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FRANK HYNEMAN KNIGHT

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## Preface

This November marked the 100th anniversary of the birth of Frank H. Knight, usually considered to be the founder of the Chicago school of economics. The accompanying paper briefly sketches his life and work.

George J. Stigler

December 1985

12/5/85

**Frank Hyneman Knight**

Frank H. Knight was born in McLean County, Illinois, on November 7, 1885, the first of eleven children of Winton Cyrus Knight and Julia Ann Hyneman Knight, farmers of Irish descent residing in southern Illinois. Two of Frank Knight's brothers, Melvin Moses and Bruce Winton, also became economists. Bruce once recounted an episode characteristic of his oldest brother. Under the suasion of their deeply religious parents, the children signed pledges at church to attend church the rest of their lives. Returning home, Frank (then 14 or 15) gathered the children behind the barn, built a fire, and said, "Burn these things because pledges and promises made under duress are not binding."

Knight pursued his education through a series of schools and small colleges in the Midwest (see D. Dewey, 1986). His academic work was unflinching marked by hard work, high intelligence, and excellent grades, and one suspects that he was unfair to both himself and the poverty of his family when he once remarked that it would have been difficult to have chosen these institutions more unwisely. This preparatory period ended with two years at the University of Tennessee, and in 1913 Knight went to Cornell University, first to study philosophy and a year later (with the eager assistance of the philosophy department) he transferred to economics. His main teachers were Alvin S. Johnson and Allyn A. Young. He wrote a dissertation, A Theory of Business Profit (1916), which displayed an astonishing depth and breadth of knowledge of the theory of value and

distribution to have been acquired so quickly. With significant revision, the thesis appeared in 1921 as the classic Risk, Uncertainty and Profit (RUP).

Knight's subsequent academic career is easily summarized. After a year of teaching at Cornell and two (1917-19) at the University of Chicago, he went to the University of Iowa where he was an associate and then a full professor for eight years. In 1927 he returned to the University of Chicago, where he taught until 1958 and remained at the university the rest of his life. (Cornell in 1928 and Harvard in 1929 unsuccessfully attempted to lure him away.) The main courses he taught were in value and distribution and the history of economic thought, although occasionally he offered different topics (I was one of a small number of students in a seminar on Max Weber in the mid-thirties). He was clearly the dominant intellectual influence upon economics students at Chicago in the nineteen-thirties (on his teaching see Patinkin, 1973, and Stigler, 1973).

He received the major honors that his profession could give him: the presidency of the American Economic Association in 1950, after he refused to be nominated in 1936 and 1937; and the Association's highest award, the Walker Medal, in 1957.

In 1911 he married a classmate at Milligan College, Minerva O. Shelburne, and they had three daughters and a son. They were divorced in 1928. In 1930 Knight married Ethel Verry, a social worker who was for many years the director of the Chicago Child Care Society, and they had two sons, Frank Bardsley, a mathematician, and Charles Alfred, a geologist. Knight died in Chicago on April 15, 1972.

### 1. The Economist

Knight's dissertation, A Theory of Business Profit, was presented to Cornell University in June 1916. This was a short two years after he transferred to economics from philosophy, although evidently his interest in economics had begun earlier. (In 1913 he was already purchasing Marxist, Fabian, and syndicalist pamphlets on a visit to London.) One can find much of Knight's mature thought in the thesis, which was completed when he was almost 31 years old.

The revisions of the thesis which appeared as Risk, Uncertainty and Profit in 1921 were substantial but not radical. Allyn Young reviewed the manuscript for the book and repeatedly asked him to "avoid the appearance of bumptiousness" (Knight Papers, Box 14), but the suggestions went unheeded. The three chapters in the thesis on the nature of perfect competition under stationary conditions became the four chapters of Part II of RUP. There were significant additions: the famous Knightian curves of diminishing returns (RUP, pp. 96ff.) made their first appearance, and the essence of the theory of the dominant firm was now mentioned (p. 193n). This section continued to present a clear, succinct statement of neoclassical price theory, and one can readily understand why Lionel Robbins made it a basic text at the London School of Economics.

