

Columbia Roots of the Chicago School: The Case of Milton Friedman

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I concluded from my own experience that the ideal combination for a budding economist was a year of study at Chicago, which emphasized theory, followed by a year of study at Columbia, which emphasized institutional influences and empirical work -- but only in that order, not the reverse (M. Friedman, (1998)).

Suppose we are students taking a test on twentieth century history of American economic thought. The test includes the following questions, which we are to mark as true or false with explanation.

1. Milton Friedman is a founding member of the new Chicago School of economics.
2. Milton Friedman is a member of the old Chicago School of economics.
3. Milton Friedman is a member of the Columbia School of economics.
4. Milton Friedman is a neoclassical economist.
5. Milton Friedman is an institutionalist.
6. Milton Friedman is and has been an economist since he entered graduate school in 1932.

Students who have read history of American economics and have followed the debate over Chicago economics may mark (1) true; realize that (2) is contentious; mark (3) false or argue that it is not meaningful; mark (4) true and (5) false. They may also mark (6) true. My answers would be different in significant ways. Without question (1) is almost certainly true, and (2) is definitely contentious. But I believe a case at least equally strong can be made for (3) as for (2) being true. Moreover, the record also suggests that our tendency to use mutually exclusive labels for economists (e.g., neoclassical versus institutional, as in statements (4) and (5)) risks hiding much that is interesting about Friedman's life and work. Whether the sixth statement is true hinges on how it is read, as "exclusively an economist," "mostly an economist," or "partially an economist." The historical and biographical record of Milton Friedman's

education and early career suggests that until he became Associate Professor of Economics at the University of Chicago in 1946 he was roughly equal parts statistician and economist.

What are some facts on which the typical students' answers to the six questions would be based?

1. Milton Friedman as founding member of the new Chicago School -- Friedman returned to the University of Chicago as Associate Professor in 1946, taking Jacob Viner's place in teaching the two graduate price theory courses, Economics 300a and 300b (later 301 and 302). His lecture notes for these courses, *Price Theory: A Provisional Text* (1962), became an unofficial text of the new Chicago School. Friedman established the Workshop in Money and Banking in the early 1950s. From the research done in this "laboratory" he and his students restored the quantity-theory doctrine to respectability in the wake of the Keynesian revolution. In political economy Friedman was instrumental in helping establish the University of Chicago as a safe house for classical liberalism.
2. Friedman as a member of the old Chicago School -- Friedman himself claims to be intellectually descended from his pre-War Chicago teachers and mentors. He studied price theory and international economics under Jacob Viner, history of thought under Frank Knight, and monetary economics under Lloyd Mints. Though he took no courses from the legendary Henry Simons, he along with other Chicago students was "Simonized." His exposure to Chicago economics actually began before he set foot on the Midway, for as an undergraduate at Rutgers University his teacher was Frank Knight's student Homer Jones.
3. Friedman as member of the Columbia School -- Friedman studied at Columbia in 1933-34, taking courses in mathematical economics and statistics from Harold Hotelling, business cycles from Wesley C. Mitchell, monetary economics from James W. Angell, and economic theory from J.M. Clark. But he claims to have learned theory principally at Chicago and learned the importance of economic institutions at Columbia. If Columbia in Friedman's era is associated with any "school of thought" it is institutionalism. At Columbia Friedman took courses from two of the three primary creators and promoters of American institutionalism, Wesley C. Mitchell and John M. Clark (M. Rutherford 2000).
4. Friedman as a neoclassical economist - This one is not hard. What kind of economist is Friedman if not a neoclassical economist? What else might he be, an

institutionalist? No way! Having learned the importance of institutions, which Friedman credits to his year at Columbia, is not enough to make him an institutionalist.

5. Friedman as an institutionalist -- See #4.
6. Friedman as an economist since 1932 - If this means "an economist among other roles" the statement is obviously true. Consider what he is known for -- monetarism, price theory, the methodology of positive economics. He was awarded the Nobel Prize for Economic Science. Anyone who *does* economics is an economist. A glance at his bibliography since he joined the Chicago faculty and at what he taught there shows that since 1946 he has been almost exclusively an economist. He made one well-known foray into methodology, but he did not continue to pursue that field. He also was not a mathematician while on the Chicago faculty -- not even a "mathematical economist." In fact he has been quite critical of the mathematization of economics. Reflecting on his skepticism and its rootedness in Chicago economics he has said:

There's no doubt that Chicago was distinctive [when I was there], and has been ever since. The real distinction was not making price theory the focal point of the graduate curriculum. That isn't the real distinction at all. The fundamental distinction is treating economics as a serious subject versus treating it as a branch of mathematics, and treating it as a scientific subject as opposed to an aesthetic subject, if I might put it that way (Hammond, 1992a, p.110).

