BIOGRAPHY OF HUGH EVERETT (1930 - 1982)

born Nov. 11, 1930, Washington, DC, USA
died July 19, 1982, McLean, VA, USA.

On November 11, 1930, Einstein's famous essay "On Religion And Science" was published in the "Berliner Tageblatt". On that same day Hugh M. Everett, III was born in Washington DC. Hugh lived in Washington until he was 8 years old, when his family moved to the Washington suburb of Bethesda, Maryland, then still a relatively small city. Except for three years as a graduate student at Princeton University, he spent all of his life in and around Washington, DC. (Washington and its Virginia and Maryland suburbs have by now merged into a single urban complex, its parts linked by the Metro system.)
Hugh's grandfather, Hugh Everett Sr., was a printer for the Washington Post at one time. He also owned the Terminal Press, a company where one of his sons, Charles (an uncle of Hugh Everett, III) worked until the mid-1930s. (No later records of the Terminal Press have come to light. Perhaps it, like so many other companies, did not survive the Great Depression.) Hugh Everett Sr. also had two daughters, Kathryn and Virginia.
Hugh's father, Hugh Everett Jr. (1903-1980) was a native of Washington DC, and a graduate of the old Central High School. From 1928 to 1936, he (Hugh, Jr.) held a world rifle record at 1,000 yards. For our purposes, however, it is more important that he won the heart of Katherine Kennedy, a graduate of George Washington University and a beginning writer. She became Mrs. Katharine Kennedy Everett and the mother of Hugh Everett III.
In 1936, when the future shaker of the foundations of quantum physics was six and America was beginning to recover from the Great Depression, Hugh's father, opting for a military career, joined the DC National Guard. Within a couple of years thereafter, Hugh's parents were divorced. Hugh subsequently did not have a good relationship with his mother. She spent some time in a mental hospital, possibly on more than one occasion. She published many stories and poems in literary magazines and other publications (interestingly, metaphysics and space were among her subjects). Decades later a posthumous collection of her poetry was published in her university magazine, authorized by her son Hugh III.
In 1940, with war threatening, Hugh's father received his commission in the regular Army. During World War II, he served as a staff officer with Gen. Mark Clark's 5th Army in Italy.
When he was twelve, Hugh wrote letters to Albert Einstein raising the question

whether it was something random or unifying that held the universe together. Einstein was kind enough to answer. In a letter dated June 11, 1943, he wrote, "*Dear Hugh: There is no such thing like an irresistible force and immovable body. But there seems to be a very stubborn boy who has forced his way victoriously through strange difficulties created by himself for this purpose. Sincerely yours, A. Einstein*".

By the time he graduated from high school, Hugh Everett gave the impression of being a mature, intellectual young man. In 1953 Everett received his bachelor's degree magna cum laude.

Hugh's family was not rich. His father, by this time a colonel, was the commander of a logistics base, Cameron Station, in nearby Alexandria, VA (Alexandria is a 200-year-old city across the Potomac River, where on Cameron Street a former home of George Washington is preserved, and nearby a church which Washington used to visit. In order to pursue his further education at prestigious Princeton University, Everett needed financial support, and he achieved it, being awarded a National Science Foundation (NSF) fellowship. Although he was interested in theoretical physics, it was to the Mathematics Department that he gained admission, and his NSF fellowship called for him to work on game theory. It is conceivable that even early in his graduate career, Hugh was thinking about military applications of game theory. But his main focus at the time was on preparing for the general exams and seeking a way to transfer into the Physics Department.

Everett made friends with other graduate students-in particular, Charles W. Misner (in physics, but with a strong mathematical bent), Hale Trotter, and Harvey Arnold. These four remained friends through Everett's three years at Princeton, and the friendship with Misner he cherished for the rest of his life. Trotter told them about news of mathematics, about algebraic topology. Everett once brought the book by Russian emigrant G. Y. Rainich, Mathematics of Relativity, and said to his friends: "Look, this was a great idea. Why did he stop there instead of going on to finish the job?" (Misner did go on later). (There is another version of this story about Rainich, namely that Peter Bergmann brought Rainich's work to the attention of John Wheeler and Misner, the latter of whom heroically "in the space of very few months produced a wonderful paper (and thesis)".) With Trotter and Misner Everett discussed the idea "that elementary particles would be obviously the way different knots would be knotted in multiple-connected space and we went over there and said all we've got to know is the classification of knots and we'll have the answer." Everett pursued that idea for some time, but said later that getting ready for the general exams (which he actually took in physics near the end of his second year of study) took time away from his theoretical work.

Despite his commitment to game theory and the Math Department, Everett drifted toward physics. In his Princeton Alumni file the list of courses he took in his first term, fall 1953, includes Electricity and Magnetism with George Reynolds and Introductory Quantum Mechanics with Robert Dicke, with the quantum mechanics course continuing into his second term, spring 1954. (In the fall, he also took an Algebra seminar with Emil Artin.)

Everett's summer vacation in 1954 coincided with the so-called Army-McCarthy hearings in the U.S. Congress, which were televised and widely watched. Misner

says that he spent a great deal of time watching the hearings. Everett may have spent some time doing the same thing, but apparently wasn't caught up in them the way Misner was. He (Everett) worked hard that summer on military applications of recursive games.
In his second year at Princeton, beginning in September 1954, Everett was admitted to the Physics Department, with Frank Shoemaker as his faculty advisor. One subject that he studied for the whole year was Methods of Mathematical Physics with Eugene Wigner. (Indeed there is no record of his having enrolled in any other course.) In the second term of that year, spring 1955, Niels Bohr attended a seminar in Princeton, and the local paper published a photo of the 68-year-old Nobel Laureate prior to the seminar surrounded by Misner, Trotter, Everett and David Harrison. In the picture Everett looks thin, with an eagle profile, a cigarette in his hand. (Everett was probably then already a chain smoker. Relatives and others say that he smoked up to three packs of cigarettes per day, a habit that may have been ultimately fatal for both him and, through second-hand smoke, his wife).

The young Princetonian geniuses very likely get acquainted with Bohr's assistant Aage Petersen, who pursued an interest in quantum mechanics with religious zeal. At one party in the Graduate College, after a good bit of sherry, Petersen steered a discussion with Everett and Misner to paradoxes of quantum mechanics. Misner had not yet thought deeply about these paradoxes, but Everett already had. The 24-year-old Everett, obviously, was already a crackerjack thinker, a feature mentioned by all who knew him. He, probably not realizing himself the true scale of his impromptu remark, offered a conceptual scheme in which the inconsistencies (the so-called paradoxes) were removed. That was the idea that the next year would yield a major piece of work, finished even before his dissertation, about the basis of quantum mechanics and would later immortalize his name.