Knight said in his thesis that "The definition of perfect competition ... is our principal task in this essay" (p. 8), and it was certainly an enormously influential part of the book. Knight's conditions must have seemed extraordinarily severe to his readers: he required infinite numbers of independent traders, free and instantaneous mobility of resources and communication of knowledge, perfect knowledge and foreknowledge, and

infinite divisibility of traded goods (RUP, pp. 76ff.). Even today we do not normally find it useful to postulate such extreme simplicity in the economy, so that even time and space are eliminated. Some of the subtle conditions, such as that the individual "must be free of social wants, prejudices, preferences, or repulsions" (RUP, p. 78), are not developed sufficiently to reveal their relevance or implications.

The treatment of risk and uncertainty quickly became Knight's "contribution." Risk was characterized by the reliability of the estimate of its probability and therefore the possibility of treating it as an insurable cost. The reliability of the estimate came from either knowledge of the theoretical law it obeyed or from stable empirical regularities:

The crux of the whole question of probability, whether pure or empirical, for purposes of economic theory, is that in so far as the probability can be numerically evaluated by either method, it can be eliminated and disregarded. (Thesis, p. 186)

In economic life of course the empirical probabilities are the important ones.

True uncertainty is to be "radically distinguished" from calculable risks: here "there is no valid basis of any kind for classifying instances" (RUP, p. 225, his italics; also p. 231). Knight believed that uncertainty cannot be explicitly and exactly defined, but one could read Bayesian elements into his discussion of probability (compare Thesis, Ch. 6, with RUP, Ch. VII).

The latter part of both the thesis and the book lack substantive structure. There is fertile, unsystematic attention to the use of combination (of which one form is specialization) to reduce uncertainty as well as risk, despite the assertion just quoted that this cannot be done for uncertainty. Considerable emphasis is placed upon intuitive knowledge in dealing with uncertainty: "knowledge of men's capacities to know [how to deal with uncertainty] turns out to be more accurate than direct knowledge of things" (RUP, p. 298). Pure profit and pure "rent" (his term for an accurately imputed income) are never found in real life: every income contains elements of both. Moral hazard makes an explicit and potentially major appearance (RUP, pp. 249-54) but then surprisingly vanishes from the subsequent discussion.

Several characteristics of Knight's writing were already well established in the first book:

1. He looked upon received theory with a strongly skeptical eye. For example, the traditional distinctions between capital and labor are vigorously -- and properly -- criticized (RUP, pp. 126ff.). He was equally critical of both Clark's concept of the stationary economy (RUP, pp. 32ff.) and of Marshall's treatment of time periods in production (RUP, pp. 142ff.). He had already rethought a large part of standard value theory by 1916.
2. He was extremely dogmatic in his empirical generalizations -- all without a trace of proof. Here are a few examples:

"The normal rate of interest is one-half to two-thirds of the normal rate of return in fairly successful businesses."

(Thesis, p. 333)

"There is little question that in fact speculators in land make on the whole less than the competitive rate of return on their investment"; but he has the rare qualm to add, "though this is difficult to prove conclusively." (RUP, p. 337)

"...Laborers show themselves ready to engage in hazardous enterprises at their own risk for an increase in wages which is a fraction of an adequate compensation for the chances they take."  
(RUP, p. 301)

3. He recurred time and time again to the same central thoughts. Once he defended the practice by quoting Herbert Spencer: "Only by varied iteration can alien conceptions be forced on reluctant minds." A lasting, and important, example of the tenacity of his beliefs is the view that a competitive enterprise system inherently leads to a cumulative increase in the inequality of the distribution of income. In later years at countless lunches this was challenged on both analytical and empirical grounds by Milton Friedman, each time leading Knight to make temporary concessions, only to return to his standard position by the next lunch. Knight must have felt that luncheons are doubly unfree.