There is a better case that Friedman has been a statistician since joining the Chicago faculty, for he has a handful of publications in this field. But these are few compared to his economics publications. Moreover, for the most part the statistical techniques he has used are, by the lights of econometric practice, non-standard. In the early years of his tenure at Chicago he developed a reputation as a severe critic of Cowles Commission efforts in developing econometrics.¹

Suppose we accept statement 1 in the mock exam as true, and make that our starting point. Few would doubt that, regardless of how we define the content of the new Chicago School, Friedman played a big part in shaping it. He arrived at Chicago at a time of transition for the department, with old hands having died (Henry Schultz),

¹ See Friedman (1951).

departed (Viner and Oskar Lange), or past their prime as economist theorists (Knight). A number of new people who were to become the Chicago establishment arrived around the time same time as Friedman - Theodore Schultz, D. Gale Johnson, Gregg Lewis, for instance, and Aaron Director returned to the Law School. But among the post-war Chicago economists it was Friedman who cut the widest swath; it was he who came to epitomize "Chicago economics." With this in mind, what I propose to do in this paper is to trace biographical details of Friedman's academic and intellectual life beginning with his freshman year at Rutgers University in 1928 until he joined the University of Chicago faculty in 1946. My purpose is to see "who he was" intellectually at different points within this part of his life, and "how he became who he became." My expectation is that this will allow us to better understand Milton Friedman and by association "Chicago economics." It will also help us understand American economics in the second quarter of the twentieth century. As the paper's title suggests, my thesis is that the "new" Chicago economics that Friedman brought to the University of Chicago in 1946 has deep roots in Columbia University. The story begins at Rutgers in 1928.²

Rutgers 1928-32

In *Two Lucky People* Friedman mentions only two of his Rutgers teachers, Arthur F. Burns and Homer Jones. The only courses he discusses are courses he took from this pair of young instructors. Friedman became friends with both men and remained so through the rest of their lives.³ They represent the starting points for Friedman's long associations with the two universities from which he received his graduate training. When Friedman first encountered them, Burns was completing his Ph.D. dissertation at Columbia University under Wesley Mitchell's direction. Jones was a graduate student at Chicago, having followed Frank Knight to Chicago from the University of Iowa.⁴ So from

² I rely heavily on Milton and Rose Friedman's memoirs, *Two Lucky People*, for a skeletal account of their lives, both in regard to significant events and people.

³ See (M. Friedman 1976; Friedman. M 1987)

⁴ Disciple may not be too strong a word for Jones's relationship with Knight. Jones and fellow graduate student Alice Hanson, who married one another, each worked as graduate assistants for Knight, as did Rose Director. They became intensely devoted to the man and his work. Jones and Hanson each sat in on numerous courses taught by Knight, taking meticulous notes. Copies are in the Homer Jones Papers at Duke University. After they left Chicago Knight sent them copies of his course outlines and transcripts of his lectures. Jones wrote to Knight in 1969 to thank him for a copy of *Risk, Uncertainty, and Profit*, and paid tribute by telling Knight that although forty years had passed since he studied with him, "I did learn then whatever economics I have ever known" (Homer Jones Papers). Alice Hanson wrote a paper for Jacob Viner's *Economics* 303, "Modern Economic Tendencies," in June 1929 entitled "F.H. Knight: An

Burns Friedman was first exposed to contemporary Columbia University economics, and from Jones he was exposed to contemporary University of Chicago economics. And it was Homer Jones who was mostly responsible for Friedman's applying for graduate study at the University of Chicago.

The record of Friedman's encounters with Arthur Burns in courses is cloudy. In the memoirs he quotes comments from a memorial service in July 1987 after Burns's death:

Arthur's initial impact on me was in a seminar that ended up with two students -- Lawrence Vass and myself -- spending full time going over word for word, sentence by sentence, a draft of Arthur's doctoral dissertation, *Production Trends in the United States*. That seminar imparted standards of scholarship -- attention to detail, concern with scrupulous accuracy, checking of sources, and, above all, openness to criticism -- that have affected the whole of my subsequent scientific work (Friedman and Friedman, 1998, p. 30).

He adds to this:

Another impact -- and I do not recall how it came about -- was to introduce me to the great nineteenth-century economist, Alfred Marshall. Arthur was a great admirer and thorough student of Marshall's *Principles of Economics*, and we spent many a pleasant hour then and in later years discussing the precise interpretation to be placed on passages from that magnificent book (Friedman and Friedman, 1998, p. 30).

Of Homer Jones, Friedman writes:

As low man on the academic totem pole, Homer was stuck with teaching, among other courses, insurance and statistics -- two subjects that I doubt he had ever before been exposed to. Since I was still planning to become an actuary, I naturally took both subjects. Insurance would hardly seem a subject of far-ranging significance, yet

Appraisal." Neither Homer Jones nor Alice Hanson completed a dissertation under Knight,

Homer made it one. His quizzical mind, his theoretical bent, yet withal his lowa-farmer interest in down-to-earth practical matters, combined to lead us far beyond the dry matter-of-fact textbook into the more fundamental issues of *Risk, Uncertainty, and Profit*, as Frank Knight titled his magnum opus.

In statistics, Homer was clearly learning along with us, and that experience has always persuaded me that the blind can in fact lead the blind. ... He did not try to hide his limited knowledge of mathematics and statistics, but neither was there any question, on his part or ours, that he was the teacher and we the students (Friedman and Friedman, 1998, pp. 31-2)

Friedman's Rutgers transcript indicates that he entered in the fall of 1928 and graduated June 11, 1932 with a Bachelor of Arts degree, High Honors, and with Honors in his Economics major. He also received the Bradley Mathematics Prize. Friedman initially planned to major in mathematics. In *Two Lucky People* he says "after a year or two, however, I changed my major from mathematics to economics" (Friedman and Friedman, 1998, p. 29). Friedman took twelve courses in economics, for a total of 45 credit hours, and fourteen courses in mathematics for a total of 37.5 credit hours.⁵ He already had a half-year of economics from Rahway High School. Table one shows the economics courses listed on Friedman's Rutgers transcript.

