Austria several years before, had already been buried.

1980: My talk at Popper celebration at LSE: “The Story of Two Karls and an Albert”

Paul Feyrabend (January 13, 1924, Vienna – February 11, 1994, Switzerland)

“Problems of Empiricism: I. Epistemology, II. Ethics,” 21-22/3/66

Paul Feyerabend was born in 1924 in Vienna, where he attended primary school and high school. In this period he got into the habit of reading a lot, developed an interest in theatre, and started singing lessons. When he graduated from high school in April 1942, he was drafted into the German Arbeitsdienst. After basic training in Pirmasens, Germany, he was assigned to a unit in Quelern en Bas, near Brest(France). Feyerabend described the work he did during that period as monotonous: "we moved around in the countryside, dug ditches, and filled them up again." After a short leave, he joined the army and volunteered for officer school. In his autobiography, he wrote that he hoped the war would be over by the time he had finished his education as an officer. This turned out not to be the case. From December 1943 on, he served as an officer on the northern part of the Eastern Front, was decorated with an Iron cross, and attained the rank of lieutenant. After the German army started its retreat from the advancing Red army, Feyerabend was hit by three bullets while directing traffic. It turned out that one of the bullets had hit him in the spine. As a consequence of this, he needed to walk with a stick for the rest of his life and frequently experienced severe pains. He spent the rest of the war recovering from his injuries.

Post–WWII and university

When the war was over, Feyerabend first got a temporary job in Apolda where he wrote pieces for the theatre. He was influenced by the Marxist playwright Bertold Brecht and was invited by Brecht to be his assistant at the East Berlin State Opera but turned down the offer. Feyerabend took various classes at the Weimar Academy, and returned to Vienna to study History and Sociology. He became dissatisfied, however, and soon transferred to Physics, where he met Felix Ehrenhaft, a physicist whose experiments

would influence his later views on the nature of science. Feyerabend changed the subject of his study to philosophy and submitted his final thesis on observation sentences. In his autobiography, he described his philosophical views during this time as "staunchly empiricist". In 1948 he visited the first meeting of the international summer seminar of the Austrian College Society in Alpbach. This was the place where Feyerabend first met Karl Popper, who had a "positive" (early Popper), as well as "negative" (later Popper) effect on him. In 1949 he was a founding member of the Kraft Circle. In 1951, Feyerabend was granted a British Council scholarship to study under Wittgenstein. However, Wittgenstein died before Feyerabend moved to England. Feyerabend then chose Popper as his supervisor instead, and went to study at the London School of Economics in 1952. In his autobiography, Feyerabend explains that during this time, he was influenced by Popper: "I had fallen for [Popper's ideas]". After that, Feyerabend returned to Vienna and was involved in various projects; a translation of Karl Popper's *Open Society and its Enemies*, a report on the development of the humanities in Austria, and several articles for an encyclopedia.

Academia

In 1955, Feyerabend received his first academic appointment at the University of Bristol, England, where he gave lectures about thePhilosophy of science. Later in his life he worked as a professor (or equivalent) at Berkeley, Auckland, Sussex, Yale, London, Berlin andZurich. During this time, he developed a critical view of science, which he later described as 'anarchistic' or 'dadaistic' to illustrate his rejection of the dogmatic use of rules, a position incompatible with the contemporary rationalistic culture in the philosophy of science. At the London School of Economics, Feyerabend met a colleague of K.R. Popper, Imre Lakatos with whom he planned to write a dialogue volume in which Lakatos would defend a rationalist view of science and Feyerabend would attack it. This planned joint publication was put to an end by Lakatos's sudden death in 1974. *Against Method* became a famous criticism of current philosophical views of science and provoked many reactions. In his autobiography, he reveals that the energy in his writings came at great cost to himself:

The depression stayed with me for over a year; it was like an animal, a well-defined, spatially localizable thing. I would wake up, open my eyes, listen -- Is it here or isn't? No sign of it. Perhaps it's asleep. Perhaps it will leave me alone today. Carefully, very carefully, I get out of bed. All is quiet. I go to the kitchen, start breakfast. Not a sound. TV - *Good Morning America* -, David What's-his-name, a guy I can't stand. I eat and watch the guests. Slowly the food fills my stomach and gives me strength. Now a quick excursion to the bathroom, and out for my morning walk - and here she is, my faithful depression: "Did you think you could leave without me?"

—From his autobiography, Killing Time

Feyerabend moved to the University of California, Berkeley in California in 1958 and became a U.S. citizen. Following (visiting) professorships (or their equivalent) at London, Berlin, and Yale, he taught at the University of Auckland, New Zealand in 1972 and 1974, always returning to California. He later enjoyed alternating between posts at ETH Zurich and Berkeley through the 1980s but left Berkeley for good in October 1989, first to Italy, then finally to Zurich. After his retirement in 1991,

Feyerabend continued to publish frequent papers and worked on his autobiography. After a short period of suffering from a brain tumor, he died in 1994 at the Genolier Clinic, overlooking Lake Geneva, Switzerland.

Imre Lakatos (November 9, 1922, Debrecen, Hungary – February 2, 1974, London)

"On Empiricism in Mathematical Philosophy," 20/3/67

"History of Science and its Rational Reconstruction" (Symposium with PSA: Lakatos, Kuhn, Richard J. Hall), 24/10/70

Lakatos was born **Imre (Avrum) Lipsitz** to a Jewish family in Debrecen, Hungary in 1922. He received a degree in mathematics, physics, and philosophy from the University of Debrecen in 1944. He avoided Nazi persecution of Jews by changing his name to **Imre Molnár**. His mother and grandmother died in Auschwitz. He became an active communist during the Second World War. He changed his last name once again to *Lakatos* (Locksmith) in honor of Géza Lakatos.

After the war, from 1947 he worked as a senior official in the Hungarian ministry of education. He also continued his education with a PhD at Debrecen University awarded in 1948, and also attended György Lukács's weekly Wednesday afternoon private seminars. He also studied at the Moscow State University under the supervision of Sofya Yanovskaya in 1949. When he returned, however, he found himself on the losing side of internal arguments within the Hungarian communist party and was imprisoned on charges of revisionism from 1950 to 1953. More of Lakatos' activities in Hungary after World War II have recently become known.

After his release, Lakatos returned to academic life, doing mathematical research and translating George Pólya's How to Solve It into Hungarian. Still nominally a communist, his political views had shifted markedly and he was involved with at least one dissident student group in the lead-up to the 1956 Hungarian Revolution.

After the Soviet Union invaded Hungary in November 1956, Lakatos fled to Vienna, and later reached England. He received a doctorate in philosophy in 1961 from the University of Cambridge. The book Proofs and Refutations: The Logic of Mathematical Discovery, published after his death, is based on this work.

Lakatos never obtained British Citizenship, in effect remaining stateless.

In 1960 he was appointed to a position in the London School of Economics, where he wrote on the philosophy of mathematics and thephilosophy of science. The LSE philosophy of science department at that time included Karl Popper, Joseph Agassi and John Watkins. It was Agassi who first introduced Lakatos to Popper under the rubric of his applying a fallibilist methodology of conjectures and refutations to mathematics in his Cambridge PhD thesis.

With co-editor Alan Musgrave, he edited the highly-cited *Criticism and the Growth of Knowledge*, the *Proceedings* of the International Colloquium in the Philosophy of

Science, London, 1965. Published in 1970, the 1965 Colloquium included well-known speakers delivering papers in response to Thomas Kuhn's ″The Structure of Scientific Revolutions″.

Lakatos remained at the London School of Economics until his sudden death in 1974 of a brain haemorrhage, aged just 51. The Lakatos Award was set up by the school in his memory.

In January 1971 he became editor of the internationally prestigious *British Journal for the Philosophy of Science* until his death in 1974, after which it was then edited jointly for many years by his LSE colleagues John Watkins and John Worrall, Lakatos's ex-research assistant.

His last LSE lectures in scientific method in Lent Term 1973 along with parts of his correspondence with his friend and critic Paul Feyerabendhave been published in For and Against Method (ISBN 0-226-46774-0).

Lakatos and his colleague Spiro Latsis organised an international conference devoted entirely to historical case studies in Lakatos's methodology of research programmes in physical sciences and economics, to be held in Greece in 1974, and which still went ahead following Lakatos's death in February 1974. These case studies in such as Einstein's relativity programme, Fresnel's wave theory of light and neoclassical economics, were published by Cambridge University Press in two separate volumes in 1976, one devoted to physical sciences and Lakatos's general programme for rewriting the history of science, with a concluding critique by his great friend Paul Feyerabend, and the other devoted to economics.

Armand Siegel

“Statistical Mechanics as a Deductive Science,” 13/2/68

Hans Ekstein (8 March 1908, Uzhgorod - 4 January 1984, Bandol, France)

“Conventionalism Revived, Poincaré Vindicated,” 24/9/74

Hans Ekstein, a physicist at Argonne National Laboratory for many years known for his work on scattering theory and the foundations of symmetry, died on 6 January 1984.

Ekstein was born in 1908 in what was then the eastern part of the Austrian Empire and grew up in Vienna. He began his scientific education in Berlin, obtaining his PhD in physical chemistry

with M. Polanyi. A refugee from Hitler's Germany, he worked in France, then came to the US in 1941.

He first settled in Kansas City and worked to prepare crystals for radio and navigational use in the war.

After the war, he worked at the Armour Research Foundation and then moved to Argonne, where he was a senior physicist from 1956 until 1973. His interests shifted to fundamental theoretical physics, in particular, to scattering theory. After retirement from Argonne he moved to southern France and continued to work at the Centre de Physique Theorique in Marseille, where he stimulated interest in

scattering theory in the group. He was the first to put the theory of rearrangement collisions and scattering in quantum field theory on a sound conceptual basis (1955-56). His work on "presymmetry" provided a starting point for the distinction between kinematical and dynamical aspects in relativistic

theories. As time went on he focused more and more on fundamental problems on the borderline between physics, mathematics and philosophy.

At the time of his death he was engaged in a long quest to understand the operational significance of gauge invariance. "I wanted to understand why the sky is (sometimes) blue" was his paraphrase for his motivation. Indeed, for those of us who had the chance of pursuing discussions with him, his freshness of approach, his relentless pursuit of truth, his complete lack of any personal vanity made knowing him a rare pleasure, one that we shall sorely miss. A G R O S S M A N N *Centre de Physique Theorique, Marseille,* R. HAAG *Universitat Hamburg,* L. STODOLSKY *Max Planck Institute, Munich*

Jean Van Heijenoort (July 23, 1912, Creil, France - March 29, 1986, Mexico City)
"From Frege to Gödel," 9/5/66

Jean Louis Maxime van Heijenoort (pronounced *highenort*) (July 23, 1912, Creil France - March 29,
1986, Mexico City) was a pioneer historian of mathematical logic. He was also a personal secretary to Leon Trotsky from 1932 to 1939, and from then until 1947, an American Trotskyist activist.

Life

Van Heijenoort came of age in straitened family circumstances because his Dutch immigrant father died when he was two. He nevertheless acquired a powerful traditional French formal education, to which his French writings attest. (He also published in Spanish.) Although he eventually became a naturalized American citizen, he visited France twice a year from 1958 until his death, and remained very attached to his French extended family and friends.

The Trotskyist

In 1932, he joined the Trotskyist movement (recruited by Yvan Craipeau) and the Communist League. Very soon thereafter, the recently exiled Trotsky hired van Heijenoort as a secretary and bodyguard, primarily because of his fluency in French, Russian, German, and English. Thus began seven years in Trotsky's household, during which he served as an all-purpose translator, helping Trotsky write several books and keep up an extensive intellectual and political correspondence in several languages.