A rather modest part of Knight's later writings fall within contemporary economic theory: chiefly two important articles in price theory and the series of articles on capital theory.

The first article, "Cost of Production and Price over Long and Short Periods" (1921; reprinted in The Ethics of Competition [EOC]), offers an emendation of Marshall's analysis of time periods. Knight distinguishes a "momentary" price which represents the supply and demand for a commodity in a speculative market: it is essentially an analysis of the prices of stocks of goods. His second, closely related period is that within which the supply of a commodity is (initially) fixed, perhaps the pricing of a given periodic crop during the crop year. Knight's third period, long run normal price, is a merging of Marshall's short and long run normal prices, a distinction which is criticized as an unnecessarily rigid classification of what is truly a continuum of time periods. The neglect of external economies will be explained shortly. There cannot be many articles in price theory that read so well after sixty-five years.

The second great article in price theory was "Fallacies in the Interpretation of Social Cost" (1924; reprinted in EOC). The article contains an attack upon Pigou's celebrated error in wishing to tax increasing cost industries and upon Frank Graham's criticisms of the doctrine of comparative costs. (For a discussion of Knight's criticisms of the latter's work, see J. Viner, Studies in the Theory of International Trade, [1937], pp. 475-82.) Knight gave a lucid analysis of the role of intra-marginal transfers (rents) in achieving an efficient use of resources. It was in this article that Knight explicitly dismissed external economies: "External economies in one business unit are internal economies in some other, within the industry" (EOC, p. 229). The last three words of this

dismissal are inappropriate: the activities subject to increasing returns may fall in separate industries. Even if these activities subject to increasing returns are monopolized, that need not prevent the buyers of their products or services from experiencing external economies.

The major later work in theory was the series of articles on capital theory, directed against both the time preference theorists ("Professor Fisher's Interest Theory: A Case in Point," 1931) and, in a round dozen additional articles, the Austrian theory of capital. The chief of these are "Capital, Time, and the Interest Rate" (1934), "The Quantity of Capital and the Rate of Interest" (1936), and "Diminishing Returns from Investment" (1944).

The first major theme of these articles is that the Böhm-Bawerkian theory of capital and interest is fatally flawed. In that theory labor joins with natural resources to produce capital goods (in the Wicksell extension of Böhm-Bawerk, sustenance for laborers and landlords). The process of producing further goods is time-consuming, and as a fundamental empirical law, the longer the production period, the larger the product. Knight denies the existence of any "primary" factors of production which contain no capital, and equally he denies the possibility of measuring the period of production of a society or an industry, although he would concede the possibility of measuring the period of construction or investment of a specific capital good. It is fair to claim victory for Knight over his adversaries (including Hayek, Machlup, Lange, and Kaldor) on this score: the period of production concept, which had never been fertile in real applications of capital theory, has virtually vanished from the literature.

On the constructive side, Knight placed much emphasis on the correct treatment of dimensionality, with particular attention to the differences in magnitude of the stock of capital and its growth (savings) in a period such as a year. Knight believed that the long run substitution possibilities of capital for labor or for any specific form of capital such as land were immense, so diminishing marginal returns to capital either did not exist or acted extremely weakly. Accordingly, no truly long run equilibrium (such as received so much attention in classical economics) might exist:

The peculiarity of the capital market, viewing capital service as a commodity, and the interest rate as its price, is twofold:

(a) the stock of the commodity is enormously large in comparison with reasonably possible additions or subtractions in any moderate interval of time and (b) under anything like normal conditions in the real world the price is definitely above any theoretical equilibrium level (as proved by the fact that the supply does increase), and the very possibility of such a level is so problematic that it really has no interpretative value whatever.