Table 1

	fall 29	spr 30	fall 30	spr 31	fall 31	spr 32
General Economics	X	X				
Money and Banking			X	X		
Statistical Methods			X	X		
Business Cycles					X	X
Economic Research					X	X
Prin. of Insurance					X	X

He took the Rutgers introductory economics sequence, Economics 21-22, General Economics: Economic Processes and General Economics: Economic Problems,

although both eventually took their Chicago Ph.D.

⁵ The greater number of courses totaling a fewer credit hours is accounted for by the fact that most of the math courses were valued at 3 credits and several of the economics courses were 4.5 credits. His math courses were Algebra, Analytic Geometry, Calculus (four semesters), Theory of Numbers, Differential Equations, Analysis (two semesters), and Elliptical Integrals.

in his sophomore year. The course synopsis from the Rutgers University Catalogue for Economics 21 is:

Nature, scope and organization of our economic activities; the price system; mechanism and processes of exchange; the organization of industry under our price system; processes and conditions governing price-making and division of national income among the various economic groups.

For Economics 22 the synopsis is:

The necessity of control; problems of the price system; business cycles; international trade; railroads, monopoly, economic insecurity; labor, taxation, government and the economic system.

He took two year-long economics sequences (four courses) in his junior year. These were Money and Banking and Statistical Methods. His professor for Money and Banking was Eugene Agger, who had been on the Columbia faculty from 1906 to 1926. The catalogue synopsis for Economics 101, Money and Banking: Money and Monetary Systems is:

The significance of money, its nature and functions and its evolution; the constitution of modern money systems; money and prices, index numbers of prices, and theories of money value; monetary standards and the problems of monetary instability.

For 102, Money and Banking: Banking and Banking Organization:

The functions of banking, banking evolution and modern banking practices; the different types of banking; clearings and exchange; reserve organization, utilization and protection; banking organization in the United States and abroad.

As he related in *Two Lucky People*, Friedman recalls taking Statistical Methods from Homer Jones.⁶ However, the Rutgers catalogue for 1930-31 (and for 1931-32) lists Arthur Burns as the instructor for Statistical Methods. Given Friedman's memory of Jones learning statistics with the students, it seems likely that Jones replaced Burns as

instructor during Friedman's third year and this change did not make it into the official catalogue. In any event, the course was revamped while Friedman was a student. The year before Friedman arrived the catalogue lists Assistant Professor Peabody as the instructor, and includes the following description:

121 Advanced Statistics: Statistical Method

Methods and place of statistical research in economics, as applied to problems of the business cycle, cost of living measurements, etc.

122 Advanced Statistics: Business Statistics

The use of statistical method in guiding the business enterprise in problems of production, market analysis, etc.

When Burns replaced Peabody as the instructor the description was changed to:

121 and 122, Statistical Method

An analysis of methods of inquiry in the social sciences. The uses of statistics in economic investigation. Collection, classification, tabulation, and graphic presentation of data. Methods of computation of the more common statistical measures. Problems in forecasting technique.

There is no such discrepancy between Friedman's memory of Jones teaching Principles of Insurance and the transcript and catalogue records. The catalogue description of Principles of Insurance (147-148) is:

The general problem of risk and risk-bearing in the capitalistic system. The limitations and possibilities of pooling risk. A comprehensive survey of life, property and casualty insurance, with some attention to the problems of social insurance.

Intended for students interested in a broad survey of the economic order, as well as those contemplating insurance as a career.

Friedman' recalls in his memorial address for Arthur Burns and in *Two Lucky People* a seminar in which he and another student, Lawrence Vass, read proofs of Burns's *Production Trends in the United States*. The Rutgers records help us fill in missing details. There are two courses

⁶ In discussion with me on May 24, 1988 Friedman also recalled that it was Homer Jones who

that might be the seminar Friedman recalls. He took a two-semester sequence on Business Cycles from Burns in his senior year. The description of Business Cycles is:

The following general topics will be taken up successively: types of business cycle theory, recent statistical research in the field of business cycles, the relationship between price and business fluctuations, the social incidence of business cycles, stabilization of business, and business forecasting.

He also took Economic Research (Economics 131-132) for which Eugene Aggar was the instructor. This was the course whereby Friedman earned the Honors distinction in Economics. The catalogue description says that:

Advanced students interested in undertaking and completing a project of their own may be enrolled in this course. The normal requirement for admission is a grade of 2 or better in all courses in the major field as well as some training in statistics. ... Each student will work in conference with selected members of the department [on an individual research project]. Where the project assigned to, and accepted by, the student is one approved by the Bureau of Economic and Business Research an honorarium of fifty to one hundred dollars will be paid on the satisfactory completion of the project. Original enrollment and selection of topics is subject to the supervision of Professor Agger.

My guess is that this is the seminar in which he and Lawrence Vass read Burns's *Production Trends in the United States*.

Friedman also recalls, without details, that Arthur Burns introduced him to Marshall's *Principles of Economics*. The Rutgers catalogue suggests how this introduction may have taken place. Economics 111 and 112 were Current Economic Theory. The content of this course and the instructor changed from year to year. The 1930-31 catalogue lists Burns as the instructor and Marshall's economics as the topic.⁷ The course description relates:

taught Statistical Methods.

⁷ Burns's offering was sandwiched between two offerings of the course by Greider in which the subject was the development of economic thought "institutionally interpreted."

The course will be based on Alfred Marshall's *Principles of Economics* and, if time permits, his *Official Papers*. The purpose of the course is to acquaint students with the substantive contents of a rounded system of economics, to inquire into the adequacy of this system of theory as an interpretation of economic behavior, and to train students in the art of economic reasoning.