Despite the shift to physics, Everett continued to work in mathematics. In December 1954 (half way through his second graduate year), he delivered a lecture on military applications of game theory in Washington, DC. His Christmas arrival at his parents that year, together with his friend Arnold, was worthy of attention as a local news item (Evidently "parents" meant his father and stepmother Sara T.). (Incidentally, Hugh's father, Colonel Everett, was transferred at this time from Alexandria to the Military District of Washington, DC as the head of supply and logistics. Later he rose to become the chief of staff).
For some months after that Christmas vacation, Everett buckled down to get ready for the general exams, which he passed in the spring. Not until the summer of 1955 did he begin to write up his ideas on quantum mechanics. The resulting 137-page manuscript was typed by Nancy Gore (February 13, 1930 -- November 11, 1998), whom Everett married a year later. Someone advised Everett that if he wanted to finish his dissertation more quickly, he should transfer to John Wheeler as an advisor.
Wheeler, who had been a postdoc with Niels Bohr in the 1930s and had collaborated with Bohr on the 1939 theory of fission, had served as a principal scientist in the Manhattan Project. Everett probably approached Wheeler around the end of 1954 (the middle of his second year at Princeton). He (Everett) later

recalled that before writing the long manuscript he went with the idea to Wheeler and asked, "Hey, how about this, is this the thing to do?"
In the "Calendar of Events", composed by Everett's widow in 1990, the time of writing the dissertation for Wheeler is given as winter 1954-55. This is undoubtedly in error. The archives show that in both terms of Everett's third year (1955-56), he, under Wheeler's guidance, worked on a dissertation referred to in the fall as Correlation Interpretation of Quantum Mechanics and in the spring simply as Quantum Mechanics). The formal submission of the dissertation did not occur until spring 1957 and the famous paper based on it was published in July 1957.
In September, 1955 (the beginning of Everett's third year at Princeton) he presented two small papers to Wheeler. (In Everett's archives, in the same folder with these two, there is stored a third paper, just four pages in length, that may have been written earlier. This third paper deals with objective vs. subjective probabilities. In it, he proves the inconsistency of the concept of objective probability and chooses as the most fruitful way to consistency an acceptance of the concept of hidden variables. The marginal remarks in this paper probably belong to Shoemaker, because the handwriting is different from the usual handwriting of Wheeler). In one of the September papers submitted to Wheeler, Everett introduces a new concept-the correlation of values X and Y (not to be confused with a coefficient of correlation), based on the expectation of change of the quantity of Shannon information about X depending on information about value Y. The paper concludes with a formula for the correlation of observable values X and Y, described by a wave function.

In the second of these two papers, this one nine pages in length, the concept of "Everettism" appears for the first time. Everett writes about splitting of the observer at each measurement (Wheeler wrote in the margin: "Split? Better words needed."), and about a branching "life tree," and admits that this beautiful physics has philosophical implications that must be addressed. In his summary, Everett illustrates the concept by an image of splitting an "intelligent amoeba with a good memory" (Wheeler wrote in the margin: "This analogy seems to me quite capable of misleading readers in what is a very subtle point. Suggest omission.")
On September 21, 1955 Wheeler wrote Everett a note, judging both papers as important works. The first one, on correlation, he is ready to send somewhere for publication, but as to the second one, "Probability in Wave Mechanics," he say he is "frankly bashful about showing it to Bohr in its present form" since it can be "subject to mystical misinterpretations by too many unskilled readers". So, it seems that Everett's theory was too advanced for its time. (Everett received his master's degree that year, probably before submission of these papers to Wheeler. At that time in physics at Princeton, passing the general exams was all that was required for the M. A. degree. Only the Ph.D. required research accomplishment.)

Everett's main 137-page work, "The Theory of the Universal Wave Function", is dated January 1956. (It was reprinted in a 1973 collection of Bryce De Witt. Chapter II of this work was taken from his unpublished article on correlation. Everett recalled later that Wheeler hurried him to a dissertation defense before his third year ended in the spring of 1956, although he (Everett) would have

preferred delay because leaving the University might have meant being drafted into the military. Everett later thanked N. Bohr, H. J. Groenewald, Petersen, A. Stern, and L. Rosenfeld for criticism. But something did delay his defense. Perhaps it was Wheeler's leaving to accept a Lorentz Professorship at Leiden University for the period January to September 1956. In any case, his startlingly original and important work on quantum mechanics caused much less of a stir than it should have, and Everett turned toward a new career full of military secrets.

Everett left Princeton in April 1956, returning in September to take his final examination for the Ph.D. degree (the general examination had been graded "Good;" the final examination was graded "Very Good"). Around this time he was among a select group of scientists invited to form a scientific core of the Pentagon Weapons Systems Evaluation Group (WSEG) under the auspices of the Institute for Defense Analyses (IDA)-a civilian organization that could hire outstanding scientists and carry out defense work without the restricted salary levels of government employment.
It is likely that Wheeler had a role in securing the invitation for Everett, which he (Everett) accepted.
In October 1956 Everett received orientation on "special weapons" (presumably nuclear weapons, to judge by the handsome certificate that he received with a mushroom cloud drawn in the center) by attending an Advanced Class at Sandia Laboratories in Albuquerque, New Mexico. There he acquired a familiarity with, and a life-long love for, computer modeling. When he directed the department of physical and mathematical sciences of WSEG, beginning in 1957, he gained a reputation as an advocate of ever more powerful computers, which took up ever more space. IDA had offices in Alexandria, in the so-called "Paperclip" building. Until August 1957, Everett and his new wife lived in nearby Arlington, where the Pentagon is located. For a little while in the spring of 1957 Everett had to tear himself away from problems of national security in order to complete his academic career.

On March 1, 1957, Everett submitted his 36-page *doctoral dissertation*, "*On the Foundations of Quantum Mechanics*", in a footnote to which he writes that it would be too much to hope that the revised wording avoids every misunderstanding or ambiguity. Bryce DeWitt later published the background of how Wheeler sat down with Everett and told him precisely what to omit from the manuscript of 1956. So when the article "'Relative State' Formulation of Quantum Mechanics" was published, there was published with it an assessment by Wheeler. This article of Everett's differed from his 1957 dissertation only by minor stylistic changes. In comparison with the 1956 paper, however, it is practically new text (no more than 20-30 percent of the texts coincide and the sequence of parts differs). Fortunately, DeWitt, known for his refined courtesy, found time to shed additional light on this history. He has stated that Everett himself re-wrote the "large" thesis (Urwerk) into a "small" one based on Wheeler's instructions. Wheeler, according to DeWitt, was motivated in part by his wish not to spoil his relations with Bohr.

John Wheeler, in his *autobiography*, provides more evidence about this story. On pp. 268-271, Wheeler recalls that he could sense the depth of Everett's dissertation (the draft version of January 1956, the version that DeWitt later called the Urwerk), yet "found the draft barely comprehensible. I knew that if I had that much trouble with it, other faculty members on his committee would have even more trouble. They not only would find it incomprehensible; they might find it without merit. So Hugh and I worked long hours at night in my office to revise the draft. Even after that effort, I decided the thesis needed a companion piece, which I prepared for publication with his paper. My real intent was to make his thesis more digestible to his other committee members". (This interaction with Everett came just after Wheeler's extremely productive period, 1954-56, when he achieved some of his most important results, including the ideas of geons-which were never accepted by Einstein-and of quantum foam.)

On March 10, 1957, Everett and Wheeler started to dispatch preprints of their articles, and during the next two days Everett participated in a large conference on game theory at Princeton. In a copy of their mailing list it is marked that answers came from Petersen, Groenewald, and Norbert Wiener. (In the cover letter it is mentioned that the articles are intended for publication in Reviews of Modern Physics as part of the Proceedings of "the recent Chapel Hill Conference." That conference, on the subject of "The Role of Gravitation in Modern Physics," was held at the beginning of March at the University of North Carolina, Chapel Hill. Among the conference participants was Richard Feynman, but, according to the conference organizer, Cecile DeWitt-Morette, Everett did not attend.)