In 1939, van Heijenoort moved to New York to be with his second wife, Beatrice "Bunny" Guyer, where he worked for the Socialist Workers Party (US) (SWP) and wrote a number of articles for the American Trotskyist press and other radical outlets. He was elected to the secretariat of the Fourth International in 1940 but resigned when Felix Morrow and Albert Goldman, with whom he had sided, left the SWP to join the US Workers Party. In 1947, he was expelled from the SWP. In 1948, he published an article, signed "Jean Vannier", in the *Partisan Review* abjuring Marxism.

Van Heijenoort was spared the ordeal of McCarthyism, and otherwise having to pay a price in later life for his youthful radicalism, because everything he published in Trotskyist organs appeared under one of more than a dozen pen names. Moreover, Feferman (1993) states that van Heijenoort the logician was quite reticent about his Trotskyist youth, and did not discuss politics. Nevertheless, in his last decade of life he contributed to the ongoing history of the Trotskyist movement by writing the monograph van Heijenoort (1978), by editing a volume of Trotsky's correspondence (van Heijenoort 1980), and by advising and working with the archivists at Harvard University's Houghton Library, which holds much of Trotsky's papers from his years in exile.

The logician

After completing a Ph. D. in mathematics at New York University in 1949 under the supervision of J. J. Stoker, he taught mathematics there but evolved into a logician and

philosopher of mathematics, in good part because of the influence of Georg Kreisel. He began teaching philosophy, first part-time at Columbia University, then full-time at Brandeis University, 1965-77. He spent much of his last decade at Stanford University, writing and editing 8 books, including parts of the *Collected Works* of Kurt Gödel.

The *Source Book* (van Heijenoort 1967), perhaps the most important book ever published on the history of logic and of the foundations of mathematics, is an anthology of translations. It begins with the first complete translation of Frege's 1879 *Begriffsschrift*, which is followed by 45 historically important short pieces on mathematical logic and axiomatic set theory, originally published between 1889 and 1931. The anthology ends with Gödel's landmark paper on the incompletability of Peano arithmetic. For more information on the period covered by this anthology, see Grattan-Guinness (2000).
Nearly all the content of the *Source Book* was difficult to access in all but the best North American university libraries (e.g., even the Library of Congress did not acquire a copy of the *Begriffsschrift* until 1964), and all but four pieces had to be translated from one of six continental European languages. When possible, the author of the original text was asked to review the translation of his work, and suggest corrections and amendments. Each piece included editorial footnotes, all references were combined into one list, and many misprints, inconsistencies, and errors in the originals were corrected. Especially important are the remarkable introductions to each translation, most written by van Heijenoort himself. A few were written by Willard Quine and Burton Dreben. The *Source Book* did much to advance the view that modern logic begins with, and builds on, the *Begriffsschrift*. Grattan-Guinness (2000) argues that this perspective on the history of logic is mistaken, because Frege employed an idiosyncratic notation and was far less read than, say, Peano. Ironically, van Heijenoort (1967a) is oft-cited by those who prefer the alternative model theoretic stance on logic and mathematics. Much of the history of that stance,
whose leading lights include George Boole, Charles Sanders Peirce, Ernst Schröder, Leopold Löwenheim, Thoralf Skolem, Alfred Tarski, and Jaakko Hintikka, is covered in Brady (2000). The *Source Book* deliberately scanted Peirce and Schröder, but devoted more pages to Skolem than to anyone other than Frege, and included Löwenheim (1915), the founding paper on model theory.

The lover

Two of van Heijenoort's four wives each bore him a child. While living with Trotsky in Coyoacán, now a
neighborhood of Mexico City, van Heijenoort's first wife left him after clashing with Trotsky's spouse. Van
Heijenoort was also one of Frida Kahlo's lovers; in the film *Frida*, he is played by Felipe Fulop. Having parted company with Trotsky in 1939 for personal reasons, van Heijenoort was innocent of all circumstances leading to Trotsky's 1940 murder. Van Heijenoort himself was likewise murdered in Mexico City, 46 years later, by his estranged fourth spouse whom he was visiting at the time. She then took her own life.

Bertrand M. Patenaude, *Trotsky Downfall of a Revolutionary* (Harper 2009)

On one of his trips to Mexico to negotiate the purchase of Natalia's papers for Harvard, Van started up a romantic liaison with the daughter of Adolfo Zamora, one of Trotsky's Mexican friends and sometime legal adviser. The romance led to marriage, and Van found himself in a tempestuous relationship with an increasingly unstable woman. The marriage kept Van connected to Mexico City, which is where he was, asleep in his study, when his wife fired three bullets from a Cold .38 into his head before turning the gun on herself. (p. 303)

Raya Dunavskaya (1 May 1910, Ukraine – 9 June 1987, Chicago)

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Born, Russian Empire **Died** June 9, 1987 (aged 77) Chicago, Illinois, United States

Main interests social theory, social revolution, social movements, dialectical philosophy, Marxist praxis, Marxism

Notable ideas State capitalism, Movement from practice that is itself a form of theory, Black Masses as Vanguard, Absolute Negativity as New Beginning, Post-Marx Marxism as Pejorative.

Raya Dunayevskaya was the founder of the philosophy of Marxist Humanism in the United States of America. At one time Leon Trotsky's secretary, she later split with him and ultimately founded the organization News and Letters Committees and was its leader until her death.

Biography

Of Jewish descent, Dunayevskaya emigrated to the United States and joined the revolutionary movement in her childhood. Active in the American Communist Party youth organization, she was expelled at age 18 and thrown down a flight of stairs when she suggested that her local comrades should find out Trotsky's response to his expulsion from the Soviet Communist Party and the Comintern. By the following year she found a group of independent Trotskyists in Boston, led by Antoinette Buchholz Konikow, an advocate of birth control and legal abortion.

Without getting permission from the U.S. Trotskyist organization, she went to Mexico in 1937 to serve as Leon Trotsky's Russian language secretary during his exile there. Having returned to Chicago in 1938 after the deaths of her father and brother, she broke with Trotsky in 1939 when he continued to maintain that the Soviet Union was a "workers' state" even after the Molotov-Ribbentrop Pact (also known as the Hitler-Stalin Pact). She opposed any notion that workers should be asked to defend this "workers' state" allied with Nazi Germany in a world war. Along with theorists such as C.L.R. James, and later Tony Cliff, Dunayevskaya argued that the Soviet Union had become

'state capitalist'. Toward the end of her life, she stated that what she called "my real development" only began after her break with Trotsky.

Her simultaneous study of the Russian economy and of Marx's early writings (later known as the *Economic and Philosophical Manuscripts of 1844*), led to her theory that not only was the U.S.S.R. a 'state capitalist' society, but that 'state capitalism' was a new world stage. Much of her initial analysis was published in *The New International* in 1942-1943.

In 1940, she was involved in the split in the Socialist Workers Party that led to the formation of the Workers Party (WP), with which she shared an objection to Trotsky's characterisation of the Soviet Union as a 'degenerated workers' state'. Within the WP, she formed the Johnson-Forest Tendency alongside C. L. R. James (she being "Freddie Forest" and he "J.R. Johnson", named for their party cadre names). The tendency argued that the Soviet Union was 'state capitalist', while the WP majority maintained that it was bureaucratic collectivist.

Differences within the WP steadily widened, and in 1947, after a brief period of independent existence during which they published a series of documents, the tendency returned to the ranks of the SWP. Their membership in the SWP was based on a shared insistence that there was a pre-revolutionary situation just around the corner, and the shared belief that a Leninist party must be in place to take advantage of the coming opportunities.

By 1951, with the failure of their shared perspective to materialize, the tendency developed a theory that rejected traditional Leninism and saw the workers as being spontaneously revolutionary. This was borne out for them by the 1949 U.S. miners' strike. In later years, they were to pay close attention to automation, especially in the automobile industry, which they came to see as paradigmatic of a new stage of capitalism. This led to the tendency leaving the SWP again to begin independent work.

After more than a decade of developing the theory of state capitalism, Dunayevskaya continued her study of the Hegelian dialectic by taking on a task the Johnson-Forest Tendency had set itself: exploring Hegel's *Philosophy of Mind*. She advanced an interpretation of Hegel's Absolutes holding that they involved a dual movement: a movement from practice that is itself a form of theory and a movement from theory reaching to philosophy. She considered these 1953 letters to be "the philosophic moment" from which the whole development of Marxist Humanism flowed. In 1954-1955 Dunayevskaya and C.L.R. James engaged in a split. In 1955, she founded her own organization, News and Letters Committees, and a Marxist-Humanist newspaper, *News & Letters*, which remains in publication today.

The newspaper covers women's struggles, the liberation of workers, people of color, gay, lesbian, bisexual and transsexual rights and the disability rights movement, while not separating that coverage from philosophical and theoretical articles.

Dunayevskaya wrote what came to be known as her "trilogy of revolution": *Marxism and Freedom: From 1776 Until Today* (1958), *Philosophy and Revolution* (1973), and *Rosa*

Luxemburg, Women's Liberation, and Marx's Philosophy of Revolution (1982). In addition, she selected and introduced a collection of writings, published in 1985, *Women's Liberation and the Dialectics of Revolution*.

In the last year of her life she was working on a new book which she had tentatively titled, *Dialectics of*

Organization and Philosophy: The 'Party' and Forms of Organization Born Out of Spontaneity.

Raya Dunayevskaya's speeches, letters, publications, notes, recordings and other items are located in the Walter P. Reuther Library at Wayne State University in Detroit. Microfilm copies of the collection are available from the WSU Archives of Labor and Urban Affairs. Guides to the collection are available from News and Letters Committees.

Marxist Humanist, born in the Ukraine in 1910 and moved with her parents to Chicago in 1920 to escape famine; expelled from the US Communist Party at age 14 as a Trotskyist; the first to decipher and translate Marx's Economic and Philosophical Manuscripts. Raya was a secretary to Trotsky for a time durng the 1930s, but she developed a position in opposition to Trotsky's "statism". She differs sharply also from "Marxist Humanists" like Fromm and Marcuse and from Lukacs, since from the beginning Raya took a clear stand against Stalinism. Raya was also the translator of Lenin's **Philosophical Notebooks**, and these notes were an important part of her political position throughout her life. In her final years, she developed criticisms of Lenin over Lenin's theory of the Party.

Marjorie Glicksman Grene (December 13, 1910, Milwaukee – March 16, 2009, Blacksburg, VA)

“Scientific Realism, Past and Present,” 27/4/71

She wrote both on existentialism and the philosophy of science, especially the philosophy of biology. She taught at the University of California at Davis from 1965 to 1978. From 1988 until her death she was Honorary University Distinguished Professor of philosophy at Virginia Tech.

Education

Her first degree was in zoology, from Wellesley College; she then received a doctorate in philosophy from Harvard University (Radcliffe College).

She studied with Martin Heidegger and Karl Jaspers, leaving Germany in 1933. She was in Denmark in 1935, and then at the University of Chicago. After losing her position there during World War II, she spent 15 years as a mother and farmer.

Her obituary in the New York Times said she was "one of the first philosophers to raise questions about the synthetic theory of evolution, which combines Darwin's theory of evolution, Mendel's understanding of genetic inheritance and more recent discoveries by molecular biologists." She, along with co-author David Depew, wrote the first history of the philosophy of biology. In 2002, she was the first female philosopher to have an edition of the Library of Living Philosophers written about her.

In 1995 the International Society for History, Philosophy and Social Studies of Biology established a prize for young scholars in her name. The Society said her name was chosen because "not only does her work in the history and philosophy of biology exemplify the strong spirit of interdisciplinary work fundamental to (the Society), but she played a central role in bringing together diverse scholars of biology even before the formation of the Society."

