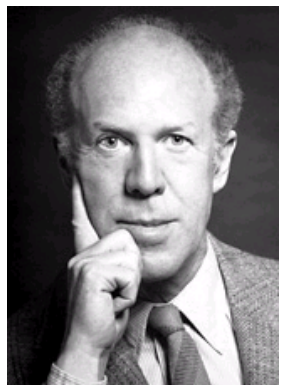




Gerard Debreu

The Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 1983

Autobiography



I was born in 1921 in Calais, France, the son of Camille Debreu and Fernande (née Decharne) Debreu. My father was the business partner of my maternal grandfather in lace manufacturing, a traditional industry in Calais. My paternal grandfather managed, until his retirement, the printing plant he had created in the small town of Marquise between Calais and Boulogne.

All my schooling to the Baccalauréat in 1939 took place in the College of the City of Calais. In the summer of 1939, the Second World War started for France, and instead of preparing for the entrance examination to one of the scientific grandes écoles in a lycée in Paris, I studied in an improvised Mathématiques Spéciales Préparatoires curriculum in Ambert (Puy-de-Dôme) during the academic year 1939-40. In the summer of 1940, France was divided




into several zones by the German occupation forces, and I went from Ambert to Grenoble, both being in the so-called "Free Zone". The academic year 1940-41 was spent at the Grenoble Lycée where I took the Mathématiques Spéciales curriculum.

In the summer of 1941, I was admitted to the École Normale Supérieure where I studied and lived until the spring of 1944. Those three years were an extraordinary experience in many ways. The small size of each entering class (about twenty in the Sciences, and thirty in the Humanities at that time) and the strict admission procedures helped to create a superheated intellectual atmosphere. The dark outside world of Paris under German occupation also exerted a strong containing pressure on the microcosm in the rue d'Ulm. Of all the teachers I had during that period, Henri Cartan was the most influential. Indirectly, N. Bourbaki also fashioned my mathematical taste.



I was supposed to take the Agrégation de Mathématiques in the spring of 1944 and thereby, to end my formal studies. But D-day intervened; I enlisted in the French Army, was sent to officer school in Cherchell, Algeria, and then served briefly in the French occupation forces in Germany until the end of July, 1945. Eventually, I took the Agrégation de Mathématiques at the end of 1945 and at the beginning of 1946. In the meantime, I had become interested in economics, an interest that was transformed into a lifetime dedication when I met with the mathematical theory of general economic equilibrium, founded by Léon Walras in 1874-77, in the formulation given by Maurice Allais in his book, *A la Recherche d'une Discipline Économique*, 1943. The two and a half years following the Agrégation were devoted to my conversion from mathematics to economics. During that period, I was an Attaché de Recherches of the Centre National de la Recherche Scientifique which showed an impressive tolerance for the absence of tangible results associated with the change from one field to another distant field.

In the summer of 1948, I attended for several weeks the Salzburg Seminar in American Studies where Wassily Leontief was a member of the faculty. As the year 1948 came to a close, I obtained a Rockefeller Fellowship that permitted me in 1949 to visit Harvard University, the University of California at Berkeley, the University of Chicago, and Columbia University, and during the first four months of 1950, to visit the University of Uppsala and the University of Oslo. My stay in Salzburg and my Rockefeller Fellowship brought me up to date with all the scientific developments in economics from which France had been cut off. Even more importantly, at the time of my visit to the University of Chicago in the fall of 1949, the Cowles Commission for Research in Economics offered me a position as a Research Associate. The Cowles Commission was the optimal environment for the type of research that I wanted to do, and I accepted its offer, starting an eleven-year association on June 1, 1950. In June, 1945, I had married Françoise Bled, and our two daughters, Chantal and Florence, were born in August, 1946, and in February, 1950.

The Cowles Commission in the early fifties proved itself to be more than I had hoped for. It seemed to be a focal point for mathematical economics where every recent development was discussed. The small research staff interacted in weekly meetings, in biweekly seminars, and in numerous conversations. In that exceptionally supportive environment, in which almost all my time was devoted to research, my work on Pareto optima, on the existence of a general economic equilibrium, and on utility theory made

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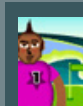
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quick progress. During the last years of the Chicago period of the Cowles Commission, I took a six-month leave at Électricité de France in Paris in the summer and the fall of 1953. The theoretical article on contingent commodities that [Arrow](#) published in that year and the applied problems created for Électricité de France by the uncertain amounts of water in hydroelectric plant reservoirs led me to the study of economic uncertainty that was eventually published as the last chapter of my monograph, *Theory of Value*, 1959.

In the summer of 1955, the Cowles Commission moved from the University of Chicago to Yale University, and in that new environment, I completed an article on market equilibrium and my monograph whose purpose was an axiomatic analysis of the theory of general economic equilibrium. I also studied several problems in the theory of cardinal utility, notably, the additive decomposition of a utility function defined on a Cartesian product of sets.

The year 1960-61 was spent at the Center for Advanced Study in the Behavioral Sciences at Stanford and devoted mostly to the complex proof that appeared in 1962 of a general theorem on the existence of an economic equilibrium. During that visit, I accepted an appointment at the University of California at Berkeley to begin on January 1, 1962. In the fall of 1961, however, I was back at the Cowles Foundation at Yale University, this time as a visitor. In that semester I started work on the core of an economy continuing that of Herbert Scarf, then at Stanford. That work later gave rise to the joint paper that we published in 1963. In the mid-sixties in Berkeley, the theory of measure spaces of economic agents that originated with a paper of Robert J. Aumann, published in 1964, became one of my main interests, as did the related problem of topologizing the set of preference relations.

In the fall of 1968, I had the first of several long leaves which took me to CORE at the University of Louvain (1968 - 69; fall, 1971; and winter, 1972), to Churchill College, Cambridge, England (spring, 1972), to the Cowles Foundation at Yale University (fall, 1976), to the University of Bonn (winter and spring, 1977), and to the CEPREMAP in Paris (fall, 1980). In the summer of 1968, I had become interested in the question of regular economies which remained unanswered until I visited the University of Canterbury in Christchurch (New Zealand) in June-July, 1969. My later research interests in Berkeley in the seventies and in the early eighties centered mainly on the study of differentiable utility functions, on the characterization of the excess demand function of an economy, on the rate of convergence of the core of an economy to its set of competitive equilibria, on the problem of least concave utility functions, and (in collaboration with [Tjalling C. Koopmans](#)) on the question of additively decomposed quasi-convex functions.

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This autobiography/biography was written at the time of the award and later published in the book series *Les Prix Nobel/Nobel Lectures*. The information is sometimes updated with an addendum submitted by the Laureate. To cite this document, always state the source as shown above.

Gerard Debreu died on December 31, 2004.

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