Friedman must have either sat in on Burns's lectures, a practice he later adopted at the University of Chicago and at Columbia, or as they became friends Burns talked with Friedman about the topic that he was teaching.

Chicago, 1932-3; Columbia, 1933-4; Chicago, 1934-5

Friedman has written that his choice between graduate fellowships in economics at the University of Chicago and applied mathematics at Brown University came to the point of virtual indifference. He quoted Robert Frost's poem

To roads diverged in a yellow wood, and sorry I could not travel
both I took the one less traveled by, and that has made all the
difference.⁸

He opted of course for economics at Chicago. Though he ultimately became an economist rather than an applied mathematician, but he actually traveled some distance before the roads diverged. We can see this in the first instance simply by examining his courses at Chicago. In his first quarter there Friedman took two courses each in economics and mathematics (See Tables 2 and 3). His course schedule included at least one graduate math course in each of three quarters of the 1932-33 academic year. Furthermore, two of his economics courses were in analytical statistics. There was little mathematics in his other economics courses. If we count the two statistics courses that he took from Henry Schultz as mathematics rather than economics, Friedman's curriculum in his first year of graduate school was six math courses and five economics courses. Thus, he did not foreclose a scholarly career in mathematics when he accepted Chicago's economics fellowship.

⁸ "The Road Less Traveled," quoted in (M. Friedman)

Table 2
University of Chicago Economics Courses

Course	Professor	Quarter
301, Price & Distribution Theory	Viner	autumn 1932
330, Money & Banking	Mints	autumn 1932
302, History of Economic Thought	Knight	winter 1933
311, Correlation & Curve Fitting	Schultz	winter 1933
370, International Trade & Finance	Viner	winter 1933
303, Modern Tendencies in Economics	Viner	spring 1933
312, Statistical Graphics	Schultz	spring 1933
221, Econ History of European Civilization	Nef	autumn 1934
220, Econ History of the U.S.	Wright	winter 1934

Table 3
University of Chicago Mathematics Courses

Course	Professor	Quarter
306, Introduction to Higher Algebra	Dickson	autumn 1932
341, Calculus of Variations	Bliss	autumn 1932
324, Theory of Algebraic Numbers	Albert	winter 1933
310, Functions of Complex Variables	Graves	spring 1933

Friedman left the University of Chicago at the end of the year for Columbia, having received a lucrative fellowship, the University Fellowship in Economics. One cannot help but speculate that for a mathematically inclined student Columbia held a special attraction other than enhanced financial security -- Harold Hotelling.⁹ In 1931 this friend and frequent correspondent of Henry Schultz was hired away from the Food Research Institute at Stanford to replace Henry Ludwell Moore on the Columbia

⁹ Though Viner was the star of the Chicago faculty, Rose Friedman's account of their first year as graduate students includes two stories of his mathematical errors ((1998)

faculty.¹⁰ Recalling Schultz's role in obtaining the Columbia fellowship Friedman writes: the most important benefit I received from the course [Correlation and Curve Fitting] was not what Schultz taught in class, though his systematic presentation of basic statistical techniques was valuable, but rather his urging me to study with Harold Hotelling at Columbia and his recommending me to Hotelling for a fellowship, which Hotelling secured" (1998). Schultz took a year-long leave of absence from Chicago in 1933-34 to make a European tour, visiting with virtually every notable European economist and statistician. He wished for his mathematically sophisticated student the opportunity to study under Hotelling, a mathematician who wrote on economics. At Columbia in 1933-34 Friedman took four out of his nine courses from Hotelling. Two of them, Statistical Inference, were closely related to the statistics courses he had taken from Schultz. The other two, in Mathematical Economics, were not matched in the Chicago curriculum.

Table 4
Columbia University Economics Courses

Course	Professor	Semester
Mathematical Economics, 117-18	Hotelling	Autumn; Spring
Economic History, 119	Simkhovitch	Autumn
Business Cycles, 211,12	Mitchell	Autumn; Spring
Seminar in Economic Theory, 315-16	Angell, Clark, Mitchell	Autumn; Spring
Statistical Inference, 111-12	Hotelling	Autumn; Spring
Problems in Currency and Credit, 128	Angell	Spring

According to the Columbia University catalogue, the two courses in Mathematical Economics (Economics 117-118) covered:

supply and demand functions; monopoly, competition, duopoly, utility, taxation, tariffs, index numbers, exhaustible resources, and dynamical economics.

The first semester of Statistical Inference covered:

summarizing and interpretation of data; probable errors; significance of means, of differences, of variances, and of least-square determinations;

¹⁰ See Mirowski and Hands (D. W. Hands, P. E. Mirowski 1998;P. Mirowski, D. W. Hands 1998)

accuracy of forecasts; Student's distribution and R.A. Fisher's extensions; comparison of observed with theoretical frequencies; tests of independence, homogeneity and goodness of fit. Proofs of the formulae as considered. Examples are drawn from a variety of fields, both within and outside the social sciences.

The second statistics course included:

correlation, simple, partial and multiple, with exact and approximate tests of significance; comparison and analysis of variances; the theory of estimation and efficiency; frequency curve fitting; analysis of time series; periodicity. Recent discoveries will be discussed.

Friedman also took two semesters of Business Cycles from Wesley Mitchell. Assuming his students were familiar with the problem of business cycles and countercyclical policies, Mitchell presented them with materials for analysis. Friedman took the second of a pair of courses on Problems in Currency and Credit from J.W. Angell. The catalogue indicates that:

This course is not intended as a systematic survey, but will undertake a detailed study of certain major problems, selected in part on the basis of the students' own interests, such as: facts and theories bearing on the relation of money and credit to prices; business cycles and monetary theory; money markets and the banking structure; the problem of central control, in the United States and abroad; the allied problem of general financial stabilization; the new international financial position of the United States.