Marjorie Grene, a Leading Philosopher of Biology, Is Dead at 98

By DOUGLAS MARTIN
Published: March 28, 2009

With an uncompromising, volatile brilliance, Marjorie Grene helped shape a modern philosophical approach to biology, opening a new field that strives to interpret the deepest meanings of the scientific study of life, including the meaning of humanness.

A philosopher of biology who once spent time as a farmer's wife writing scholarly works before doing chores, Dr. Grene was one of the first philosophers to raise questions about the synthetic theory of evolution, which combines Darwin's theory of evolution, Mendel's understanding of genetic inheritance and more recent discoveries by molecular biologists.

One question she addressed, using parallels with ancient philosophers, was the implications of the role of chance in evolution.

Another was the role of cellular components, other than genes, that govern the development of an organism and its physical features.

She wrote about the difference between life and nonlife, and how species are defined. Using Darwin as a basis, she speculated on the idea of human freedom.

"She was arguably the founding figure in the new field of the philosophy of biology," Michael V. Wedin, a philosopher at the University of California, Davis, wrote in an essay posted on the Internet.

Dr. Grene — who died on March 16 in Blacksburg, Va., at the age of 98, her daughter, Ruth, said — studied with Heidegger, Jaspers, Alfred North Whitehead and other 20th-century philosophers. And she drew on their insights into perception and communication in her own vast studies into the history of philosophy. Several of her 13 books were among the first to bring the thinking of Sartre and other existentialists to the American public.

Her guiding light was Aristotle, whom she regarded as much a biologist as a philosopher and about whom she wrote two books. She rejected Descartes' belief that self-awareness defined the understanding of existence, arguing that meaning comes from interaction with the environment.

Richard Burian, an emeritus professor of philosophy at Virginia Tech, where Dr. Grene also taught, said her rejection of Cartesian introspection meant that she was "bucking the mainstream of philosophic thought for her entire career."

Dr. Grene early and fully grasped the revolution in biology in the last century that came from more powerful microscopes, the use of short-lived organisms like fruit flies for breeding experiments and a rigorous application of the scientific method. Dr. Burian said she was perhaps the first philosopher in the United States or Europe to raise philosophic questions about the resultant expansion of the knowledge of evolution.

The philosophy of biology subjects conceptual puzzles within biology to philosophic analysis, and applies biology to discussions of traditional philosophic questions. Increasingly, philosophers have met with geneticists, anthropologists, paleontologists, bacteriologists and others to help come up with intellectual contexts for scientific research.

Dr. Grene helped pave the way for this sort of cooperation by running at least five summer seminars for the National Endowment for the Humanities and two summer institutes for the Council for Philosophical Studies. She also helped form the International Society for the History, Philosophy, and Social Studies of Biology, which named a major award for her.

In 2004, Dr. Grene and David Depew published the first book-length history of the philosophy of biology, "The Philosophy of Biology: An Episodic History."

Marjorie Glicksman was born in Milwaukee on Dec. 13, 1910, and graduated from Wellesley College in 1931 as a zoology major. She then studied with Heidegger and Jaspers in Germany before earning her doctorate at Radcliffe. She taught at the University of Chicago, where she met and married David Grene, a lauded classicist known for his translations of Greek tragedies.

In 1944, she followed her husband's dream and moved to an Illinois farm. As a farmer's wife and the mother of two children, she got up early to study and write philosophy before beginning farm work. In 1952, the family moved to a farm in Ireland, where the routine continued.

The farm life taught her a lesson, she wrote in "A Philosophical Testament" (1995): "Agricultural duties and critical philosophies didn't mix."

In Chicago, she had met Michael Polanyi, a distinguished physical chemist turned philosopher; she ended up helping him research and develop his important book "Personal Knowledge" (1958). The book proposed a far more nuanced, personal idea of knowledge, and directly addressed approaches to science.

“There is hardly a page that has not benefited from her criticism,” Dr. Polanyi wrote in his acknowledgments. “She has a share in anything I may have achieved here.”

The Grenes divorced in 1961, and David died in 2002. In addition to her daughter, Dr. Grene is survived by her son, Nicholas; six grandchildren; and one great-granddaughter.

Dr. Grene returned to teaching at universities in Manchester and Leeds in the late 1950s. She ultimately taught at a dozen or more colleges and universities, spending 13 years at the University of California, Davis, where she was chairwoman of the philosophy department. Since 1988, she had been Honorary University Distinguished Professor at Virginia Tech.

Dr. Grene was legendary for her intellectual ferocity. Dr. Wedin wrote that she “always managed to find fresh ways to impugn views she regarded as ill-founded, ill-argued, or just plain nonsense. And there were many such views.”

But she was kind to young colleagues and baked cookies for the office. When asked her specialty in philosophy, she modestly wrote, “I stammer and say, ‘Oh, well, this and that.’ ”

Her sense of humor sparkled when she was asked about being the first woman to have an edition of the Library of Living Philosophers devoted to her — Volume 29 in 2002. Previous honorees included Bertrand Russell and Einstein. “I thought they must be looking desperately for a woman,” Dr. Grene said.

Jean Pierre Vigier (January 16, 1920, Paris - May 4, 2004)

“Cosmological Implications of Anomalous Redshifts,” 3/12/74

He earned his Ph.D. in Mathematics from University of Geneva in 1946 and in 1948 was appointed assistant to Louis de Broglie, a position he held until the latter's retirement in 1962. He authored more than 200 scientific papers, and co-authored and edited a number of books and conference proceedings. He was a member of the editorial board of Physics Letters A, and was a proponent of the Stochastic Interpretation of quantum mechanics, which was based on the ideas of de Broglie and David Bohm. Politically, Vigier was an active supporter of communism throughout his life.

The story of Jean-Pierre Vigier is a remarkable one which deserves serious consideration by historians of science. In this piece we can point to only a few of his multifarious activities. What makes his case special is that Jean-Pierre has managed to spend his entire scientific and social life as a dissident. Many who know him only

through his work in physics will be intrigued to discover that Jean-Pierre has another equally illustrious career in dissident politics, one devoted to the achievement of peace and cooperation in a world free of want, that is, to a genuine socialist society. Despite his horrific experiences of war he retains an almost childlike charm and an enthusiasm for life which is truly inspiring. A life spent in opposition is not an easy option. Yet he is indefatigable--whatever setbacks Jean-Pierre has encountered in his scientific or political work he has invariably emerged with renewed vigor.

Jean-Pierre Vigier was born in 1920 in the building of the Ecole Normale Superieure in Paris where his grandfather was Director of Studies. His father, an English teacher, spoke to him in English at home, which explains Jean-Pierre's marvelous command of that language. Jean-Pierre grew up in Geneva and entered the University of Montpellier in 1939 to take a degree in mathematics and physics. He was mobilized in the French army in 1940 and joined the R6sistance and the French Communist party in October of that year. In 1941 he went back to the University of Montpellier and at the same time inscribed in the University of Geneva from which he obtained a PhD in mathematics in 1946. Jean-Pierre rose to be a member of the General Staff of the Resistance based in the mountains of the Haute Savoie. In 1942 he was arrested by French police and taken to Vichy where he was interrogated and beaten. It was decided to deliver him into the hands of Klaus Barbie, the Nazi "Butcher of Lyons." Luckily, the train carrying .lean-Pierre to Lyons was bombed by the British and he was able to escape to continue his activities. A member of the first French regiment to cross the Rhine in 1944, he was wounded and awarded the L6gion d'Honneur. The M6daille de R6sistance followed after the war.

Jean-Pierre left the army in 1946 and was put on the personal staff of Frederic Joliot-Curie who was building up the French atomic energy commission (CEA). There he stayed until 1949 when he became unemployed after supporting Joliot-Curie's refusal to build the bomb. Joliot-Curie recommended him to Louis de Broglie at the Institut Henri Poincar6 (IHP) in Paris. There Jean-Pierre registered for a PhD in physics and entered the CNRS and a life of research. He has worked in de Broglie's laboratory and its successor ever since.

As is attested to by the extensive (but only selected) list of publications included in these special issues. Jean-Pierre's work in theoretical physics has spanned an extraordinary range: quantum mechanics, astrophysics, elementary particle physics, nuclear physics, and more. His initial work at IHP was on unified field theory. In 1952 he presented David Bohm's papers on the causal interpretation of quantum mechanics to de Broglie's seminar. This inspired de Broglie to resume work on the theory that he himself had initiated in 1927. This transformation in de Broglie's interests set the agenda for Jean-Pierre's future career and over the next 25 years the two collaborated on an impressive series of studies in fundamental physics.

In 1954 Jean-Pierre visited Bohm in Brazil where they wrote a paper together justifying the usual probability formula of quantum mechanics on the basis of an H theorem obeyed by a subquantum medium undergoing random fluctuations. This initiated a long period of investigations by Jean-Pierre and many others into a possible stochastic basis for quantum mechanics. During the 1950s and early 1960s he and de Broglie devoted much effort to understanding the relation $E=hv$ and interpreting the meaning of quantum

numbers in terms of the internal structures of extended particles and relativistic fluids. Later work included seeking soliton solutions in de Broglie's double-solution theory and the development of de Broglie's theory of light in terms of massive photons moving along spacetime tracks. The latter idea led to the suggestion that the observed astronomical redshift may result from a frictional effect of the vacuum which causes photons to slow down, and hence to a theory of the universe not requiring the big bang, a subject to which Jean-Pierre is still contributing.

When in the late 1940s a Vietnamese delegation came to Paris to negotiate peace, the party appointed several of its members with military backgrounds as contacts. Jean-Pierre met Ho Chi Mirth and General Giap and thus began a long period of friendship and solidarity with the Vietnamese struggle, and made many visits to Vietnam. Jean-Pierre twice went to Vietnam as a member of the Russell tribunal on American war crimes and served as its general secretary. In the early 1960s he was a member of the central committee of the party but quit over the line on the Algerian war of independence. The final break with the party came in the eruption of 1968 when Jean-Pierre argued for a revolutionary policy.

In the 1960s he visited Japan to collaborate and write papers with Yukawa on the bilocal theory of elementary particles. Jean-Pierre has always considered the nonlocality of many-body quantum mechanics to be one of its deepest and unavoidable features. In the 1970s and 1980s he was able to show with colleagues that this property could be compatible with Einsteinian causality. He has been especially active in recent years and in demand by many young researchers who came to work at IHP. Recent work has included the deduction of the quantum operator structure from stochastic calculus, the causal interpretation of spin 1/2, contributions to neutron interferometry where Jean-Pierre intitiated significant new experimental work on the *eim~,eg* problem, and the development of a stochastic theory of the ether. Recognition of his stature led in 1986 to his being appointed an editor of *Physics Letters A.*

Although remarkably diverse, there is a consistent critical thread running through Jean-Pierre's *oeuvre,* a willingness to probe fundamental issues where others are content to live with contradictions. He believes the story of physics is the story of battles between competing schools of thought and sees himself as part of a movement to develop a realist interpretation of quantum mechanics. It is because of the refusal of physicists such as de Broglie, Vigier, Bohm, and Bell to take the safe academic road and regurgitate inadequate ideas that the foundations of quantum mechanics is today a respectable and innovative field of research. It is ideas that have fired Jean-Pierre, and all of his many students and collaborators will attest to his generosity of spirit in giving full credit to the work of others. About his experiences of war he is humble and refuses to join parades that suggest it is anything other than a ghastly human waste.