(JPE, 1935, p. 813)

This work encountered much more criticism (see, for example, F. Lutz, The Theory of Interest, Ch. 8, 1966, and Paul Samuelson, 1943).

Throughout his career at Chicago, Knight taught a highly idiosyncratic course on the history of economics, and it is suitably represented by the famous article "The Ricardian Theory of Production and Distribution" (1935). Knight's interest in intellectual history is not in the process by

which it evolves but rather in the lessons it has for modern scholars; for example,

The classical theory of wages and profits contrasts with that of rent in that it continued to be controversial, while the rent doctrine was, from the beginning, accepted as definitive. This, at least, is a good sign, for the theory sheds no light whatever on the economic principles of distribution and is an amazing tissue of inconsistency and irrelevance. These reasonings are interesting and important, not merely because they illustrate the workings of the best minds in one of the most important fields of thought and have, needless to say, some relation to facts and to real problems, but especially because they serve to warn against types of fallacy which seem to be perennially natural to minds not trained to be on guard against them.

(History and Method of Economics [HME], 1956, p. 75)

If Knight was quite unhistorical in treating with Dogmengeschichte, he was unusually widely read and perceptive in his rare appearances as an economic historian. "Historical and Theoretical Issues in the Problem of Modern Capitalism" (1928) is a fascinating commentary on Werner Sombart and the related literature on capitalism, and Knight was also the translator of Max Weber's General Economic History (1927).

This is perhaps as appropriate a place as any to point out the unceasing intellectual curiosity Knight displayed throughout his life. He was an inveterate and usually disappointed attendant at a vast number of

lectures at the university. His wide-ranging reading never ceased. On our voyage to the first meeting of the Mt. Pelerin Society in 1947, a voyage made in astonishingly powerful and persistent storms, he spent the whole time in his berth rereading Jacob Burkhardt. It was a fundamental element of his character that his intellectual explorations were directed to the question of how "right" the subject of these explorations was.

## 2. The Philosopher

For most present-day economists, the primary purpose of their study is to increase our knowledge of the workings of the enterprise and other economic systems. For Knight, the primary role of economic theory is rather different: it is to contribute to the understanding of how by consensus based upon rational discussion we can fashion a liberal society in which individual freedom is preserved and a satisfactory economic performance achieved. This vast social undertaking allows only a small role for the economist, and that role requires only a correct understanding of the central core of value theory. That is why the larger part of Knight's writings are outside of technical economics; indeed, that is why Knight did not return to the subjects constituting the main contributions of RUP.

Economic theory prescribes the efficient ways of achieving given ends; this to Knight was a pathetically small part of human activity. The effects of acts often diverge grotesquely from the desires which led to them. Wants themselves are highly unstable, and it is their essential nature to change and grow. "The chief thing which the common-sense individual actually wants is not satisfactions for the wants he had, but more, and better wants" (EOC, p. 22). So man is an explorer and

experimenter, a seeker for unknown and perhaps unknowable truths, a creature better understood through the study of literature than by scientific method.

It is easy, then, for Knight to castigate the competitive enterprise economy as essentially amoral, as he does in the famous essay, "The Ethics of Competition" (1923). Knight does not specify the nature of the ethical principles on which he bases his severe criticisms of a competitive economic system, beyond saying they are "the common-sense ideals of absolute ethics in modern Christendom" (EOC, p. 44). That is a surprising criterion for him to employ, partly because he believed that "the Christian conception of goodness is the antithesis of competitive" (EOC, p. 72) but also because he believed tht Christian ethics had undergone great changes over time.

In the event, he bases his criticisms of those who praise the competitive system on three general grounds. The first ground is that the defense assumes perfect competition, which is certainly not even closely approximated in real life, and indeed the competitive economy instills in people crass and vulgar tastes (including placing a "premium on deceit and corruption"; EOC, p. 50). The second ground is that, viewed as a game, which is what business actually is in good part, the competitive system lacks most elements of fairness (EOC, p. 60). Finally, a competitive system is triply damned because competition itself is not ethically admirable (EOC, p. 64).