When Friedman took the course Angell gave center stage to Keynes's *Treatise on Money* (1930)

The "Seminar in Economic Theory" that Friedman took for two semesters was taught jointly by J.W. Angell, J.M. Clark, and Mitchell. Friedman has among his papers several pages of notes entitled "Clark's Seminar," which may be from this course. He has a more extensive set of lecture notes from Clark's "Social Economics" (Economics 109). Though he did not take this course for credit, the notes show that he attended class regularly through the semester.

Chicago, 1934-35

After the 1933-34 academic year Schultz returned to his Chicago faculty position and Friedman came back from Columbia to assist in reestablishing Schultz's statistics laboratory and to complete work on his doctorate. Friedman's fortunes at Chicago appear to have been tied to Schultz more so than to any other member of the faculty. It was Schultz who contacted Harold Hotelling to set in motion the University Fellowship at Columbia. And it was he for whom Friedman worked upon his return to Chicago. Schultz also supervised Friedman's masters thesis, "An Empirical Study of the Relationship Between Railroad Stock Prices and Railroad Earnings for the Period 1921-31"¹¹ (M. Friedman 1933). Friedman helped Schultz especially with chapters 18 and 19 of *The Theory and Measurement of Demand* (1938), which have to do with related demands for different products. A section of chapter 19 on complementarity is based on a paper Friedman wrote in January 1934, his year at Columbia.

Friedman planned to take his degree from Chicago, not Columbia. To that end he completed required courses in European and American economic history, and on January 28, 1935 passed the required German language examination. Even though he left Chicago in the summer of 1935 without a Ph.D. thesis to work for the National Resources Committee in Washington, and did not return, he expected that he would complete a Chicago doctorate. In December 1937, while he was working for the National Bureau of Economic Research in New York, Friedman was approved for Candidacy for the Ph.D. by the University of Chicago Department Chair, H.A. Millis, and by the University faculty.

During the time Friedman was assisting Henry Schultz with the demand study he was also engaged in his first research project on monetary economics. Friedman and Moses Abramovitz began with a jointly-written term paper, and continued the project while sharing a cabin in rural Ontario in the summer of 1934. Their work stretched into the next academic year, while Friedman was in Chicago working for Schultz. Their topic was the role of hoarding in determination of national income. Drafts of their paper and letters from Abramovitz to Friedman (but none in the other direction) remain in the Friedman Papers. The three drafts (of the whole or parts) that remain have the titles "Hoarding," "Hoarding and the National Income," and "D - Analysis." These documents show that the two students began working on the problem

de novo, without setting the problem in the context of literature. As the work progressed they developed a bibliography that included J.W. Angell's "Money, Prices, and Production"; R.W. Hawtrey's *Currency and Credit* (especially chapter IV and the mathematical note); Dennis Robertson's "Saving and Hoarding" and *Banking Policy and the Price Level* (chapter V and mathematical notes); Nicholas Kaldor's, "Note on the Determinateness of Equilibrium"; and Henry Schultz's "The Meaning of Statistical Demand Curves." The letters also reveal that two of their teachers gave advice. Abramovitz, who was back in New York, consulted with J.W. Angell, and Friedman with Arthur Burns.

Friedman's departure from Chicago for Washington in August 1935 marks the end of his time in residence as a graduate student. What can we make of these facts of his three years of graduate training?

- (1) Friedman began with the goal of becoming a mathematical economist.
- (2) He was more the student of Henry Schultz than of any other individual Chicago economist.
- (3) Schultz's departure for the 1933-34 year created a void at Chicago in mathematical economics, which for Friedman was more than adequately filled by his year with Hotelling at Columbia.
- (4) Friedman envisioned himself as first and foremost a Chicago student throughout the period. In his mind the year at Columbia was more a sojourn than a permanent transfer.
- (5) Friedman's main interests through his three years of graduate training were in mathematical economics and statistics.

1935-1946

Table 5 lists Friedman's employment from 1935 until he became a faculty member at the University of Chicago in 1946.

¹¹ Friedman passed the final exam for the A.M. degree on June 20, 1933 and the degree was conferred on December 19th.

Table 5

Date	Employment
Aug. 1935 - Sept. 1937	Associate Economist, National Resources Committee
Sept. 1937 - July 1940	Member, Research Staff, NBER & Lecturer, Columbia University
1940 - 1941	Lecturer in Statistics with Rank of Professor, University of Wisconsin
1941 - 1943	Principal Economist, Division of Tax Research, U.S. Treasury & Professor, U.S. Department of Agriculture Graduate School
Mar. 1943 - Aug. 1945	Associate Director, Statistical Research Group
1945-46	Associate Professor of Economics & Statistics, University of Minnesota

His friend Allen Wallis preceded Friedman in taking a summer job with the National Resources Committee. Upon his recommendation Hildegarde Kneeland offered Friedman a job in her group that was planning a study of consumer purchases. Friedman recalls the feeling of being a part of the New Deal scene: "There was a sense of excitement and achievement in the air. We had the feeling - or illusion - that we were in at the birth of a new order that would lead to major changes in society" (1998). The purpose of the study was to produce data for use in setting weights in cost of living indices. Kneeland's group were responsible for design of survey questionnaires, planning the survey schedule, sampling techniques, and data tabulation and analysis. Friedman "became completely immersed in the project. It was challenging, different from anything I had ever done, and greatly widened my perspective, both substantively and personally" (1998). The project was primarily statistical, and the biggest challenge was design of the sample.¹² This work on the

¹² Rose Director left Chicago for her home in Portland, Oregon in August 1935, and in April 1936 returned to Chicago to work as an assistant for Frank Knight and work on her dissertation under his direction. She too later went to Washington where she held jobs at the National Resources Committee, the Department of Agriculture's Bureau of Home Economics, and the Division of Research and Statistics in the Federal Deposit Insurance Corporation. In the latter position her boss was Homer Jones, a fellow student of Frank Knight.

consumption study for the New Deal NRC was the seed of Friedman's *A Theory of the Consumption Function* (1957), which he regards as his best piece of scientific work.