It is unfortunately rare to find such large-scale progressive political commitment combined with a passionate devotion to physics. His experience as a fighter against injustice has left Jean-Pierre with a deep compassion and understanding of human psychology. Regrettably, the socialist society Jean-Pierre has striven for is yet to be realized; that history is still to be written, as is the full story of this unique scientist. Peter Holland, *School of Interdisciplinao, Sciences Universi O, of the West of England*
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United Kingdom

Lew Kowarski (10 February 1907, Saint Petersburg - 30 July 1979)

“Scientists as Magicians—Since 1945,” 26/10/71

A naturalized French physicist**, of Russian-Polish descent. He was a lesser known, but important contributor to nuclear science.**
Lew Kowarski was born in Saint Petersburg to a Jewish businessman Nicholas Kowarski and the Ukrainian singer Olga Vlassenko. Following the Bolshevik Revolution, when Lew was 12 years old, his family fled west under adventurous circumstances and settled in Vilnius (then in Poland). During his youth, Lew was a talented musician and considered a music career; however, his fingers grew too large for the keyboard.
He received a Chemical Engineering degree from the University of Lyon and an Sc.B. and Ph.D. from the University of Paris where he carried out research on neutron counting.

Research during WWII

He joined Frédéric Joliot-Curie's group in 1934, where Hans von Halban came in 1937. They established in 1939 the possibility of nuclear chain reactions and nuclear energy production. While doing their research, the events of World War II forced them to eventually move to England, bringing with them the world's entire stock of heavy water, given on loan by Norway to France so that it would not fall into German hands. They continued their research at the Cavendish laboratory in Cambridge for the MAUD Committee, part of the wartime Tube Alloys project.
Kowarski then worked in the Montreal Laboratory in Canada, but only after Halban had been replaced as Director by John Cockroft, as he did not want to work under Halban. He supervised the construction of Canada's first nuclear reactor (ZEEP) at the Chalk River Laboratories in 1945.

Post war research

He came back to France to supervise the first two French reactors in 1948 and 1952. A staff member of CERN (Geneva) since participating in its formation in 1953, he was a Decorated Officer Legion of Honor, Fellow of the American Nuclear Society, and a recipient of citation and prize from the U.S. Atomic Energy Commission. After his retirement in 1972, he was a University Professor at Boston University, focusing on the interaction between Science and Mankind.

In 1940, James Chadwick forwarded the work of two French scientists, Hans von Halban and Kowarski, who worked in Cambridge, to theRoyal Society. He asked that the papers be held, as they were not appropriate for publication during the war. In 2007, the Society discovered the documents during an audit of their archives. The documents describe how to control the chain reaction, describe the components of a nuclear reactor, and describe how to produce plutonium.

Lucien Goldmann (July 20, 1913, Bucharest but grew up in Botoşani, Romania – October 8, 1970, Paris)

He spoke about his book “The Unknown God”

French philosopher and sociologist of Jewish-Romanian origin. As a professor at the EHESS in Paris, he was an influential Marxist theorist.

Goldmann's thinking

While many Parisian leftists staunchly upheld Marxism's "scientificity" in the 1950s and 1960s, Lucien Goldmann insisted that Marxism was by then in severe crisis and had to reinvent itself radically if it were to survive. He rejected the traditional Marxist view of the proletariat and contested the structuralist movement. In fact, the popularity of such trends on the Left Bank was one reason why Goldmann's own name and work were eclipsed - this despite the acclaim of thinkers as diverse as Jean Piaget and Alasdair MacIntyre, who called him "the finest and most intelligent Marxist of the age".

He refused to portray his aspirations for humanity's future as an inexorable unfolding of history's laws, but saw them rather as a wager akin to Blaise Pascal's in the existence of God. "Risk", Goldmann wrote in his classic study of Pascal's Pensées and Jean Racine's Phèdre, "is possibility of failure, hope of success, and the synthesis of the three in a faith which is a wager are the essential constituent elements of the human condition". He called his work "dialectical" and "humanist." He sought to synthesize the "Genetic epistemology" of Piaget with the Marxism of György Lukács; he was the founder of the theory of Genetic structuralism which he developed in the 1960s.

From *International Socialism*, No.46, February/March 1971, p.22.

The death of Lucien Goldmann last October at the early age of fifty-seven was a serious loss to a revolutionary movement in which serious Marxist theorists are far from plentiful.

Goldmann’s whole life was a struggle in defence of the Marxist method. From 1945 to the sixties he stood up against both the philosophical onslaught on Marxism and the

Stalinist distortions of Marxism, whether dogmatic or revisionist. To do so he drew on the early work of Georg Lukacs which he propagated, translated and popularised.

Goldmann made no fundamental advances in Marxist method beyond Lukacs' positions, but his political independence enabled him to avoid his master's zigzags, and his concrete applications of the method to the history of literature and philosophy showed all the richness that a dialectical approach is capable of. The Hidden God should be read by anyone who wants to see how intellectual creations can be located in social reality without being reduced to the status of reflections or passive products.

In The Human Sciences and Philosophy he provided a manual which any socialist exposed to the bourgeois social sciences can use to avoid contamination. He shows the dangers of 'mechanistic biology, behaviouristic psychology, empiricist history, factual and descriptive sociology'; and he identifies

> '... the inadequacies of the new descriptive methods of contemporary sociology and of the separation of theory from concrete research. The common factor running through tendencies which are apparently different and even opposed, is *the radical elimination of every historical element* from the study of human facts.'

Marxist thought itself is not immune from corruption by bourgeois ideas, and here too Goldmann's work is of value. In the essay *Is there a Marxist Sociology?* (IS 34) he studies the various revisions and distortions Marxism has been subjected to. He traces these to the creation of false alternatives which did not exist in Marx's work. For example, the separation of science and morality, of individual and collective, of means and ends.

For nearly a hundred years varieties of 'Marxism' have been used to bolster up party bureaucrats, opportunist politicians and brutal ruling classes. The dead wood left behind will take a lot of clearing, and Goldmann's work was a pioneering effort.

The tragedy of Goldmann was that this struggle for Marxist method took place in isolation from the working class. Partly this isolation derived from Goldmann's historical situation, partly from his own choices (e.g. his distrust of Trotskyism, tendencies to reformism in practical politics, etc.) As a result, Goldmann fought for Marxism within the institutions of bourgeois culture. Hence a tendency in his work, not fully elaborated, to defend Marxism in terms of its 'comprehensiveness' as a theory in relation to other theories, rather than on the basis of the historical role of the proletariat.

When the revolutionary movement is strong enough to maintain its own culture, the problems will be confronted differently. But the isolated forerunners will not be forgotten.

Roger Garaudy (born July 17, 1913, in Marseille)

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Roger Garaudy or Ragaa (born July 17, 1913, in Marseille) is a French author and Muslim convert who drew public attention for his stance and writings as a Holocaust denier.
During World War II, Garaudy was imprisoned in Djelfa, Algeria, as a prisoner of war of Vichy France; he was a member of the French Communist Party who tried to reconcile Marxism with Roman Catholicism in the 1970s, and then abandoned both doctrines in favour of Sunni Islam when he became Muslim in 1982, taking his new name. He currently lives in Spain.
Garaudy was a communist who tried to reconcile Marxism with Catholicism in the 1970s and then abandoned both doctrines in favour of Sunni Islam when he became Muslim in 1982, taking the name Ragaa.
In 1998, a French court found him guilty of Holocaust denial and racial defamation, fining him FF 120,000 ($40,000) for his 1995 book Mythes fondateurs de la politique israélienne. Endorsing the views of French Holocaust denier Robert Faurisson, the book declared that during the Holocaust, Jews were not killed in gas chambers. The book was quickly translated into Arabic and Persian, and a Sudanese lawyer, Faruk M. Abu Eissa, assembled a five-man legal team to support Garaudy at his trial in Paris. The Iranian government paid some of Garaudy's fine. Garaudy is also known to be a friend of Abbé Pierre.

Mihailo Marković (24 February 1923, Belgrade–7 February 2010, Belgrade)

“Scientific Prediction and Visions of the Future,” 17/10/78

Mihailo Markovic (1923), is the most significant Serbian philosopher of 20th century and a regular member of the Serbian Academy of Arts and Sciences. Some of his numerous books, such as *Dialectical Theory of Meaning (1961)*and *Philosophical Bases of Sciences (1981)*, belong to the world philosophical heritage. His books have been translated into all important world languages. He has taught at a number of European, American and Canadian universities and scientific academies. He has been a Professor

at the Michigan University in An Harbor and at the Pennsylvanian University in Philadelphia, the Chairman of the Yugoslav Philosophical Association, the dean of the Faculty of Philosophy in Belgrade, the Head of the Institute for Philosophy of the Faculty of Philosophy in Belgrade, a member of the Organizational Committee of the Summer School in Korcula, a member of the Council of the 'Praxis' magazine, a member of the editorial staff of the magazines*The Philosophical Forum*, Boston, *Filozofia*, Torino, and *Neues Forum*, Vienna.

A Serbian philosopher. He was born in Belgrade, Kingdom of Serbs, Croats and Slovenes.
In the 1960s and 1970s he gained prominence as a proponent of the Praxis School, a Marxist humanist movement that originated in SFRY.
A co-author of the Serbian Academy of Sciences and Arts (SANU) Memorandum, during late 1980s and 1990s Marković was a prominent supporter of Slobodan Milošević. He died in February 2010 in Belgrade, Serbia.

Early life

arković became a member of the youth organization of the Communist Party of Yugoslavia (KPJ) in 1940, and in 1944 he became a member of the KPJ itself. As a partisan he actively participated in the struggle for liberation of Yugoslavia during World War II.

Academic career

Marković took a doctorate in philosophy first at the University of Belgrade Faculty of Philosophy in 1955, and then another in 1956 at University College London. There he studied logic under A.J. Ayer, and wrote his thesis on the *Concept of Logic*. In 1963 he became a full professor of philosophy at the University of Belgrade's Faculty of Philosophy, and the dean of the faculty in the period 1966–1967. From 1960 to 1962 he was the president of the Yugoslav Society of Philosophy. In the 1970s, he taught at the University of Michigan at Ann Arbor and was a director of the Institute of Philosophy at the University of Belgrade. Marković was a co-Chairman of the International Humanist and Ethical Union (1975–1985). He has been a corresponding member of the Serbian Academy of Sciences and Arts since 1963 and a full member since 1983. In his honour, a collection of articles entitled *Philosophy and Society* was published in Belgrade in 1987.

Social critic

After the Resolution of the Informbiro condemning the Yugoslav communist regime, Marković took part in a fierce debate against Stalinist dogmatism, becoming one of the fiercest critics of the Stalinist philosophical theses. His *Revision of the Philosophical Bases of Marxism in the USSR*, published in 1952, was the first major attack on the Stalinist philosophy in Yugoslavia.
In the 1960s Marković became a major proponent of the Praxis School of Marxist interpretation, which emphasized the writings of young Marx, and their dialectical and humanist aspects in particular. He also actively contributed to the international journal *Praxis*. Due to his critical observations, together with seven other professors from the Faculty of Philosophy in Belgrade, Marković was suspended in January 1975, and finally lost his job in January 1981. After that, Marković worked in the Institute of Social Research until his retirement in 1986.

As a member of the Serbian Academy of Sciences and Arts (SANU) in 1986, Marković, together with Vasilije Krestić and others, wrote the SANU Memorandum, a document that has formulated the central tenets of Serbian Mihailo Marković's nationalism. While the document has been viewed in some neighbouring former Yugoslav republics as a preparation for full scale Greater Serbian expansionism, many Serbs considered it a realistic depiction of the Serbian position within Yugoslav federation.

SPS

Marković was vice-president of the Slobodan Milošević's Socialist Party of Serbia (SPS) until 1995 as well as its one-time chief ideologue. At other times, he was a vocal critic of the official SPS party line.