On April 15 1957, Everett formally presented his dissertation for defense. Wheeler and his faculty colleague V. Bargmann wrote in their assessment that Everett's formulation of the problem and his solution were almost completely original, and suggested that the thesis "may be a significant contribution to our understanding of the foundations of quantum theory." Accordingly, they recommended acceptance of the dissertation. The oral examination took place on April 23. The principal examiners-Wheeler, Bargmann, H.W. Wyld, and R. H. Dicke-concluded: "The candidate passed a very good examination. He dealt with a very difficult subject and defended his conclusions firmly, clearly, and logically. He shows marked mathematical ability, keenness in logic analyses, and a high ability to express himself well".

***Bryce DeWitt letter (1957)*:**

Not long after the defense, Wheeler received from Bryce DeWitt, who was the editor of the proceedings of the Chapel Hill conference, an eight-page review of Everett's paper. (DeWitt, incidentally, did not know that Everett's paper was a Ph.D. thesis.) Wheeler sent the review to Everett, who then provided a four-page response to DeWitt. DeWitt wrote that Everett's work had rather a more philosophical than a physical character, which was acceptable, since "physicists themselves are obliged to be their own epistemologists." He astutely surmised that there was not simply a verbal but also a more substantive parallelism between Everett's "relative state" and Einstein's "relativity." Everett, in his paper, treated the external observer in the way that Einstein had done with a privileged inertial frame. However, although agreeing with Everett's physics and his logic (in

particular, with Everett's assertion that probability theory and measure theory are mathematically equivalent), DeWitt decidedly disagreed with the epistemological conclusions that Everett reached. DeWitt, based on his own experience, rejected the reality of the world branching. Everett liked DeWitt's analysis so much that he sent parts of it to others with whom he was corresponding.
Everett, in his response to DeWitt, willingly engaged in discussion about what should be understood as a valid theory in general, but his main effort was given to convincing DeWitt that, according to the proposed concept, each parallel observer would not feel branching. Instead, he argued, the image of a constantly branching world represents not an abstract formalism but an isomorphic description of reality. Prior to publication, Everett was able to add these explanations in a footnote to the fifth part of his article (by way of analogy, he cited Newton's mechanics confirming Copernican theory just by proving that Earth's inhabitants should not feel Earth's motion). Everett's article and the companion contribution by Wheeler appeared in the July 1957 issue of Reviews of Modern Physics (an issue that also contained a paper by Misner based on his thesis).

And then-nothing. Although Wheeler once mentioned Everett in a sequence with Newton, Maxwell, and Einstein, the scientific world preferred not to notice the article by Everett, which Max Jammer in the 1970s named "one of the best kept secrets in this century". This silence of non-recognition seriously wounded Everett for a long time. Despite his intellectual independence even from the most authoritative judgments of others, he was emotionally rather sensitive to them, as one can infer from his correspondence and in the recollections of the people who knew him.

Meanwhile Everett was taken up with the life of young father. He and Nancy had been married in 1956 and their daughter Liz was born on July 7, 1957 (she lived only until July 11, 1996). However, Everett's wife and son later confessed that he, like John von Neumann and Einstein, "wasn't really made for family life." Everett lived mainly in the world of intellect, and his work demanded a permanent fountain of ideas.
Here is how he succinctly characterized his work in 1965: "Responsible for research in mathematical techniques and models; selection, programming and operation of WSEG computing facility; project leader several WSEG projects; developed numerous mathematical models and techniques in field of military operations research; developed numerous computer programs, subroutines, and utility routines in support of WSEG projects". His obituaries spoke more revealingly a bout this period of his life. He made major contribution to national security, pioneered the application of game theory and optimization methods in the practical analysis of policy alternatives (almost superpositions!), and in WSEG, which was assigned problems of particular challenge and complexity, he was the recognized leader-the one to whom everyone went for advice and counsel. Also in the solution of practical problems Everett was often ahead of his time. For example, in the late 1950s he created a computer text editor with page layout (what would now be called a word processor), which he later described as the most complicated task he had ever worked on. The term "Everett algorithms" is commonly used among mathematicians; these algorithms were the most effective

in their time.

Needless to say, much of what Everett worked on was classified Secret or Top Secret. Only recently has some of that come to light. In 1957 WSEG participated in global-scale UFO research and investigated the efficiency of Minuteman missiles. Later, this organization developed anti-noise radar techniques. But most of the archives of IDA are still strictly classified. There are but two unclassified publications by Everett in eight years of activity in WSEG/IDA, not counting a monographic article on recursive games in his "doctoral" year (mathematicians refer to this article as a "thesis"). The two other unclassified articles are "The Distribution and Effects of Fallout in Large Nuclear Weapon Campaigns", co-authored with one of his best friends, George E. Pugh, and a pioneer article on Lagrangian relaxations.

Everett's connection to theoretical physics weakened year by year. Early in 1958 Everett received an inquiry and sent his article on relative states to the Institute for Theoretical Physics, Budapest. In the spring of that year, Wheeler visited Everett at the Pentagon. They carried out a brisk conversation and had lunch with George Pugh. (It is perhaps during this visit that Wheeler learned that Everett "had reprogrammed nearly all the computers" in the Pentagon.) In January 1959 Wheeler wrote Everett about interesting work of Michael May (the capability to state how the outcome of a measurement is connected to the accuracy of the apparatus), and incidentally invited Everett to speak in the beginning of May at Princeton at a special seminar on the theory of relative states. It is not known whether Everett did (or could) accept this invitation. In fact, by May 1959 his career in physics had received one more setback.

At Wheeler's insistence, Everett in March 1959 visited Copenhagen in order to meet with Bohr (and with Petersen and Misner as well). Evidently Wheeler wanted to know the attitude of his mentor to the theory of his graduate student. Everett, with his wife, stayed in Copenhagen for six weeks, until April 21. The meeting with Bohr did take place, but the 75-year-old patriarch was not inclined to discuss seriously "any new (strange) upstart theory" and, it seems, did not give Everett a chance to express himself. Everett has only the most gloomy memories of this meeting, and was rather reluctant to recollect it at all. From Frank Tipler I have learned that Mrs. Everett said in a private conversation with L. David Raub that "Bohr refused to talk to Everett about the MWI [many-worlds interpretation]".
But in his Copenhagen hotel, the Osterport, Everett came up with a big mathematical idea, which, five years later, became the intellectual contribution to and foundation for the company "Lambda," which brought big money to him. This idea, scratched, in the best traditions of science fiction, on three sheets of hotel letterhead, consisted of the application of Lagrange multipliers to the solution of optimization problems. The idea had to ripen for four years-perhaps because of declassification delays. (As a sign of Everett's transition from physics to mathematics during these years one may take note of a letter from P. Greene to Everett, in which interest to the concept of relative states is claimed in connection with studies of properties of cognitive systems and perceptual machines).