In early 1937 Friedman represented Kneeland's group at the National Bureau of Economic Research's Conference on Research in National Income and Wealth, which was organized the previous year by Simon Kuznets. His participation in this meeting on national income and its distribution, and a recommendation from Arthur Burns, led to Friedman's next job. In mid-1937 Friedman began his career-long association with the National Bureau of Economic Research.

Simon Kuznets was participating in development of national income accounts. When Friedman went to work for him at the NBER, he was given the task of completing estimates Kuznets had begun of the incomes of independent professionals: physicians, dentists, lawyers, accountants, and consulting engineers. The task was similar to that which he had done for the Kneeland group at the NRC in that the final product was estimates of income and its distribution. But in this project Friedman was further down the production line, analyzing survey data rather than designing surveys. The end product for Friedman was *Incomes from Independent Professional Practice* (1945), which served as his Columbia Ph.D. dissertation. In the course of explaining changes over time in the distribution of income in the professions, Friedman developed the concept of permanent income, which was to become so important in his and others' work in consumption and monetary economics.

While working in New York for the National Bureau Friedman taught in Columbia University's Extension. His fellow student and friend from Columbia, Eli Ginzberg, arranged this. It was in this teaching experience that Friedman began to develop what came to be his version of Chicago price theory. In 1937 and 1938 he taught elementary economics. Also, beginning in the fall semester 1938 and continuing through spring 1940 he taught Economics ub-171 and ub-172, a course that carried graduate credit and with mostly graduate students. The course title was Structure of Neo-Classical Economics. Table 6 shows the reading list for this course, which matches closely reading lists for his Economics 300 at the University of Chicago in the late 1940s (See (1999). Not only the readings match, but Friedman's lectures for his Columbia course also were the core of his price theory courses at Chicago and of *Price Theory: A Provisional Text* (1962).

Table 6
Assignments in course given at Columbia by M. Friedman entitled
"Structure of Neo-classical Economics"

(listed in order in which assigned)

First Semester

Author	Title	Page Information
Alfred Marshall	<i>Principles of Economics</i>	Book III, ch. 2,3,4; Book IV, ch. 1,2
Henry Schultz	<i>The Meaning of Statistical Demand Curves</i>	pp. 1-10
E.J. Working	"What do Statistical 'Demand Curves' Show?"	QJE Vol. XLI (1927), pp. 212-27
Frank H. Knight	<i>Risk, Uncertainty, and Profit</i>	Ch. 3
Frederic Benham	<i>Economics</i>	pp. 89-100
J.R. Hicks	<i>Value and Capital</i>	pp. 11-37
Marshall	<i>Principles of Economics</i>	Book V Ch. 3,4,5,12 Appendix H
A.L. Meyers	<i>Elements of Modern Economics</i>	Ch. 5,7,8,9
Joan Robinson	<i>Economics of Imperfect Competition</i>	Ch. 2
J.M. Clark	<i>The Economics of Overhead Cost</i>	Ch. 9
Jacob Viner	"Cost Curves and Supply Curves"	Bd. III (Sept., 1931) Zeitschrift fuer Nationaloekonomie pp. 23-46
Edward Chamberlin	<i>The Theory of Monopolistic Competition</i>	Ch. 3, sec. 1,4,5,6, Ch. 5
M. Abramovitz	"Monopolistic Selling in a Changing Economy"	Q.J.E., Feb., 1938 pp. 191-214

R.F. Harrod	<i>Doctrines of Imperfect Competition</i>	Q.J.E., May 1934 Sec. 1, pp. 442-61
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Suggested readings for Mathematicians

Author	Title	Page Information
O. Lange	"On the Determinateness of the Utility Function"	Vol. I (1993-34) Review of Economic Studies pp. 218ff
R.G.D. Allen	"The Nature of Indifference Curves"	Vol. I (1993-34) Review of Economic Studies pp. 110ff

Suggested readings in Mathematics

Author	Title	Page Information
R.G.D. Allen	<i>Mathematical Analysis for Economists</i>	Ch. 2, pp. 28-30, 54-55 Ch. 5, pp. 107-14 Ch. 6; Ch. 4

Second Semester

Author	Title	Page Information
Marshall	<i>Principles of Economics</i>	Book V Ch. 6
J.B. Clark	<i>The Distribution of Wealth</i>	Preface, Ch. 1,7,8,11, 12,13,23
John Stuart Mill	<i>Principles of Political Economy</i>	Book II, Ch. 14
J.B. Hicks	<i>The Theory of Wages</i>	Ch. 1-6
Adam Smith	<i>The Wealth of Nations</i>	Book I, Ch. 10
Marshall	<i>Principles of Economics</i>	Book VI Ch. 15
Simon Kuznets and Milton Friedman	<i>Incomes from Independent Professional Practice</i>	Bulletin 72-3, National Bureau of Economic