Mili Čapek (26 January 1909, Třebechovice pod Orebem, Bohemia-17 November1997, Little Rock, ARK) "The Myth of Frozen Passage: The Status of Becoming in Physics," 14/4/64

Belatedly se have heard about the passing of one of our distinguished members, Milic Capek, Boston University Professor Emeritus of Philosophy, on November 17,1997, in Little Rock, Arkansas. He was 88.

Capek was born in the village of Třebechovice pod Orebem, Bohemia on January 26,1909. He received his PhDr. in philosophy at Charles University in 1935. Talking his way out of occupied Czechoslovakia, he studied at the Sorbonne-and directed Czech language broadcasts back to his homeland. Fleeing Paris on a bicycle 10 days ahead of the Nazi tanks, he made his way to America, via Dakar, Casablanca, and a Vichy concentration camp in Morocco. During the war, he taught physics in the Army Specialized Training Program at the University of Iowa, the Navy V12 program at Doan College, and at the University of Nebraska. Returning to Czechoslovakia after the war, he taught briefly at the University of Olomouc before fleeing once again, one month before the communist coup d'etat, to take up permanent residence, and citizenship, in the United States.

Professor Capek joined the Carleton College philosophy faculty in 1948. In 1962, after a distinguished career at Carleton both as a teacher and as a productive scholar, he accepted a position at Boston University, where he served with distinction until his retirement in 1974. Visiting professorships included the Davis Campus of the University of California, Emory University, North Texas University, Yale, and, again, Carleton, as the Donald J. Cowling Distinguished Visiting Professor of Philosophy. In 1983 Carleton honored him with a Doctor of Letters degree.

He was the author of A Key to Czechoslovakia: The Territory of Kladsko ((1946), Philosophical Impact of Contemporary Physics (1961), Bergson and Modern Physics (1971), The Concepts of Space and Time (1976), The New Aspects of Time: Its Continuity and Novelties (1991) and numerous articles in scholarly periodicals. Milic Capek made major contributions to the understanding of the philosophical implications of relativity theory and quantum mechanics, and to the philosophy of time.*(MR)*

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Thomas Samuel Kuhn (July 18, 1922, Cincinnati – June 17, 1996, Cambridge, MA)

"History of Science and its Rational Reconstruction" (Joint Symposium with PSA: Lakatos, Kuhn, Richard J. Hall), 24/10/70

Thomas Samuel Kuhn (surname pronounced /ˈkuːn/; July 18, 1922 – June 17, 1996) was an American physicist who wrote extensively on the history of science and developed several important notions in the sociology and philosophy of science.

Kuhn has made several important contributions to our understanding of the progress of knowledge: Science undergoes periodic "paradigm shifts" instead of progressing in a linear and continuous way These paradigm shifts open up new approaches to understanding that scientists would never have considered valid before• Scientists can never divorce their subjective perspective from their work; thus, our comprehension of science can never rely on full "objectivity" - we must account for subjective perspectives as well

Life

Thomas Kuhn was born in Cincinnati, Ohio to Samuel L. Kuhn, an industrial engineer, and Minette Stroock Kuhn. He obtained his B.S. degree in physics from Harvard University in 1943, and M.S. and Ph.D. degrees in physics in 1946 and 1949, respectively. As he states in the first few pages of the preface to the second edition of The Structure of Scientific Revolutions, his three years of total academic freedom as a Harvard Junior Fellow were crucial in allowing him to switch from physics to the history (and philosophy) of science. He later taught a course in the history of science at Harvard from 1948 until 1956 at the suggestion of university president James Conant. After leaving Harvard, Kuhn taught at the University of California, Berkeley, in both the philosophy department and the history department, being named Professor of the History of Science in 1961. At Berkeley, he wrote and published (in 1962) his best
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known and most influential work: *The Structure of Scientific Revolutions*. In 1964, he joined Princeton University as the M. Taylor Pyne Professor of Philosophy and History of Science. In 1979, he joined the Massachusetts Institute of Technology (MIT) as the Laurance S. Rockefeller Professor of Philosophy, remaining there until 1991. Kuhn interviewed and taped Danish physicist Niels Bohr the day before Bohr's death. In 1994, Kuhn was diagnosed with cancer of the bronchial tubes, of which he died in 1996. Thomas Kuhn was married twice, first to Kathryn Muhs (with whom he had three children) and later to Jehane Barton (Jehane R. Kuhn).

Achille Papapetrou (1907, Serrai, Greece-- 12 August 1997, Paris)
“General Relativity: Some Puzzling Questions,” 14/3/72

GeneralRelativity and Gravitation, Vol. 8, No. 8 (1977), pp. 541-543

Achille Papapetrou was born in 1907 in Serrai in northern Greece, where his father was a school teacher. The family was forced to leave during World War I, but was able to return after the peace. Papapetrou studied at the lyc6e in Serrai, where he began giving private tutoring to students in mathematics. He went to Athens in 1925 to study mechanical and electrical engineering at the Polytechnic, receiving his engineering diploma in 1930. Before graduation he became an Assistant in Mathematics, and he continued in this post while working as an engineer in Athens.

Papapetrou's earliest published work was on solid state theory, an interest which continued for a number of years. A grant enabled him to go to Germany in 1934, where he studied under Paul Ewald in Stuttgart. Papapetrou's life there, and his work on the dendritic growth of crystals, is described by Professor Ewald in the dedication to this *festschrift.* Papapetrou's interest in relativity dates from this time in Stuttgart, where he met and started to collaborate with Helmut Hönl-a collaboration which resulted in their joint papers on the equations of motion of monopole-dipole spinning particles. He secured his doctorate *rerurn technicum* from the Technische Hochschule of Stuttgart in 1935 and returned to Greece to accept a post as an Assistant in Electrical Engineering. In 1939 he was nominated for a Professorship at the Polytechnic, but because of political and personal intrigues he did not finally receive the appointment until 1940. He served from 1940 to 1946 as Professor of Physics at the Polytechnic.

During this time in Athens he organized the first "Free (i.e., voluntary) Seminars" in Greece on relativity theory. These seminars started in 1935 and continued intermittently for the next six or seven years. Professor Papapetrou taught throughout the German occupation. He shared with the Greek people the tragic history of their occupation and the remarkable odyssey of their resistance and was well known as an opponent of all forms of collaboration with the occupiers. Papapetrou continued his work on multipole particles in special and general relativity. During the occupation he was cut off from scientific communication with the rest of the world; his work from this period was published in Greek journals and only became known outside Greece much later. In

1946, on the recommendation of Professor Ewald, he was invited as a Research Fellow by Schroedinger to the Institute for Advanced Study in Dublin. Schroedinger was then working on unified field theories, as well as on other problems of general relativity. While continuing his earlier researches on general relativity, Papapetrou started to work on unified field theories, publishing a number of articles of his own as well as one in collaboration with Schroedinger. He found exact spherically symmetric solutions to the equations for the nonsymmetric field, as well as proving the nonexistence of nonsingular static solutions to these equations. In 1948 he was invited as a Research Fellow to the Physics Department at Manchester, which included Leon Rosenfeld and was headed by P. M. S. Blackett. While there, he worked mainly on problems of the equations of motion in general relativity. He introduced marked simplifications to the derivation of the slow-motion equations of motion by the Fock method through systematic use of the conservation law for the stress-energy tensor. He also derived the equations of motion for spinning test particles in general relativity, partly in collaboration with Ernesto Corinaldesi.

In 1952, Papapetrou was invited to take up a position as Senior Researcher in the Forschungsinstitut für Mathematik der Deutschen Akademie der Wissenschaften in East Berlin. He stayed in the D.D.R. from 1952 to 1961, receiving an appointment in 1957 as Professor of Theoretical Physics at the Humboldt University. During this time he helped to train a group of young German researchers in general relativity, including G. Dautcourt and H. J. Treder, who now heads the group. His work covered a wide range of topics in general relativity, including a proof of the nonexistence of periodic nonsingular solutions to the field equations, finite discontinuities and jump conditions for the gravitational field (gravitational shock waves), and further work on the equations of motion.

As a graduate student I attended the Third GRG Meeting at Royaumont in 1959-a time when U. S. government funding was much more liberal than today. This provided the occasion for my first meeting with Achille and Koula, his wife. Thus began a continuous friendship which has only deepened and grown stronger over what will soon be twenty years-and a scientific apprenticeship on my part which, although all too occasional, has benefitted me greatly and has resulted in a recent collaboration.

In 1960 and 1961, Papapetrou spent a year in Paris at the Institut Henri Poincaré. The flirtation was so agreeable to both sides that it became a permanent liaison in 1962, when he took up a post as Directeur de Recherche at the CNRS, a post he held from then until this year of his retirement. To a whole generation of younger relativists who have had the pleasure of being entertained on visits to France by one or both of the Papapetrous, it may come as a surprise that they were ever associated with any other locale than~ Paris they have made so much their own. He became a French citizen about ten years ago. Joining the already well-established Paris group of relativists, which includes Marie-Antoinette Tonnelat, Yvonne Choquet-Bruhat, and André Lichnerowicz, Papapetrou had added greatly to this group's renown through his work and his contribution to the training of a younger generation of relativists, including such well-known "Frenchmen" as Adnan Hamoui and John Madore, to say nothing of I. Moret-BaiUy, B. Linet, and B. Leauté. Since 1975 Papapetrou has been Director of the Laboratoire de Physique Théorique at the Institut Henri Poincaré. His work in Paris has ranged over almost all topics of current interest in the field, for the years have brought

no slackening-if anything a slight acceleration-in his creative output. Among the topics which come to mind are his work on elastic waves in general relativity and gravitational radiation detectors, shells of matter and their gravitational collapse, the Newman-Penrose formalism and its identities, stationary axially symmetric gravitational fields, gravitational and electromagnetic radiation fields-but rather than enlarge the list, let me recommend perusal of the bibliography to the reader, who is sure to find some title(s) of interest in connection with his or her own work.

At the Copenhagen GRG Meeting in 1971 Papapetrou was elected to the Committee of the GRG Organization and has served on it ever since. He visited Princeton for a semester in 1964-1965, Vienna in 1970-1971, and he spent two semesters with us at Boston University in 1972, to mention only his longer visits abroad. His lectures on general relativity in Boston were published in 1974 and give an excellent introduction to the subject. It is the only textbook, as far as I know, to include a discussion of the Newman-Penrose formalism. This book complements his earlier lectures on special relativity, published in German in 1957. One of these days someone is going to get the bright idea of translating the Special Relativity into English, or the General Relativity into German-or both into French.

Those of us who know and have worked with Achille realize that his "retirement" is purely a formal, bureaucratic one. We look forward with anticipation to many more years of active scientific work and warm friendship from him.

John Stachel

Achilles Papapetrou, a leading researcher in the field of general relativity for over 50 years, died in Paris at the age of 90 on 12 August 1997.

Herbert Marcuse (19 July, 1898, Berlin- 29 July 1979, Starnberg)

“Husserl’s Critique of Science in ‘Die Krisis der Europäischen Wissenschaften’,” 13/2/64

Early life

Herbert Marcuse was born in Berlin to Carl Marcuse and Gertrud Kreslawsky and raised in aJewish family. In 1916 he was drafted into the German Army, but only worked in horse stables in Berlin during World War I. He then became a member of a Soldiers' Council that participated in the aborted socialist Spartacist uprising. He completed his Ph.D. thesis at the University of Freiburg in 1922 on the German Künstlerroman after which he moved back to Berlin, where he worked in publishing. In 1924 he married Sophie Wertheim, a mathematician. He returned toFreiburg in 1928 to study with Edmund Husserl and write a Habilitation with Martin Heidegger, which was published in 1932 as *Hegel's Ontology and Theory of Historicity.* This study was written in the context of the Hegel renaissance that was taking place in Europe with an emphasis on Hegel's ontology of life and history, idealist theory of spirit and dialectic. With his academic career blocked by the rise of the Third Reich, in 1933 Marcuse joined the FrankfurtInstitute for Social Research.