One might say that Everett was a model of punctuality. In two of his main ideas one can discern features of a stable paradigm: Both ideas were born with the help of Bacchus), and both were published simultaneously with the birth of a child (in the second case it was his son Mark Oliver, born on April 10, 1963).
Everett's ideas in mathematics as well as in physics have not received due recognition-although mathematicians, with perhaps a twinge of jealousy, say that to reduce Everett only to a physics genius is to diminish him . In some high-school math textbooks, the name Everett has been listed in rather distinguished company: "... an interpolation polynomial may be written in one of the forms suggested by Lagrange, Newton, Stirling, Gauss and Laplace-Everett"). On the other hand we read: "It was Everett who first suggested, as early as 1963, the use of Lagrange multipliers in discrete optimization problems. However a boom in this area began after the appearance of work by Hald and Charnes devoted to the traveling-salesman problem". Abe Charnes was an important figure in mathematics , and in 1965 he published a note about Everett's method , from which one could see that the master misunderstood one of Everett's key concepts-the "gap." (As H. Greenberg notes, most people in optimization theory now use the term routinely, but hardly any remember it was Everett who defined it first.)
Everett's last printed work, a brief explanation in answer to Charnes' note, obeyed the punctuality paradigm: It appeared simultaneously with the birth of his newest "child," the private corporation "Lambda" .

Everett's father retired in 1958 and his mother died in the early 1960s. The 1960s were a trying time in America. First there was the Cuban missile crisis in 1962, then an escalating conflict in Vietnam.
Permutations are not unknown in the Pentagon. At the end of August 1964 the Defense Research Corp. (DRC) of Santa Barbara, California, which had been engaged in defense research only, announced the formation of Lambda Division (also called the Lambda group), which, in addition to military problems, would work also to solve civilian ones in the general areas of systems analysis and computer modeling. Everett left his post as director of the mathematics and physical sciences division of WSEG and was named head of Lambda. Joining him in Lambda were George E. Pugh from the Arms Control and Disarmament Agency and three experts from IDA-Lawrence B. Dean, Jr., Paul M. Fitzpatrick, and Robert J. Galiano (very likely, the "Bob" to whom Everett wrote from Denmark about Lagrangian methods). Lambda Division set up its headquarters in a new building at 1401 Wilson Boulevard, Arlington, with over a million dollars in government study contracts (a hefty amount in 1964). Later Lambda moved to 1501 Wilson Boulevard. The photos illustrating the newspaper articles about Lambda show a highbrow young Ph.D. in glasses and with a soft smile, rather similar to that of Mona Lisa.
It is generally accepted that scientists are impractical people, but Everett didn't fit that stereotype. After working less than a year in the Lambda division of DRC, he, with the same four partners, founded an independent firm-Lambda Corporation-and on July 1, 1965 he was elected its President. Apparently, civilian problems in the new company took second place, because the scale of its military work increased. Two employees recalled Lambda Corporation as the organization

that was responsible for much of the strategic analysis work in support of the systems analysis program at the Pentagon while Robert McNamara was Secretary of Defense, and in an obituary, Princeton's Graduate School praised Everett as a strategic adviser and analyst during the Vietnam War (it said also that he "was in part responsible for the application of game theory to the analysis of ballistic missile performance").

Lambda was intended as a company where people with extraordinary intelligence and problem-solving ability (which indeed describes its small staff, and certainly its leader, Everett) would be assigned problems exceeding the usual degree of complexity and challenge. It is such problems that are interesting to such people. The staff included physicists, mathematicians, and chemists (among them were those who had worked in the Manhattan Project). The idea succeeded very well. From recently written memoirs by Joseph George Caldwell, an ex-member of the technical staff of Lambda Corporation who developed there a practical method for applying the famous John Nash solution (for which Nash later received a Nobel Prize), one learns that "Lambda Corporation's specialty was solving constrained optimization problems, especially two-sided optimization problems, such as occur in warfare." Lambda developed the Quick General War Game Simulator for the Department of Defense.

Turning to the personal side of life at the company, Caldwell wrote, "Every Friday afternoon was 'Sherry Hour' at Lambda Corporation. Once a month we had a 'pot luck' square-dance dinner. Once a month we played poker in the Lambda poker group, which evolved from the WSEG poker group. There was an annual Lambda family picnic. Hugh and Fred Miercort bought a beach condo in Charlotte Amalie in the US Virgin Islands, and a number of us stayed there. Hugh was married to a very pleasant, down-to-earth lady." Mr. Caldwell adds some private recollections about Everett: "His home had an indoor swimming pool. He . . . enjoyed eating in fine restaurants. He enjoyed taking pictures with the microfilm camera that he always carried in a small case attached to his belt. He smoked his cigarettes with a filter, had long, swept-back black hair and a mustache/goatee, which he stroked while reviewing his poker hands". Caldwell also recalls Nancy Everett: "She enjoyed the Lambda monthly square dances, and the wives of the Lambda staff (most were men) enjoyed chatting with her. Although her husband was the founder and president of Lambda, there was not a trace of her taking advantage of this social position, as many women would. She chatted with the other women on a 'peer-to-peer' basis."

So, in the 1960s Everett was recognized as an applied mathematician. Inquiries now came to him concerning Lagrange multipliers. In print he is mentioned in the same connection, and many his colleagues of those years found out only years later that Everett was also a physicist. An operations research student, H. Greenberg, introduced to Everett by Dr. Mandell Bellmore, recollects that in 1967 and later he discussed with Everett the Lagrange multiplier method, as well as other subjects.

Everett liked solving problems, especially those that others could not solve. Greenberg admired Everett, his honesty, his generosity with compliments, and his encouragement. Everett taught him some of his techniques of application of his method, and was open with his ideas, even though he was in a highly competitive business.

Administration probably attracted Everett less. After being the president of the Lambda Corporation for three years, he was succeeded by L. Dean, reserving for himself only the post of chairman of the board. Fitzpatrick by that time had left the management of the firm, and Galiano and Pugh served as vice-presidents. The board of directors included three leaders of General Research Corp. (a firm that G. Pugh would later join), the president of Boston Capital Corp., and a vice-president of Control Data Corp. An overview of the Lambda Corp. is given by Mr. Caldwell as follows: "Lambda Corporation grew rapidly until the early 1970s. With the advent of massive spending on the Vietnam War, and the 'Great Society' welfare programs, defense budgets became tight, and the firm was eventually absorbed by General Research Corporation (formerly Defense Research Corporation) of McLean, Virginia". During its "civilian" period Lambda did some contract work for American Management Systems (AMS) and about 1970 "was awarded (from Merck & Company) the largest private operations research contract ever awarded, to conduct an analysis of the economic feasibility of modular manufacturing methods for production of chemicals and pharmaceutical drugs".

A recollection by Dr. John Y. Barry shows that Everett's relations with client companies were not always smooth. (Barry, despite his negative view of Everett's ethics, held his intellect in highest esteem): "I knew Hugh Everett when we both worked in the Weapons Systems Evaluation Group in the Pentagon during the early 1960s. . . . In the middle 1970s I was in the basic research group of J. P. Morgan and hired Lambda Corporation to develop . . . the Bayesian stock market timer. He refused to give us the computer code and insisted that Lambda be paid for market forecasts. Morgan could have sued Lambda for the code under the legal precedent of 'work for hire'. Rather than do so, we decided to have nothing more to do with Lambda because they, Hugh, were so unethical. We found that he later used the work developed with Morgan money as a basis for systems sold to the Federal Government. He used us. . . . In brief a brilliant, innovative, slippery, untrustworthy, probably alcoholic, individual."