		Research, section 5, appendix
F.H. Knight	"Interest"	<u>Encyclopedia of the Social Sciences, also in Ethics of Competition</u>
J.M. Keynes	<i>The General Theory of Employment, Interest and Money</i>	Ch. 11-14
Gustav Cassell	<i>Fundamental Thoughts in Economics</i>	Ch. 1,2,3

While at the National Bureau Friedman was an advisor to state income studies in Wisconsin and Delaware. Through his role in the Wisconsin study Friedman came to know Harold Groves, a public finance specialist in the Department of Economics of the University of Wisconsin. In early 1940 Groves inquired if Friedman would have interest in a position teaching statistics in the department. On February 24, 1940 Friedman wrote to Groves saying that he was very much interested, but needed to think about it a few days. At this point Friedman had changed his mind about completing his degree at Chicago, for he told Groves that he had passed the Columbia Ph.D. preliminary exams and lacked only the thesis. For this he had received permission to use the professional incomes manuscript he and Simon Kuznets were preparing. Their first draft was complete and they had begun revisions. He expressed hope that they would have it in good enough shape by June (1940) for circulation to National Bureau's Board of Directors. If this went well he would take the exam on the thesis and receive his degree before end of calendar year (M. Friedman 1940a).

Groves's hope was that Friedman would come to Wisconsin as a statistician, taking primary responsibility for teaching statistics. But he ran into problems. At Wisconsin the faculty who taught the statistics course, less than adequately in Groves's view, were jealous of their prerogatives. For his part, Friedman was not excited at the prospect of specializing this narrowly. He wrote to Groves on March 2:

As you know my interests extend to other fields, in particular econ theory and the relation between theory and quantitative analysis. I would be happy teaching only statistics for a year or two, but could I substitute another field for some of the statistics in a year or two? I would be glad to come out to Wisconsin so that my questions and those some of the Wisconsin people have about me could be cleared up (M.

Friedman 1940b) [This is from my notes. Ask Gloria to proof from orig letter or send me a copy]

In mid-March Friedman sent Groves a vita for use in negotiating the position within the department. This vita provides us with a picture of how Friedman identified himself professionally in 1940.

He listed his fields of specialty at the University of Chicago as economic theory, statistics, and mathematics. Likewise, he listed Columbia fields as economics and statistics. He had passed the preliminary examinations for the Ph.D. at both Chicago and Columbia. When he prepared the vita for Groves's he was on the research staff at the NBER and Instructor in the Columbia University Extension. He also continued to serve as a consultant for the National Resources Planning Board (formerly the National Resources Committee). He listed fourteen publications (aside from book reviews), with five in analytical statistics and four in theory and estimation of demand. Friedman had three completed but unpublished manuscripts: his 1933 master's thesis on the relationship between railroad stock prices and earnings, a paper he wrote on fitting indifference curves while working for Henry Schultz, and a paper on use of regression in studies of family expenditure for the 1937 meeting of the American Statistical Association. In addition he was working on three manuscripts: the professional income study with Kuznets, a statistics textbook with Allen Wallis, and another paper with Wallis on R.A. Fisher's *Statistical Methods for Research Workers*.

Friedman gave his interests in terms of "broad fields" and "specific substantive fields:

Broad fields --

1. Statistics: primarily, statistical research in economic problems and application of statistical methods to economic data; secondarily, statistical methods and mathematical statistics.
2. Economic theory: primarily, relationship between theoretical and empirical analysis, problems involved in reformulation theory in terms subject to empirical testing and in bridging the gap between theory and "facts"; secondarily, pure theory and mathematical economics.

Specific fields -

1. Measurement of national income and its distribution

2. Business cycles
3. Theory of capital and interest
4. Statistical analysis of family budget data

His eight references reveal his ties at the time:

1. Arthur F. Burns, NBER and Rutgers University
2. Harold Hotelling, Columbia University
3. Hildegard Kneeland, National Resources Planning Board
4. Frank H. Knight, University of Chicago
5. Simon Kuznets, NBER
6. Wesley C. Mitchell, NBER
7. Jacob Viner, University of Chicago
8. R.C. McCren, Columbia University

Unable to wrestle the elementary statistics course away from Professors Erwin Gaumnitz and Philip Fox of the School of Commerce, Groves wrote on April 9 suggesting that Friedman offer mathematical economics, a course on income and wealth, and one on business-cycle economics. Friedman approved, saying that he was as happy with business cycles as with elementary statistics. In negotiations through the spring 1940 a plan was worked out for Friedman to offer three courses during the fall semester: Mathematical Economics (Economics 197), Business Cycles (Economics 176), and Seminar in Wealth and Income (Economics 232).

No sooner was this plan made than another problem arose. Few of the graduate students were prepared mathematically for the mathematical economics course Friedman envisioned. He wrote to Joseph Pechman, who appealed on the part of the students for keeping the mathematics "simple," that he and Groves had grappled with the problem of how to do justice to the course in one semester with students who were not advanced in math.¹³ Their decision was to make calculus a prerequisite. Pechman's request persuaded Friedman that this was impractical. If he required calculus this would close the course off to the majority of the students. Friedman assured Pechman that he intended to keep the mathematics as simple as possible, but knowledge of calculus would be necessary. The outline of the course would be the same as his course at Columbia, except for the mathematical approach. He described

¹³ Pechman conveyed that the students were enthusiastic about the opportunity to take mathematical economics, but with little emphasis on mathematics in the Wisconsin program feared their limitations (J. A. Pechman 1940)

the Columbia course as entirely non-mathematical. Friedman's accommodation to the circumstances was to require calculus or his consent for enrollment, while offering to have extra meetings through the first few weeks for students needing a primer in the requisite mathematics.