In 1933, Marcuse published his first major review, of Marx's *Economic and Philosophical Manuscripts of 1844.* In this review, Marcuse revised the interpretation of Marxism, from the standpoint of the works of the early Marx. This review helped the world see that Marcuse was becoming one of the most promising theorists of his generation.

While a member of the Institute of Societal Research, Marcuse developed a model for critical social theory, created a theory of the new stage of state and monopoly capitalism, described the relationships between philosophy, social theory, and cultural criticism, and provided an analysis and critique of German fascism. Marcuse worked closely with critical theorists while at the Institute.

United States

After emigrating from Germany in 1933, in 1934, Marcuse immigrated to the United States, where he became a citizen in 1940. Although he never returned to Germany to live, he remained one of the major theorists associated with the Frankfurt School, along with Max Horkheimer and Theodor W. Adorno(among others). In 1940 he published *Reason and Revolution*, a dialectical work studying Georg W. F. Hegel and Karl Marx.

During World War II Marcuse first worked for the U.S. Office of War Information (OWI) on anti-Nazi propaganda projects. In 1943 he transferred to the Office of Strategic Services (OSS), the precursor to the Central Intelligence Agency. His work for the OSS involved research on Nazi Germany and denazification. After the dissolution of the OSS in 1945, Marcuse was employed by the US Department of State as head of the Central European section, retiring after the death of his first wife in 1951.

In 1952 he began a teaching career as a political theorist, first at Columbia University, then at Harvard University, then at Brandeis University from 1958 to 1965, where he taught philosophy and politics, and finally (by then he was past the usual retirement age), at the University of California, San Diego. He was a friend and collaborator of the political sociologist Barrington Moore, Jr. and of the political philosopher Robert Paul Wolff, and also a friend of the Columbia University sociology professor C. Wright Mills, one of the founders of theNew Left movement.

In the post-war period, Marcuse was the most explicitly political and left-wing member of the Frankfurt School, continuing to identify himself as a Marxist, a socialist, and a Hegelian.

Marcuse's critiques of capitalist society (especially his 1955 synthesis of Marx and Freud, Eros and Civilization, and his 1964 book One-Dimensional Man) resonated with the concerns of the student movement in the 1960s. Because of his willingness to speak at student protests, Marcuse soon became known as "the father of the New Left in the United States", a term he strongly disliked and disavowed. His work heavily influenced intellectual discourse on popular culture and scholarly popular culture studies. He had many speaking engagements in the US and Europe in the late 1960s and 1970s. He became a close friend and inspirer of the French philosopher André Gorz.

Marcuse defended the arrested East German dissident Rudolf Bahro (author of *Die Alternative: Zur Kritik des real existierenden Sozialismus*[trans., *The Alternative in Eastern Europe*]), discussing in a 1979 essay Bahro's theories of "change from within".

The New Left and radical politics

Many radical scholars and activists were influenced by Marcuse, such as Angela Davis, Abbie Hoffman, Rudi Dutschke, and Robert M. Young. (See the List of Scholars and Activists link, below.) Among those who critiqued him from the left were Marxist-humanist Raya Dunayevskaya, and fellow German emigre Paul Mattick, both of whom subjected *One-Dimensional Man* to a Marxist critique. Marcuse's 1965 essay "Repressive Tolerance", in which he claimed capitalist democracies can have totalitarian aspects, has been criticized by conservatives. Marcuse argues that genuine tolerance does not tolerate support for repression, since doing so ensures that marginalized voices will remain unheard. He characterizes tolerance of repressive speech as "inauthentic." Instead, he advocates a discriminatory form of tolerance that does not allow so-called "repressive" intolerance to be voiced.

"Surely, no government can be expected to foster its own subversion, but in a democracy such a right is vested in the people (i.e. in the majority of the people). This means that the ways should not be blocked on which a subversive majority could develop, and if they are blocked by organized repression and indoctrination, their reopening may require apparently undemocratic means. They would include the withdrawal of toleration of speech and assembly from groups and movements which promote aggressive policies, armament, chauvinism, discrimination on the grounds of race and religion, or which oppose the extension of public services, social security, medical care, etc"

"Liberating tolerance, then, would mean intolerance against movements from the Right and toleration of movements from the Left."

Marcuse later expressed his radical ideas through three pieces of writing. He wrote *An Essay on Liberation* in 1969 celebrating liberation movements such as those in Vietnam, which inspired many radicals. In 1972 he wrote *Counterrevolution and Revolt*, which argues that the hopes of the 1960's were facing a counterrevolution from the right.

After Brandeis denied the renewal of his teaching contract in 1965, Marcuse devoted the rest of his life to teaching, writing and giving lectures around the world. His efforts brought him attention from the media, making his work more influential. He continued to promote Marxian Theory and progressive socialism, with some of his students helping to spread his ideas. He published his final work The Aesthetic Dimension in 1979 on the role of high art in the process of emancipation from bourgeois society.

Marriage and death

Marcuse married three times. His first wife was mathematician Sophie Wertman (1901–1951), with whom he had a son, Peter (born 1928). Herbert's second marriage was to Inge Neumann (1910–1972), the widow of his close friend Franz Neumann (1900–1954). His third wife was Erica Sherover (1938–1988), a former graduate student and forty years his junior, whom he married in 1976. His son Peter Marcuse is currently professor emeritus of Urban Planning at Columbia University. His granddaughter is the novelist Irene Marcuse and his grandson, Harold Marcuse, is currently a professor of history at the University of California, Santa Barbara.

Ten days after his eighty-first birthday, Marcuse died on July 29, 1979, after having suffered a stroke during a visit to Germany. He had spoken at the

Frankfurt *Römerberggespräche*, and was on his way to the Max-Planck-Institute for the Study of the Scientific-Technical World in Starnberg, on invitation from second-generation Frankfurt School theorist Jürgen Habermas. In 2003, after his ashes were rediscovered in the USA, he was buried in the Dorotheenstädtischer cemetery, Berlin.

Paul Adrien Maurice Dirac (8 August 1902, Bristol—20 October 1984, Tallahassee, FL)

"Gravitation and Quantization," Osgood Hill Conference, October 31-November 3, 1972

“On the Use of Projective Geometry in Physics,” 30/10/73

Early years

Paul Dirac was born in Bristol, England and grew up in the Bishopston area of the city. His father, Charles Dirac, was an immigrant from Saint-Maurice in the Canton of Valais, Switzerland. His mother was originally from Cornwall and the daughter of a mariner. Paul had an elder brother, Félix, who committed suicide in March 1925, and a younger sister, Béatrice. His early family life appears to have been unhappy due to his father's unusually strict and authoritarian nature.

Dirac was educated first at Bishop Road Primary School and then at Merchant Venturers'Technical College (later Cotham School), where his father was a French teacher. The school was an institution attached to the University of Bristol, which emphasized scientific subjects and modern languages. This was an unusual arrangement at a time when secondary education in Britain was still dedicated largely to the classics, and something for which Dirac would later express gratitude.

Dirac studied electrical engineering at the University of Bristol, completing his degree in 1921. He then decided that his true calling lay in the mathematical sciences and, after completing a BA in applied mathematics at Bristol in 1923, he received a grant to conduct research at St John's College, Cambridge, where he would remain for most of his career. At Cambridge, Dirac pursued his interests in the theory of general relativity (an interest he gained earlier as a student in Bristol) and in the nascent field of quantum physics, under the supervision of Ralph Fowler.

Career

Dirac noticed an analogy between the Poisson brackets of classical mechanics and the recently proposed quantization rules in Werner Heisenberg's matrix formulation of quantum mechanics. This observation allowed Dirac to obtain the quantization rules in

a novel and more illuminating manner. For this work, published in 1926, he received a Ph.D. from Cambridge.

In 1928, building on 2x2 spin matrices which he discovered independently (Abraham Pais quoted Dirac as saying "I believe I got these (matrices) independently of Pauli and possibly Pauli got these independently of me") of Wolfgang Pauli's work on non-relativistic spin systems, he proposed theDirac equation as a relativistic equation of motion for the wavefunction of the electron. This work led Dirac to predict the existence of the positron, the electron's antiparticle, which he interpreted in terms of what came to be called the Dirac sea. The positron was observed by Carl Anderson in 1932. Dirac's equation also contributed to explaining the origin of quantum spin as a relativistic phenomenon.

The necessity of fermions i.e. matter being created and destroyed in Enrico Fermi's 1934 theory of beta decay, however, led to a reinterpretation of Dirac's equation as a "classical" field equation for any point particle of spin ħ/2, itself subject to quantization conditions involving anti-commutators. Thus reinterpreted as a (quantum) field equation accurately describing quarks and leptons i.e. all elementary matter particles, this Dirac field equation is as central to theoretical physics as the Maxwell, Yang-Millsand Einstein field equations. Dirac is regarded as the founder of quantum electrodynamics, being the first to use that term. He also introduced the idea of vacuum polarization in the early 1930s. This work was key to the development of quantum mechanics by the next generation of theorists, and in particular Schwinger, Feynman, Sin-Itiro Tomonaga and Dyson in their formulation of quantum electrodynamics.

Dirac's *Principles of Quantum Mechanics*, published in 1930, is a landmark in the history of science. It quickly became one of the standard textbooks on the subject and is still used today. In that book, Dirac incorporated the previous work of Werner Heisenberg on matrix mechanics and of Erwin Schrödinger on wave mechanics into a single mathematical formalism that associates measurable quantities to operators acting on the Hilbert space of vectors that describe the state of a physical system. The book also introduced the delta function. Following his 1939 article, he also included the bra-ket notation in the third edition of his book, thereby contributing to its universal use nowadays.

In 1933, following his 1931 paper on magnetic monopoles, Dirac showed that the existence of a single magnetic monopole in the universe would suffice to explain the observed quantization of electrical charge. In 1975, 1982, and 2009, intriguing results suggested the possible detection of magnetic monopoles, but there is, to date, no direct evidence for their existence.

Dirac was the Lucasian Professor of Mathematics at Cambridge from 1932 to 1969. In 1937, he proposed a speculative cosmological model based on the so-called large numbers hypothesis. During World War II, he conducted important theoretical and experimental research onuranium enrichment by gas centrifuge.

Dirac's quantum electrodynamics made predictions that were - more often than not - infinite and therefore unacceptable. A workaround known as renormalization was developed, but Dirac never accepted this. "I must say that I am very dissatisfied with the situation," he said in 1975, "because this so-called 'good theory' does involve neglecting infinities which appear in its equations, neglecting them in an arbitrary way. This is just

not sensible mathematics. Sensible mathematics involves neglecting a quantity when it is small — not neglecting it just because it is infinitely great and you do not want it!" His refusal to accept renormalization, resulted in his work on the subject moving increasingly out of the mainstream. However, from his once rejected notes he managed to work on putting QED on "logical foundations" based on Hamiltonian formalism that he formulated. He found a rather novel way of deriving the anomalous magnetic moment "Schwinger term" and also the Lamb shift, afresh, using the Heisenberg picture and without using the joining method used by Weisskopf and French, the two pioneers of modern QED, Schwinger and Feynman, in 1963. That was two years before the Tomonaga-Schwinger-Feynman QED was given formal recognition by an award of the Nobel Prize for physics. Weisskopf and French (FW) were the first to obtain the correct result for the Lamb shift and the anomalous magnetic moment of the electron. At first FW results did not agree with the incorrect but independent results of Feynman and Schwinger (Schweber SS 1994 "QED and the men who made it: Dyson,Feynman,Schwinger and Tomonaga", Princeton :PUP). The 1963-1964 lectures Dirac gave on quantum field theory at Yeshiva University were published in 1966 as the Belfer Graduate School of Science, Monograph Series Number, 3. After having relocated to Florida in order to be near his elder daughter, Mary, Dirac spent his last fourteen years (of both life and physics research) at the University of Miami in Coral Gables, Florida and Florida State University in Tallahassee, Florida.