Here's an impression by another ex-colleague of Everett, Dr. Paul Flanagan (who was a Lambda employee): "Hugh was the smartest man I have known, but only smart in some areas. His understanding of emotions and people was limited and he hurt many people by how he treated them. Hugh the thinker was very different from Hugh the human being."

***DeWitt reminds physicists about Everett (1970s)*:**

During those years, Everett's contact with quantum mechanics was limited essentially to reading Physics Today. In 1968 the theory of relative states was mentioned in a book by Aage Petersen, but on the whole Everett's concept was largely forgotten or treated as if taboo. Bryce DeWitt recollects that even the recognized expert on the history of quantum mechanics Max Jammer, who visited DeWitt in 1969, had never heard of his interpretation.

(Here is one more vivid scene. About 1970 Everett interviewed a young Ph.D., Donald Reisler, for a job at Lambda Corp. After lunch, he rather timidly asked if Reisler had read his paper on the relative-state formulation. Reisler thought for an instant and replied, Oh my God, you are that Everett, the crazy one who wrote

that insane paper. I had read it in graduate school and chuckled, rejected it out of hand, and went on with my straightforward business. They quickly became friends.)
DeWitt resolved to rectify this situation. He wrote an article for Physics Today, which appeared in September 1970, after which Everett could no longer be ignored. (A flood of reader responses, with comments by DeWitt, followed.) Soon after the publication of the article DeWitt contacted Everett asking whether the large work (about which Everett has written to him in 1957) still existed, and Everett promised to look for the manuscript. At this point Wheeler withdrew his support for Everett's view (because he disliked the publicity surrounding it, in DeWitt's opinion).
DeWitt, with the help of his student R. Neill Graham, reviewed some 500 articles on interpretations of quantum mechanics. And in 1971, after receiving from Nancy Everett the unique saved copy of the "large" thesis, he asked Everett what he thought of the idea of publishing it. Everett gave his permission with the proviso that he not be responsible for the technical work of editing, proofreading, etc. DeWitt accepted this condition (those duties were performed by Neill Graham), and in April, 1972 Princeton University Press received DeWitt's proposal for a collection including Everett's long work and articles by leading physicists on the subject. Four months later the proposal was accepted, although not without remarks about how much time had passed since Everett's work was written and about its unpopularity in many quarters. It was at first planned to issue the book in the winter, then in the spring; in fact it was published only in the autumn of 1973. For the past fifteen years it has been hard to find a copy of the book, but the preface by DeWitt (with elegant and appropriate epigraphs from the writing of Jorge Luis Borges and William James added) is accessible on the Internet. It is Everett's last (and most important) publication. (Later reprints have appeared.)

The appearance of this book is consistent with the paradigm "*a publication—a child.*" In that year (1973), Everett resigned from Lambda Corp. and with his friend Don Reisler founded DBS Corporation in Arlington, Virginia, a company devoted, at least initially, to civilian developments solely in the sphere of information science and data management. Reisler and Everett had been friends for three years and apparently had markedly similar natures. Both were "solution people", rather than "utility people." Reisler took on the administrative duties of the president and Everett became the chairman of the small (15-employee) company. They put copies of their dissertations in a box and made a pact that they would not open the box or discuss its contents for ten years—time that should be devoted to building the business. If they succeeded, they reasoned, then after ten years they would have time to read and discuss the material. If they did not succeed, then they would also have time since the business would have folded.
The Everetts moved to a house in an upscale Washington suburb, McLean, VA. Everett's father, with his wife Sara T., settled in nearby Berryville, VA. Hugh and Nancy's children acquired from Everett if not his talents in sciences, then definitely his commitment to rituals and his ability to focus relentlessly on a single thing. Their older child Liz, each day after school, listened to an album of Neil Young, "After the Goldrush," from beginning to end. Mark, the younger child,

was a terror at home playing his toy drum set, purchased for him at the age of six at a garage sale next door.

Sales of the DeWitt-Graham collection were not bad. By February, 1974, a few months after its publication, 485 hardbound and 326 paperbound copies had been sold, more than half of them abroad. The book bore fruit, as Everett began to be mentioned by physicists, and finally general readers heard of him too—at least, readers of science fiction and the popular magazine Analog. The Everetts were visiting in New York when an issue of Analog including reference to his work appeared. Unfortunately, Everett learned about this issue only later, by which time unsold copies of the magazine had been recycled. But as the result of an inquiry sent to the editors, the Everetts apparently obtained some copies, one of which was sent in Princeton, where it created a small furor. A Xerox copy was made for Wheeler, who by then had moved to teach at the University of Texas in Austin. Before long the many-worlds view became a whole branch of science fiction, and posthumously Everett himself became a character in stories and novels. As usual, it seems that writers invented it all before the scientists. Fans have found in a 1938 story by half-forgotten Jack Williamson, "The Legion of Time," this statement: "Geodesics have an infinite proliferation of possible branches, at the whim of subatomic indeterminism". Other many-world stories appeared early, including Philip K. Dick's "Captive Market," written in 1954 and published in April, 1955. However, the science-fiction ideas were more anti-Everettian than either pre- or pro-Everettian: The principal distinction is that an Everettian observer can observe only one branch world. (The next conceptual revolution was proposed only in 2000 , but that is quite another subject.)

This sketch cannot avoid a glance at the *family life* of the Everetts. Whether you look at it with today's standards or through the filter of the 1970s, the Everett's family life was certainly not ideal. The history of their son Mark tells part of the story. In June 1997 Gina Morris, an interviewer of "Select Magazine," quoted words of rock star E (a.k.a. Mark Everett), who had been a pupil at a private school in 1969: ". . . father, a physicist, was never around. At home, irony and sarcasm were substitutes for love." She went on: "[Mark] became dangerously introverted, and was regularly visited by the psychologist". Suffering from spiritual loneliness, Mark found rebellious escape in music (from the drums he shifted by the age of 11-12 to making up little songs on the family's upright piano). In school, his loneliness was replaced by sudden popularity as "a cute little drummer kid" in the school band. In the wide-open 1970s he fell victim to the temptations of that time, and in 1976 was arrested and expelled from school for using alcohol, marijuana ("grass"), and apparently other drugs ("powder"). Fortunately, drugs did not take over his life or ever become a big problem for him. After a five-year course of therapy Mark defeated his addictions . Afterwards he and his rock group eels followed a dizzying path of popularity from the bottom to the top of the charts.

Hugh Everett had his own hobbies: wine making, photography (he never parted with his miniature camera), and CB transmitting (he was lovingly called "The Mad Scientist" by his CB buddies). He also enjoyed ocean cruises.