Knight's argument is subject to severe limitations. Because he avoids almost all questions of quantity, he often bases his argument on polar cases. Most of men's wants, for example, are stable, and at most only a small part of men's activities are devoted to the search for new wants or the exercise of curiosity. Again, he judges actual competitive enterprise

by the criterion of perfect competition, yet this would be an incongruous criterion to judge other types of economic systems. (I offer some additional comments in The Economist as Preacher, pp. 18-19.)

Yet he was even-handed in his criticisms, and when the historians criticize the competitive organization of economic life he laments their ignorance:

Few critics of capitalism see clearly enough that the entrepreneur in his "control" of production is relatively helpless as to what he shall produce, and where and when and by what instrumentalities and methods -- and in particular as to what he shall pay for labor....If one considers the range within which the manager can actually choose arbitrarily and remain in business, and averages out over a reasonable area and time period, it is evident that impersonal competition is after all overwhelmingly dominant.

(HME, p. 92)

The exploratory nature of man's goals, the infinite variety and changeability of tastes, and the mutuality of the relationship between scientist and subject in the social sciences, all led Knight to believe that positivism and behaviorism were grossly inappropriate to the study of man. (See, for example, "What Is 'Truth' in Economics?" [1940], reprinted in Freedom and Reform [FR], and the temperate reply of T. Hutchinson, JPE, 1941, pp. 732-50.) The communication between individuals introduced a dimension wholly absent from the physical sciences, so the root fallacy "is

to believe that social science should or can be a science in the same sense as in natural science" (FR, p. 226).

On the basis of Knight's assignment of a narrow role to science in the study, let alone the control, of human behavior, and of Knight's ethical axiom that one person should influence another only by rational discourse, he launched a series of powerful attacks on important exponents of social planning. Knight was a pungent writer and a skillful phrasemaker. Instructive examples of these attacks are "The Newer Economics and the Control of Economic Activity" (1932, JPE, pp. 433-76), "Bertrand Russell on Power" (1939, Ethics, 253-85), and "Salvation by Science: The Gospel According to Professor Lundberg" (1947, HME).

Although the main principles of economics are obvious, "even insultingly obvious" (FR, 325), Knight despaired that they would ever be (or even could be) recognized in political life. A parable he contrived in an unpublished lecture presents this fatalistic outlook in a typical manner:

As for telling the truth in political matters -- well there is a popular story of a small boy who told the truth. Not George and the cherry tree story, but the equally famous boy who made the simple observation that an emperor had no clothes on.

Scientifically, there is one fault in that story; it is unfinished. I think the author was a kindly, sensitive soul, and hadn't the heart. In the story, as a story, it is of course a merit. But in a scientific lecture it should be finished, and will only take a few sentences: That evening the people awoke to the realization that they had no emperor and the wise men were anxiously discussing what to do. You can't imagine a man as

emperor after he had solemnly paraded the streets as his bare self, can you? The wise men couldn't agree, of course, and the next day there was a war. And in a year a prosperous, happy nation had been destroyed and a civilization reduced to barbarism. All because a child made an innocent remark about a plain matter of fact. And back of that, because an emperor was fool enough to let people see the human being inside an emperor's togs -- which certainly everyone knew was there. Truth in society is like strychnine in the individual body, medicinal in special conditions and minute doses; otherwise and in general, a deadly poison. ...

And yet, Knight did not believe that the age of liberalism was doomed by man's incapacity to engage in and abide by rational discourse in the formation of social policy. Time and again he returned to the two forces which made liberalism intolerable: the cumulative growth of monopoly and increasing inequality of income (e.g., EOC, pp. 291, 310; FR, p. 31n). Perhaps there is no paradox here: perhaps a master of theory must become a servant of casual empiricism.

-- George J. Stigler

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