In the 1950s in his search for a better QED, Paul Dirac developed the Hamiltonian theory of constraints (Canad J Math 1950 vol 2, 129; 1951 vol 3, 1) based on lectures that he delivered at the 1949 International Mathematical Congress in Canada. Dirac (1951 “The Hamiltonian Form of Field Dynamics” Canad Jour Math, vol 3 ,1) had also solved the problem of putting the Tomonaga-Schwinger equation into the Schrödinger representation (See Phillips R J N 1987 “Tributes to Dirac” p31 London:Adam Hilger) and given explicit expressions for the scalar meson field (spin zero pion or pseudoscalar meson), the vector meson field (spin one rho meson), and the electromagnetic field (spin one massless boson, photon).

The Hamiltonian of constrained systems is one of Dirac’s many masterpieces. It is a powerful generalization of Hamiltonian theory that remains valid for curved spacetime. The equations for the Hamiltonian involve only six degrees of freedom described by g_{rs},p^{rs} for each point of the surface on which the state is considered. The g_{m0}(m = 0,1,2,3) appear in the theory only through the variables g^{r0}, $(- g^{00})^{-1/2}$which occur as arbitrary coefficients in the equations of motion. $H=\int d^3x[(- g^{00})^{-1/2}H_L - g^{r0}/g^{00}\ H_r]$ There are four constraints or weak equations for each point of the surface x^0 = constant. Three of them H_r form the four vector density in the surface. The fourth H_L is a 3-dimensional scalar density in the surface $H_L\approx 0$; $H_r\approx 0$ (r=1,2,3)

In the late 1950s he applied the Hamiltonian methods he had developed to cast Einstein’s general relativity in Hamiltonian form (Proc Roy Soc 1958,A vol 246, 333,Phys Rev 1959,vol 114, 924) and to bring to a technical completion the quantization problem of gravitation and bring it also closer to the rest of physics according to Salam and DeWitt. In 1959 also he gave an invited talk on "Energy of the Gravitational Field" at the New York Meeting of the American Physical Society later published in 1959 Phys Rev Lett 2, 368. In 1964 he published his “Lectures on Quantum Mechanics” (London:Academic) which deals with constrained dynamics of nonlinear dynamical

systems including quantization of curved spacetime. He also published a paper entitled “Quantization of the Gravitational Field” in 1967 ICTP/IAEA Trieste Symposium on Contemporary Physics.

If one considers waves moving in the direction x^3 resolved into the corresponding Fourier components (r,s = 1,2,3), the variables in the degrees of freedom 13,23,33 are affected by the changes in the coordinate system whereas those in the degrees of freedom 12, (11-22) remain invariant under such changes. The expression for the energy splits up into terms each associated with one of these six degrees of freedom without any cross terms associated with two of them. The degrees of freedom 13, 23, 33 do not appear at all in the expression for energy of gravitational waves in the direction x^3. The two degrees of freedom 12, (11-22) contribute a positive definite amount of such a form to represent the energy of gravitational waves. These two degrees of freedom correspond in the language of quantum theory , to the gravitational photons (gravitons) with spin +2 or -2 in their direction of motion. The degrees of freedom (11+22) gives rise to the Newtonian potential energy term showing the gravitational force between the two positive mass is attractive and the self energy of every mass is negative.

Amongst his many students was John Polkinghorne, who recalls that Dirac "was once asked what was his fundamental belief. He strode to a blackboard and wrote that the laws of nature should be expressed in beautiful equations."

Personal life

Dirac married Eugene Wigner's sister, Margit, in 1937. He adopted Margit's two children, Judith and Gabriel. Paul and Margit Dirac had two children together, both daughters, Mary Elizabeth and Florence Monica.

Margit, known as Manci, visited her brother in 1934 in Princeton from her native Hungary and, while at dinner at the Annex Restaurant (1930s–2006), met the "lonely-looking man at the next table." This account came from a physicist from Korea who met and was influenced by Dirac, Y.S. Kim, who has also written: "It is quite fortunate for the physics community that Manci took good care of our respected Paul A.M. Dirac. Dirac published eleven papers during the period 1939-46.... Dirac was able to maintain his normal research productivity only because Manci was in charge of everything else."

A reviewer of the 2009 biography writes: "Dirac blamed his [emotional] frailties on his father, a Swiss immigrant who bullied his wife, chivvied his children and insisted Paul spoke only French at home, even though the Diracs lived in Bristol.'I never knew love or affection when I was a child,' Dirac once said." She also writes that "[t]he problem lay with his genes. Both father and son had autism, to differing degrees. Hence the Nobel winner's reticence, literal-mindedness, rigid patterns of behaviour and self-centredness. [Quoting the biography:] 'Dirac's traits as a person with autism were crucial to his success as a theoretical physicist: his ability to order information about mathematics and physics in a systematic way, his visual imagination, his self-centredness, his concentration and determination.'"

Personality

Dirac was known among his colleagues for his precise and taciturn nature. His colleagues in Cambridge jokingly defined a unit of a dirac which was one word per

hour. When Niels Bohr complained that he did not know how to finish a sentence in a scientific article he was writing, Dirac replied, "I was taught at school never to start a sentence without knowing the end of it." He criticized the physicist J. Robert Oppenheimer's interest in poetry: "The aim of science is to make difficult things understandable in a simpler way; the aim of poetry is to state simple things in an incomprehensible way. The two are incompatible."

Dirac himself wrote in his diary during his postgraduate years that he concentrated solely on his research, and only stopped on Sunday, when he took long strolls alone. [citation needed]

An anecdote recounted in a review of the 2009 biography tells of Werner Heisenberg and Dirac sailing on a cruise ship to a conference in Japan in August 1929. "Both still in their twenties, and unmarried, they made an odd couple. Heisenberg was a ladies' man who constantly flirted and danced, while Dirac—'an Edwardian geek', as [biographer] Graham Farmelo puts it—suffered agonies if forced into any kind of socialising or small talk. 'Why do you dance?' Dirac asked his companion. 'When there are nice girls, it is a pleasure,' Heisenberg replied. Dirac pondered this notion, then blurted out: 'But, Heisenberg, how do you know beforehand that the girls are nice?'"

According to a story told in different versions, a friend or student visited Dirac, not knowing of his marriage. Noticing the visitor's surprise at seeing an attractive woman in the house, Dirac said, "This is... this is Wigner's sister". Margit Dirac told both George Gamow and Anton Capri in the 1960s that her husband had actually said, "Allow me to present Wigner's sister, who is now my wife."

Dirac was also noted for his personal modesty. He called the equation for the time evolution of a quantum-mechanical operator, which he was the first to write down, the "Heisenberg equation of motion". Most physicists speak of Fermi-Dirac statistics for half-integer-spin particles and Bose-Einstein statistics for integer-spin particles. While lecturing later in life, Dirac always insisted on calling the former "Fermi statistics". He referred to the latter as "Einstein statistics" for reasons, he explained, of "symmetry".

John Archibald Wheeler (July 9, 1911, Jacksonville, Fl – April 13, 2008, Hightstown, NJ)

"Gravitation and Quantization," Osgood Hill Conference, October 31-November 3, 1972

He is also known for having coined the terms **black hole, quantum foam** and **wormhole** and the phrase "**it from bit**".

Biography

John Archibald Wheeler was born in Jacksonville, Florida. He graduated from theBaltimore City College high school in 1926 and earned his doctorate from Johns Hopkins University in 1933. His dissertation research work, carried out under the supervision of Karl Herzfeld, was on the theory of the dispersion and absorption of helium.

Wheeler was a professor of physics at Princeton University from 1938 until 1976, and then the director of the Center for Theoretical Physics at the Univerity of Texasfrom 1976 to 1986, when he retired from academic work. At the time of his death, Wheeler had returned to Princeton University as a professor *emeritus*. Professor Wheeler's graduate students included Richard Feynman, Kip Thorne, and Hugh Everett. Unlike some scholars, Wheeler gave a high priority to teaching. Even after he became a famous physicist, he continued to teach freshman and sophomore physics, saying that the young minds were the most important.

Wheeler made important contributions to theoretical physics. In 1937, he introduced the S-matrix, which became an indispensable tool in particle physics. Wheeler was a pioneer in the theory of nuclear fission, along with Niels Bohr and Enrico Fermi. In 1939, Wheeler collaborated with Bohr on the liquid drop model of nuclear fission.

Together with many other leading physicists, during World War II, Wheeler interrupted his academic career to participate in the development of the atomic bomb during the Manhattan Project, working at the Hanford Site in Washington, where several large nuclear reactors were constructed to produce the elementplutonium for atomic bombs. Even before the Hanford Site started up the "B-Pile" (the first of its three reactors), Wheeler had anticipated that the accumulation of "fission product poisons" would eventually impede the ongoing nuclear chain reaction by absorbing many of the thermal neutrons that were needed to continue a chain reaction. Wheeler deduced that an isotope of the noble gas xenon (Xe^{135}), by calculating its half-life in radioactive decay, would be one most responsible.

Some years later, Wheeler went on to work on the development of the more powerfulhydrogen bomb under the Project Matterhorn nuclear weapons program.

After concluding his Manhattan Project work, Wheeler returned to Princeton University to resume his academic career. In 1957, while working on mathematicalextensions to the Theory of General Relativity, Wheeler introduced the concept and the word wormhole to describe hypothetical "tunnels" in space-time.

During the 1950s, Wheeler formulated geometrodynamics, a program of physical and ontological reduction of every physical phenomenon, such as gravitation andelectromagnetism, to the geometrical properties of a curved space-time. Aiming at a systematical identification of matter with space, *geometrodynamics* was often characterized as a continuation of the philosophy of nature as conceived byDescartes and Spinoza. Wheeler's geometrodynamics, however, failed to explain some important physical phenomena, such as the existence of fermions (electrons,muons, etc.) or that of gravitational singularities. Wheeler therefore abandoned his theory as somewhat fruitless during the early 1970s.

For a few decades, general relativity had not been considered a very respectable field of physics, being detached from experiment. Wheeler was a key figure in the revival of the subject, leading the school at Princeton, while Sciama and Zel'dovichdeveloped the subject at Cambridge University and the University of Moscow. The work of Wheeler and his students made high contributions to the Golden Age of General Relativity.

His work in general relativity included the theory of gravitational collapse. The term black hole was coined in 1967 during a talk he gave at the NASA Goddard Institute of Space Studies (GISS). He was also a pioneer in the field of quantum gravity with his development (with Bryce DeWitt) of theWheeler-DeWitt equation or, as he called it, the "wave function of the Universe."

Recognizing Wheeler's colorful way with words, characterized by such confections as "mass without mass", the festschrift honoring his 60th birthday was fittingly entitled *Magic Without Magic: John Archibald Wheeler: A collection of essays in honor of his sixtieth birthday*, Ed: John R. Klauder, (W. H. Freeman, 1972, ISBN 0-7167-0337-8).

Wheeler was the driving force behind the voluminous general relativity textbook Gravitation, co-written with Charles W. Misner and Kip Thorne. Its timely appearance during the golden age of general relativity and its comprehensiveness made it the most influential relativity textbook for a generation.