On the business front, Everett never slowed down. He diversified into the mini-computer business and, with one of his ex-employees, Elaine Tsiang Reisler,

he founded the software engineering company Mono-Wave. (She was Elaine Tsiang when she had worked for Everett and, earlier, when she was DeWitt's student. Her married name was pure coincidence. Her husband was no relation to Everett's friend and colleague Don Reisler.) Mono-Wave is the only one of Everett's firms still in operation: its main business is speech recognition He also delivered other software products to the market. And he branched out beyond scientific applications. Everett was founder and owner of Key Travel Agency in Rosslyn (a district of Arlington) and owned a condominium rental unit on St. Thomas. Yet all of these were, as his wife wrote, "side ventures".
Everett's business in DBS included such things as designing "a novel means of protecting computer files and programs, a method for detecting inefficiencies in the use and application of computers, an algorithm for scheduling the operation of a large-scale chemical plant, a method of optimizing the routing of school buses, techniques for data handling, and so many others".

Physics, for Everett, existed in a parallel world far from his business ventures. However, in the spring of 1977 he received and accepted an invitation from DeWitt and Wheeler to participate in their seminar on human consciousness and the problem of a computer's "consciousness" at the University of Texas in Austin. Everett bought half a dozen copies of the anthology of 1973 from Princeton University Press, put them and his family in an automobile, and set off for Texas. (His son Mark refutes a widespread version that they traveled in a Cadillac. Mr. Caldwell writes that it was a "long black 1964 Lincoln Continental", which is America's other luxury sedan.) He also took with him a copy of the just-published book by G. Pugh, The Biological Origin of Human Values, in which a chapter is devoted to Everett's self-learning Bayesian Machine. In May he and his family rolled into Austin with flair. There he met DeWitt for the first (and, in fact, the only) time and found him to be in all respects a delightful gentleman. Everett, a chain smoker, was given a privilege rarely if ever granted to anyone else, to smoke in a University auditorium.
Half of Everett's four-hour seminar was devoted to the book by Pugh, which may have been relevant to a question Wheeler had been pondering in Texas: Does human consciousness somehow play a critical role in determining the laws of physics (Wheeler's "participatory universe")? Everett did not agree with Wheeler's views on this subject. Wheeler, in his turn, was very ambivalent about Everett's views. Some weeks later, at the Misners, Wheeler told Everett that he mostly believed his interpretation but reserved Tuesdays once a month to disbelieve it. In fact, his disbelief was probably more pronounced than that. Several months later, Wheeler asked that the theory be referred to as that by "Everett-and-no-more-Wheeler". As Wheeler made clear in a later letter sent to P. Benioff, he wanted to dissociate himself from Everett's theory. In the Benioff letter, he states firmly that the theory was entirely conceived by Everett, and adds, "Though I have difficulty subscribing to it today, I still feel it is one of the most important contributions made to quantum mechanics in recent decades and feel the credit for it should go where credit is due".
During lunch in a beer-garden restaurant that the graduate students liked to frequent, DeWitt arranged for Wheeler's graduate student David Deutsch to sit next to Everett. (In terms of research interest, Deutsch was, in effect, DeWitt's

student as well.) Deutsch was interested to know what defines the Hilbert space basis with respect to which one defines "universes," in the general case (not just for perfect measurements, where Deutsch considered the answer obvious). Everett said it was the structure of the system itself. Deutsch asked: Which aspect of the structure, the state itself, the Hamiltonian, or what? Everett answered the Hamiltonian, but he didn't think that this was an important issue. Their conversation proceeded all through lunch, and Deutsch stresses that (contrary to what has been stated by historians) Everett did not prefer the term "relative states," being, on the contrary, extremely enthusiastic about "many universes" and being very stalwart as well as subtle in its defense. Everett, for his part, was pleased by the meeting with "young Britishers" (apparently including Deutsch). Deutsch remembered Everett as very impressive person — full of nervous energy, highly-strung, a chain-smoker, very much in tune with the issues of the interpretation of quantum mechanics, unusual for one having left academic life many years before.

Everett was the star of the seminar. Both before and after it he was enclosed in a crowd of graduate and postdoctoral students. Other participants have preserved similar memories. Everett himself was buoyed up by the encounters because he believed that one-on-one conversation is so superior to written communications for exchanging ideas.

In an answer to historian B. Harvey, written some weeks later, Everett says that he certainly approves of the way DeWitt presented his [Everett's] theory (and it is in line with Deutsch's story), but adds that he does not follow the current literature on quantum mechanics and would be grateful for being supplied with references or reprints in this field. (One has to assume that Everett meant only that he had not been concentrating on quantum-mechanics research. He could hardly have been the star of the Texas seminar or so greatly impressed Deutsch if he had not been pretty much up to date.)

Later in May, when the Misners, celebrating their wedding anniversary, visited the Everetts, someone had the happy idea of recording on tape their recollections of their years in Princeton, accompanied by good wine and Mark's drum-set rhythms. (The noise of the drums occasionally interfered with speech, so that in the tape transcript there are lacunae. It nevertheless remains a most valuable source, although the speakers' pasts keep going off in orthogonal directions—but what else is one to expect from the author of the many-worlds concept?)

In 1977 Everett faced not only glory, but also the duties of a suddenly venerated physicist. J.-M. Levy-LeBlond and P. Benioff were among the first to send him their work for comments. Levy-LeBlond raised the question of terminology: If "there is but a single (quantum) world", he said, it is not right to speak about "many worlds", "branching," and such concepts, which revert to a classical picture of the world. Everett judged Levy-LeBlond's article to be "one of the more meaningful on this subject." (In an earlier draft copy of his answer he wrote that Levy-LeBlond "grasped the general thought behind" the interpretation) and, with an apology, said that although for three months he had been planning to write a large analysis, he failed because it always seemed too difficult to find enough time.)

In his letter to Levy-LeBlond, Everett explained that the term "many worlds" was not his, and said he "had washed my hands of the whole affair in 1956". (In his

draft copy, where he gave the date as 1955, there still was the phrase: "Far be it from me to look a gift Boswellian writer in the mouth!") The first manuscript by Benioff Everett also diligently annotated with pencil, then tried but failed to reach Benioff by phone. Later, his enthusiasm ran low.
That year, 1977, which probably brought *a peak of recognition* to Everett, ended badly. On December 4, the DBS office was burglarized (the thief left on a wall an inscription: "YOU LOST SOMETHING"), and on December 30 Everett's uncle, Charles Everett (1911-1977), who had served for forty years as a printer at "The Washington Post" and had just retired in March, died of cancer at Fairfax Hospital in Virginia. Half a year later, on July 20, 1978, his wife followed him - literally on the eve of the engagement of her grandson (the Everetts show a sort of strange "relativeness" of key dates). That summer Everett's children went to Hawaii to visit Liz's Army boy friend, and Everett with his wife visited the Misners in Maryland, where they saw Wheeler, who was there to receive an honorary degree from the University of Maryland.

Additional signs of recognition came to Everett in 1978. In one manuscript sent to him by a medical doctor named Berley, his thesis is generously called an "almost fitting tribute to Einstein". Although Berley's manuscript was on art, perception, and the mind, Everett took the trouble to respond, saying that Berley described his [Everett's] work "reasonably accurately", and he recommended that the doctor read the book by G. Pugh . Nancy later wrote to Wheeler that it would be fun to read those words ("almost fitting tribute to Einstein") in a book. (Eventually, in May 1980, Berley's book did appear.)
Another book, by Andre Vidal, with a dedicatory inscription in French, came in 1978, and in June of that year, Syohei Miyahara, the President of the Physical Society of Japan, wrote to Everett that his Society would like to include the translation of Everett's "valuable paper" of 1957 in an anthology on the theory of measurement in quantum mechanics. Soon he received from Everett a copy of the 1973 anthology and permission to publish any two his works from the anthology.
But not everyone understood or embraced Everett's work. Once Everett was asked by Physical Review Letters to review a submitted paper called "Quantum Attention Theory." It was so far off base that Everett chose to cast his negative review in sarcastic terms. He wrote that the paper might be "an example of state-of-the-art computer generated configuration of buzz words specific to a particular field — in which case it is a real advance in automatic syntax and grammar generation, and the program should be published as a major advance."
Early in 1979, Everett's daughter Liz moved to Hawaii to start a career in the world of TV and radio. It seems that Wheeler may have played a role in inspiring her to choose this career, when she met him during her family's memorable trip to Austin in May, 1977. (This probably came about not because Wheeler considered TV and radio especially appealing fields in which to work, but because he encourages every young person to do whatever that person has a passion for.) On March 13, 1979 Wheeler himself had a flirtation with TV. He hosted a popular scientific Einstein show on the Public Broadcasting System (PBS). The Everetts saw the show and enjoyed it. Hugh even placed a call to Wheeler to congratulate him and to find out if it meant the beginning of a new career as showman, but Wheeler was away from Texas at the time.

More seriously, Wheeler tried to change Everett's career. He (Wheeler) advanced the idea of creating a working group at the Institute for Theoretical Physics (ITP) in Santa Barbara, California, devoted to the quantum theory of measurement with the mandate to search for the deepest foundations from which it would be possible to derive quantum mechanics. In July 1979, he wrote to ITP's director, Douglas Scalapino, saying that he had received Everett's consent to get back into physics, and that Everett could conceivably get free of other commitments for a period of time and go to work at the Institute.

Nothing came of this plan, and it may have added a pinch of salt to an old wound. Even junior employees at DBS noticed that Everett went out of his way to avoid speaking about his physics past. However, a Renaissance Man (recollecting the first epigraph at the beginning of this piece) doesn't suffer long from depression. An extraordinary young DBS staff member, K. Corbett, working on computer programming at the company in 1979-1980, wondered if Everett thought of computer programming as an arena in which he could show off his superior intellect. (Corbett had graduated with honors from Princeton University with a B. A. in English Literature, and was self-trained as a programmer.) One wonders, too, if Everett was influenced by being dragged along all those years by logic, learning machines, and artificial intelligence. Corbett recalls that the small staff of DBS were all in awe of Everett.

Both Everett and Reisler were in love with what was still a novelty in those days—the personal computer. In DBS there were only two, one of which was used personally by Everett. Most of DBS's computing work was done on timesharing facilities leased from American Management Systems (AMS) in nearby Fairfax, Virginia. Everett, for the rest of his life, was an AMS vice president. Today, AMS is an international corporation with an annual income of over a billion dollars. Retrospective estimation, based on its present growth rate, suggest that at the end of the 70s AMS income amounted to tens of millions of dollars per year. (Strangely, it is the only institution that has not responded to my inquiries about Everett.) Everett was a true computer hacker at heart. He claimed to have invented a technique to deliberately scramble program code prior to delivery to the customer, and took inordinate satisfaction from this practice. (His hacking was quite disinterested and did not involve breaking into secure sites or disrupting other computers, activities now associated with the word.) Everett and Reisler became almost evangelical about computers; they just could not control themselves in the face of glowing perspectives, including freedom from the control of authorities. The bitter paradox is that they were ten to twenty year ahead of their time. DBS lost money and had to shut down. Now, some of the ideas conceived first at DBS are starting to be invented by others.

Some of the fullest memories of DBS come from Keith Lynch, who worked there for ten months (after being released from prison!). He had been accused—falsely, as it turned out—of the 1977 burglary and was convicted and sentenced to six years in prison. His friends showed Reisler several letters written by Lynch in prison to prove that the wall inscription was made by another hand. Reisler took note not only of the handwriting but also of the content of the letters, and decided they showed talent. In July, 1979, only two days after being paroled, Lynch became a programmer at DBS (where the inscription was still on the wall!). Lynch describes the small suite of DBS offices on the 15th floor, with an excellent

view from its north-facing windows. (Had the windows faced east, the view would have been even more notable: the Lincoln Memorial two kilometers away, the Washington Monument about a kilometer farther, and the Capitol Dome some two kilometers beyond that.) According to Lynch, Everett's desktop computer, a Radio Shack (Tandy) TRS-80, would occasionally be running something when Everett wasn't around. Lynch gained the impression that this work wasn't business-related but had something to do with physics or math or sheer curiosity.
To Lynch Everett appeared aloof, off doing his own thing, not involved with the day-to-day business of DBS, which included analyzing statistics to look for patterns of racial discrimination, sex discrimination, police brutality, etc., mostly for the Department of Health, Education, and Welfare (though Lynch admits that he could be mistaken, since he was very new to the world of business then).
Everett's digital alarm clock played a short synthesized tune at 11:30 every morning, and everybody at DBS had to drop whatever he or she was doing (unless it was very urgent) and eat. Also, right after work on Fridays, they all had dinner together at an Italian restaurant across the street. Everett was at his most sociable in those relaxed settings. He remained a man of the 1950s—he smoked, drank, ate high-fat foods, and argued that medical science was mistaken about cholesterol being dangerous. He was quite out of step with most educated Americans in the 1970s.
Lynch tells us that he and the staff were once somewhat disturbed when Everett showed them a gold coin from South Africa—a nation which at the time still had its repressive system of apartheid. Everett's net worth was just barely a million dollars, and once he mentioned someone's proposal to tax all money over a million dollars at 100%. He would see nothing wrong with this, he said, if, whenever his net worth fell below a million dollars, the government would bring it back up to a million dollars.
What makes Lynch's recollections especially valuable to the biographer and reader is that Lynch, more than any other DBS employee, shared with Everett many interests and views in physics, math, logic, paradoxes, religion, and libertarian philosophy. They would converse at length on these subjects during lunches and dinners together. Everett's political philosophy was very similar to what Harry Browne has stated: One shouldn't waste one's time trying to change the government, since no matter how restrictive government becomes, there will always be ways for a clever person to find loopholes. In fact, the more restrictive it becomes, the more loopholes there will be.
Everett was *a committed atheist*. He once claimed he had a disproof of the Catholic faith. (He chose not to share this "disproof" with Lynch. He said he had shared it once with someone who was strongly Catholic and also strongly committed to logic, and that person was driven to suicide. Everett was afraid that Lynch would promptly use it on Catholics.) Atheist or not, Everett firmly believed that his many-worlds theory guaranteed him immortality: His consciousness, he argued, is bound at each branching to follow whatever path does not lead to death —and so on ad infinitum. (Sadly, Everett's daughter Liz, in her later suicide note, said she was going to a parallel universe to be with her father.)