In 1979, Wheeler spoke to the American Association for the Advancement of Science (AAAS), asking it to expel parapsychology, which had been admitted ten years earlier at the request of Margaret Mead. He called it a pseudoscience, saying he didn't oppose earnest research into the questions, but he thought the "air of legitimacy" of being an AAAS-Affiliate should be reserved until convincing tests of at least a few so-called psi effects could be demonstrated. His request was turned down, and the Parapsychological Association remained a member of the AAAS.

In 1990, Wheeler has suggested that information is fundamental to the physics of the universe. According to this 'it from bit' doctrine, all things physical are information-theoretic in origin.

Wheeler: It from bit. Otherwise put, every 'it'—every particle, every field of force, even the space-time continuum itself—derives its function, its meaning, its very existence entirely—even if in some contexts indirectly—from the apparatus-elicited answers to yes-or-no questions, binary choices, bits. 'It from bit' symbolizes the idea that every item

of the physical world has at bottom—a very deep bottom, in most instances—an immaterial source and explanation; that which we call reality arises in the last analysis from the posing of yes–no questions and the registering of equipment-evoked responses; in short, that all things physical are information-theoretic in origin and that this is a participatory universe.

Wheeler was awarded the Wolf Prize in Physics in 1997.
Wheeler has speculated that the laws of physics may be evolving in a manner analogous to evolution by natural selection in biology. "How does something arise from nothing?", he asks about the existence of space and time (*Princeton Physics News*, 2006). He also coined the term "Participatory Anthropic Principle" (PAP), a version of a Strong Anthropic Principle. From a transcript of a radio interview on "The anthropic universe":
Wheeler: We are participators in bringing into being not only the near and here but the far away and long ago. We are in this sense, participators in bringing about something of the universe in the distant past and if we have one explanation for what's happening in the distant past why should we need more?
Martin Redfern: Many don't agree with John Wheeler, but if he's right then we and presumably other conscious observers throughout the universe, are the creators — or at least the minds that make the universe manifest.

On April 13, 2008, Wheeler died of pneumonia at the age of 96 in Hightstown, New Jersey.
In April 2009, Wheeler was the focus of the monthly periodical Physics Today published by the American Institute of Physics. The articles contained reflection by prominent physicists, including many of those for whom he served as an academic advisor.

Bryce Seligman DeWitt (January 8, 1923, Dinuba CA – September 23, 2004, Austin, TX)

"Gravitation and Quantization," Osgood Hill Conference, October 31-November 3, 1972

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a theoretical physicist renowned for advancing gravity and field theories. He systematically approached the quantization of general relativity, in particular, developed canonical quantum gravity and manifestly covariant methods that use the heat kernel. B. DeWitt formulated the Wheeler-deWitt equation for the wavefunction of the Universe with John Archibald Wheeler and advanced the formulation of the Hugh Everett's many-worlds interpretation of quantum mechanics. With his student Larry Smarr he originated the field of numerical relativity.

He received his bachelor's, master's and doctoral degrees from Harvard University. His Ph.D. (1950) supervisor was Julian S. Schwinger. Afterwards he worked at the Institute for Advanced Study, the University of North Carolina at Chapel Hill and the University of Texas at Austin. He was awarded the Dirac Prize in 1987, the American Physical Society'sEinstein Prize in 2005, and was a member of the National Academy of Sciences and theAmerican Academy of Arts and Letters.

He was born **Carl Bryce Seligman** but he and his three brothers added "DeWitt" from their mother's side of the family, at the urging of their father, in 1950. (20 years later this change of name so angered Felix Bloch that he blocked DeWitt's appointment to Stanford University and DeWitt instead moved to Austin, Texas.) He served in World War II as a naval aviator. He was married to accomplished mathematical physicist Cecile DeWitt-Morette. He died September 23, 2004 from pancreatic cancer at the age of 81. He was survived by his wife and four daughters.

Books

- Bryce DeWitt, *Dynamical theory of groups and fields*, Gordon and Breach, New York, 1965
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- S. M. Christensen, ed., *Quantum theory of gravity. Essays in honor of the 60th birthday of Bryce S. DeWitt*, Adam Hilger, Bristol, 1984.
- Bryce DeWitt, *Supermanifolds*, Cambridge University Press, Cambridge, 1985.
- Bryce DeWitt, *The Global Approach to Quantum Field Theory*, The International Series of Monographs on Physics, Oxford University Press (2003), ISBN 978-0198510932.
- "Sopra un raggio di luce", Di Renzo Editore, Roma, 2005.

László Tisza (July 7, 1907, Budapest – April 15, 2009, Cambridge, MA)

“On the Conceptual Structure of Physics,” 14/12/61

United States

In 1941, Tisza immigrated to the United States and joined the faculty at the Massachusetts Institute of Technology. His research areas included theoretical physics and the history and philosophy of science, specifically on the foundation of thermodynamics and quantum mechanics. He taught at MIT until 1973.

Laszlo Tisza, physics professor emeritus and an expert in quantum mechanics and thermodynamics, died on Wednesday, April 15. He was 101.

Tisza, born in 1907 in Budapest, immigrated to the United States in 1941 and joined the MIT faculty. He taught at MIT until 1973, specializing in theoretical physics, thermodynamics, quantum mechanics and statistical physics.

Tisza was a colleague of famed physicists Edward Teller, Lev Landau and Fritz London, and initiated the two-fluid theory of liquid helium. His first encounter with quantum mechanics was in 1928 when, as a mathematics student in Budapest, he transferred to the University of Gottingen and attended Max Born's course. There, he was delighted to see modern mathematics applied to experience and switched his major to physics. Still, his impression that the connection between the physics and mathematics was not clear enough became the beginning of a life-long search.

Later, Tisza worked in Leipzig under Werner Heisenberg, and with Teller wrote his first paper on molecular spectra. The same theme developed into a PhD thesis, submitted in Budapest. Tisza then joined Landau's group in Kharkov and was much influenced by Landau's integration of thermodynamics into modern physics. In 1937, Tisza was associated with Fritz London in Paris, who established the connection between Bose-Einstein statistics and liquid helium. Tisza developed this into an early version of the two-fluid model of superfluidity that became standard for describing experiments.

In addition to the studies he pursued at the Universities of Budapest, Gottingen and Leipzig, Tisza worked as a research associate at the Ukrainian Physico-Technical Institute in Kharkov, Ukraine, and the College de France in Paris before coming to MIT.

Tisza was a fellow of the American Physical Society and the American Academy of Arts and Sciences, and a John Simon Guggenheim fellow. In 1966, he published "Generalized Thermodynamics."

Laszlo Tisza, a physics professor at MIT for more than three decades and a specialist in quantum mechanics and thermodynamics who left a legacy of groundbreaking research, died April 15 of heart failure at the Stone Institute in Newton.

He was 101 and lived in Newton.

Dr. Tisza became famous for developing a model in 1938 "that explained the unusual behavior of liquid helium, which results when helium gas is cooled to within a few degrees of absolute zero," according to a press release from the Massachusetts Institute of Technology. "Earlier that year, experiments had shown that below a certain temperature, liquid helium lost all of its viscosity and could flow through narrow channels with complete absence of friction."

Colleagues in countries where he had trained as a young man with master physicists of the 20th century mourned his passing.

"Laszlo Tisza's creative accomplishments in physics were wide and deep, propelled by a now-rare devotion to frontier problems both in science and in the philosophy of science," said Harvard physics professor Gerald Holton.

"He was one of that group of bright and accomplished men and women who escaped in mid-20th century from the deadly ideologies of Europe, and on coming here helped make this country excel in science."

The last of the many publications Dr. Tisza authored is his "Memoir: Adventures of a Theoretical Physicist," being published by Physics in Perspective.

In its foreword, MIT physics professor and Nobel laureate Jerome I. Friedman writes of Dr. Tisza: "He not only witnessed a number of the developments in physics at close hand and knew many of the major figures, he also made significant contributions of his own. Edward Teller, Lev Landau, and Fritz London were his mentors."

"He started his career with some self-doubt," Friedman said, "but went on to provide the crucial idea that resolved the mystery of superfluid helium. Robert S. Cohen of Watertown, a retired Boston University physics professor and dean, was Dr. Tisza's longtime friend.

"Laci [as he was called] was a pioneer teacher in the field of statistical analysis and quantum physics," Cohen said.

In spite of his achievements, Dr. Tisza was a modest man. When MIT first hired him, Cohen said, Dr. Tisza "thought that anybody of value had left the university and they had hired him."

As a young physicist in Europe, Cohen said, Dr. Tisza had become internationally known for his research on statistical thermodynamics.

In 1934, world-renowned physicist Niels Bohr made his first trip to Russia and took Laci with him, Cohen said. "This was a big, pioneering breakthrough with a Communist country. Tisza went back to Russia after that trip with Bohr and worked for two or three years with the most creative Russian physicist, Landau, who was doing theoretical physics. Landau was like the Einstein of Russia."

Dr. Tisza was born in Budapest on July 7, 1907, "a unique time to be born there," said his stepson Stephen Buka of Barrington, R.I. "At the time, Hungary was the seat of science, culture, and arts, the center of intellectual and cultural life. Laci grew up in Budapest with that culture and had an early fascination with math and problem-solving."

In high school, he received the prestigious Eotvos Prize in physics. Another winner was Teller, a fellow Hungarian and longtime friend, who came to this country to work on its nuclear program and died in 2003.

"Though his father owned a bookstore in Budapest," said Dr. Tisza's wife, Magda, "Laci was quite sure this was not for him."

He studied at the Universities of Budapest, Gottingen, and Leipzig, earning his doctorate from the University of Budapest in 1932. Before arriving at MIT in 1941, Dr. Tisza was a research associate at the Ukrainian Physico-Technical Institute in Kharkov, Ukraine, and at the College de France in Paris.

In 1938, while working at the College de France, Dr. Tisza married Hungarian physician Veronica (Vera) Benedek. With Vera, who became a pediatric psychoanalyst, he left France at the beginning of World War II and settled in Cambridge, Magda said. The couple divorced in 1963.

"When I met Laci a few years before we were married," Magda Tisza said, "I was a widow with two teenage sons and a lecturer in French at MIT." After the couple married in 1973, they settled in Newton, where they spent the next 36 years together.

"I think the highlights for Laci were his studies in Germany in the late 20s where he met the early great minds of 20th-century physics; his two years in Kharkov, working in the Institute of Lev Landau; his interaction and work on liquid helium and superconductivity with Fritz London, and the long, happy years at MIT," his wife said. There he first taught the basics of physics, while many of the faculty were away on wartime work, and, later, established his course on thermodynamics.

Dr. Tisza's classes were among the most popular at MIT. He taught both undergraduate and graduate physics, and often, faculty members would sit in. Abner Shimony of New Haven, who was teaching philosophy at MIT at the time, was among them.

"Laci's course in thermodynamics was brilliant," he said. "He also made significant contributions to the philosophy and history of physics. He was a man of great ideas devoted to understanding the natural world."

After his retirement from MIT in 1973, Dr. Tisza continued teaching and remained highly active there and in the physics department "for many years to come," MIT physics professor Mildred Dresselhaus said.

Inside and outside of the classroom, Dr. Tisza was "a very gentle man," Dresselhaus said. "He was not forceful but demanded excellence from himself and others."

Dr. Tisza never lost his zest for life. He loved good food and good wine. As a younger man, he had been an eager hiker and mountain climber, and he continued hiking into his 90s. Although he lived in the United States for decades, his wife said, "he was proud of the fact that he still spoke Hungarian fluently and enjoyed fairly frequent trips to Budapest."

In 2007, a symposium was held for his 100th birthday. "At that time and beyond, within the last two weeks of his life, Laci remained clear-headed, well informed and, to the last, engaged in his work," his wife said.

In addition to his wife and stepson, Dr. Tisza leaves another stepson, David Buka of Andover, and five grandchildren.