Everett believed deeply in the many-worlds theory, and when Lynch argued that this theory was not falsifiable, and therefore was not scientific, he replied that it

would be falsified if standard quantum mechanics was falsified.
Everett took a great interest in the notorious "unexpected hanging" paradox. Once he posed to Lynch another paradox: whether people should have the "freedom" to sell themselves into slavery. Everett, according to Lynch, was great fun to talk with. By age 50, he had become even more handsome, had grown side-whiskers and a professorial goatee, and had a high, shining Socratic forehead.
From the same period is a letter Everett wrote to the historian of science D. Raub, in response to a letter he had received from Raub. Nancy Everett has cited this letter of her husband's as maybe "the most representative of Hugh's thoughts and definitive statement thereof". Everett wrote that he certainly still supports all of the conclusions of his thesis and considers it to be still the only completely coherent approach to explaining both the contents of quantum mechanics and the appearance of the world. He adds that he has encountered a number of other scientists "subscribing" to it, by and large the younger crop free of preconceptions, but he has no list (perhaps, he suggests, Wheeler has a list of such persons).

LAST YEARS.
On June 29, 1980, Everett's father died of cancer in a hospital. There is very little written record of events in Everett's life in the following two years. Later that year, not long after his fiftieth birthday, Everett received from Wheeler a request for permission to include Everett's 1957 article in the large anthology on quantum theory and measurement that he was preparing with W. Zurek. Everett answered at once with permission.
Other mentions of his theory came to Everett's attention, judging by, among which, as his wife recalled, he had special regard for the book Other Worlds by Paul Davies. Mathematicians, too, did not overlook him.
Another small thing that is known from this period is that when the Everetts, with Elaine Tsiang, were on a cruise on the Odessa (sailing from Florida), Elaine was mistaken for their daughter, despite the fact that she was Chinese. Life apparently flowed smoothly at this time. Once, at a DBS 11:30 lunch, Don Reisler started a conversation on an abstract subject: the meaning of life and how would Everett feel if this was his last day on Earth. Any regrets, sorrows, etc.? Neither Everett nor Reisler was sick and there was no intimation of trouble — although they were no longer young — so both the conversation and the outcome are striking. Everett said he was fully satisfied and could go without any feeling that he had missed something. Reisler left for Europe that afternoon and never saw Everett again.
On Monday, July 19, 1982--possibly the twenty-fifth anniversary of the publication of the article on relative states -- Mark found his father not breathing. He tried to save him, but without success, and at Fairfax Hospital they stated death after a sudden heart attack. Possibly, he had died even during the previous night. Don Reisler was then in France. Elaine Tsiang, too, could not arrive from Seattle, but she sent Nancy a touching memorial free verse.
Services were held at St. Thomas Episcopal Church, Brook Road, on Friday, July 23. The eulogy was perfect.
Soon the home on Touchstone Terrace in McLean became lonely. Mark packed

everything he owned into his car and drove 3,000 miles to Los Angeles, where he knew not a soul. He lived there for ten years by random earnings, writing and recording songs every day, and eventually achieving the American dream — but that is a separate history. Nancy answered letters addressed to her husband, sent materials to his first biographers, assembled and arranged his papers, and settled the estate. (Not until a year and a half after Everett's death did Wheeler send him a letter, commemorating the appearance of the anthology containing the 1957 article [161]). It hardly seems possible that Wheeler was unaware of Everett's death, but that may be the case.) Liz's suicide in 1996 at age 39 broke Nancy's health. In 1998, on what would have been Hugh's 68th birthday, she died of lung cancer at home, with Mark at her side.
It is two generations of physicists later, and Everett's concept has not yet been accepted "officially" (although more and more physicists—chief among them Bryce DeWitt — embrace it).

The Everett Interpretation:

When one introduces hidden-variables or state reduction, certain kinds of physical quantities (the "preferred" ones) get to be value-definite - among them the observed quantities (quantities like position, which are well-localized in space). Eschewing hidden-variables or state-reduction, still we have to pick out preferred quantities. How? And precisely which ones? This is the preferred basis problem. The tightrope that must be walked (if we are to make sense of quantum mechanics without hidden-variables or state reduction) is to show first, how certain sorts of quantities get to be preferred (the preferred basis problem), and second, how particular values get to be assigned to such quantities (the problem that going over to many worlds or - as has been suggested by Albert and Loewer, in an approach which has received a lot of subsequent attention - going over to a many minds approach is supposed to solve).
Simon Saunders
For a general introduction to the problem of measurement, see Simon Saunders: "The Philosophy of Physics", The Routledge Companion to the Philosophy of Science, S, Psillos and M. Curd, eds., Routledge.
For a systematic account of probability in the Everett interpretation see Simon Saunders:
"Time, Quantum Mechanics, and Probability", Synthese, 114 (1998), 405-44 (also available at http://xxxx.arXiv.org/abs/quant-ph/0111047).

See also the recent books:
1. Author: Byrne, Peter.
The many worlds of Hugh Everett III : multiple universe, mutual assured destruction, and the meltdown of a nuclear family.
(New York, NY : Oxford Univ. Press, 2010). - 436 p.
2. The Everett Interpretation of Quantum Mechanics:
Collected Works 1955-1980 With Commentary.
Authors:
Hugh Everett, III, Jeffrey A. Barrett, Peter Byrne.

Editors: Jeffrey A. Barrett, Peter Byrne
ISBN 0691145075, 9780691145075
(Princeton University Press, 2012). - 389 p.
Hugh Everett III was an American physicist best known for his many-worlds interpretation of quantum mechanics, which formed the basis of his PhD thesis at Princeton University in 1957. Although counterintuitive, Everett's revolutionary formulation of quantum mechanics offers the most direct solution to the infamous quantum measurement problem--that is, how and why the singular world of our experience emerges from the multiplicities of alternatives available in the quantum world. The many-worlds interpretation postulates the existence of multiple universes. Whenever a measurement-like interaction occurs, the universe branches into relative states, one for each possible outcome of the measurement, and the world in which we find ourselves is but one of these many, but equally real, possibilities. Everett's challenge to the orthodox interpretation of quantum mechanics was met with scorn from Niels Bohr and other leading physicists, and Everett subsequently abandoned academia to conduct military operations research. Today, however, Everett's formulation of quantum mechanics is widely recognized as one of the most controversial but promising physical theories of the last century.
In this book, Jeffrey Barrett and Peter Byrne present the long and short versions of Everett's thesis along with a collection of his explanatory writings and correspondence. These primary source documents, many of them newly discovered and most unpublished until now, reveal how Everett's thinking evolved from his days as a graduate student to his untimely death in 1982. This definitive volume also features Barrett and Byrne's introductory essays, notes, and commentary that put Everett's extraordinary theory into historical and scientific perspective and discuss the puzzles that still remain.
Table of Content:

About authors (2012):
Jeffrey A. Barrett is professor of logic and philosophy of science at the University of California, Irvine.
Peter Byrne is an award-winning investigative reporter and science writer.

There are a few places where the biography and additional materials about HUGH EVERETT can be found.

Wikipedia electronic Encyclopedia([http://en.wikipedia.org/)](http://en.wikipedia.org/) , an article HUGH EVERETT.

There is an extended essay and FAQ of the HEDWEB where additional information about HUGH EVERETT can be found.

See also: Eugene B. Shikhovtsev's Everett Bio.

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