But there was yet another twist. In August Professor James S. Earley received a semester's leave, which meant Economics Theory (Economics 150) was not covered. Witte asked Friedman to teach that course in place of Mathematical Economics. He described their goal in the course: "What we have attempted to do in this course is to give a systematic modern theory course, stressing the orthodox approach but indicating major points of deviation in other modern theories" (E. S. Witte 1940) So in the end Friedman taught neither statistics nor mathematical economics.

If we look at Friedman's contacts with friends and teachers in 1940 Allen Wallis stands out, as do his colleagues at the National Bureau. Of the latter, most had Columbia connections. Friedman knew Wallis from Chicago, but he also had studied at Columbia and worked at the National Bureau. In 1940 Wallis was teaching statistics at Stanford, and he and Friedman were collaborating on two statistics projects. Friedman expected to soon take his degree from Columbia, using his and Kuznets's National Bureau professional income study as his thesis. Two of Friedman's teachers who were influential at this point were Wesley Mitchell and Harold Hotelling. Mitchell, his boss at the National Bureau, became involved in the fall of 1941 in controversy over Friedman and Kuznets's claim that physicians' incomes were derived partly from monopoly power of the American Medical Association. Friedman was also following Mitchell's approach in teaching business cycles. Friedman did not get to teach statistics at Wisconsin, but he did prepare a proposal for statistics curricula that was inspired by Hotelling's "The Teaching of Statistics" (1941?). This led, through Wallis as an intermediary, to his being appointed to the committee on the teaching of statistics of the Institute of Mathematical Statistics, of which Hotelling was chair. In the period immediately preceding and during his tenure at Wisconsin Friedman wrote two book reviews that set themes for what came to be his methodology, reviews of Jan Tinbergen's *Business Cycles in the United States of America, 1919-32* and Robert Triffin's *Monopolistic Competition and General Equilibrium Theory*. The ideas in these reviews developed out of the work he was doing in New York, at the National Bureau and the Columbia Extension.

Early in his first semester at Wisconsin Friedman gave a talk to the Wisconsin Graduate Club on "Neo-Classical Economics." His opening point was that there was no conflict between neoclassical economics and institutional economics. He said the difference between them was in how they reacted to not having access to experiments, like the natural sciences. Neoclassical economists relied principally on intellectual experiments with "conceptual controls" and institutional economists fell back on comparative history. Friedman defended the neo-classical approach, giving as an example Marshall's analysis of taxes on printed matter and printing presses, and arguing that conceptual controls are essential for discovering indirect effects. Foreshadowing arguments he would develop later in his methodology essays, he told his student audience that:

(a) to make [a] conceptual experiment [one] must decide on other things to be held constant - [we are] interested only in other 'relevant' things.

(b) holding of other things same = provisional.

[We] must not underestimate this contribution - major fallacies involve neglect of other things (M. Friedman 1940c).

Friedman's judgment was that past contributions of neoclassical economics were larger than those of any other approach, but that its future contributions would be smaller.

Friedman unknowingly stepped into a bitter intradepartmental struggle at Wisconsin. Although invited to remain, he chose to leave Wisconsin after the one year (1938). In the summer of 1941 the Friedman family returned to the East Coast and their Columbia - National Bureau contacts. Friedman had committed to a summer project in collaboration with Carl Shoup and Ruth Mack, to study use taxes to prevent inflation. This study was prompted by the United States' growing involvement in the war in Europe (1943). Shoup was a Columbia professor whom Friedman had met through the Conference on Income and Wealth. In the fall of 1941 Shoup, Mack, and Friedman submitted their study to the U.S. Treasury, and Friedman accepted an offer of a position in the Treasury's Division of Tax Research.

The Friedmans moved to Washington in late 1941 with friends from Columbia, Lowell and Agnes Harriss. The two couples took apartments in the same building, and Lowell Harriss and Friedman worked together at the

Treasury. The Friedmans also reestablished Chicago and family contacts, for Aaron Director was living in Rockville, Maryland. Friedman's two years at the Treasury provided his first experience in actually shaping public policy. He notes with surprise in *Two Lucky People* that testimony on how to avoid inflation that he gave to Congress in May 1942 was "thoroughly Keynesian."

The only 'methods of avoiding inflation' I mentioned in addition to taxation were 'price control and rationing, control of consumers' credit, reduction in governmental spending, and war bond campaigns.' Equally Keynesian is a comment I wrote somewhat earlier on a paper titled 'The Inflationary Gap,' by Walter Salant ... in which he contrasted the OPA approach with the Shoup-Friedman-Mack approach.

Until I reread my statement to Congress in preparing this account, I had completely forgotten how thoroughly Keynesian I then was. I was apparently cured, or some would say corrupted, shortly after the end of the war (Friedman and Friedman, 1998, p. 111).

In the spring of 1943 Allen Wallis recruited Friedman to the Statistical Research Group at Columbia. When he began work on March 1 Friedman rejoined both Chicago and Columbia acquaintances. Wallis himself embodied both. George Stigler was there, along with Rollin Bennett, who was a fellow Columbia student. Also at the Statistical Research Group was Friedman's Columbia professor, Harold Hotelling.

Economics played no direct role in Friedman's work at the SRG from 1943 to 1945 - he was a mathematical statistician.¹⁴ Among the statistical projects to which he contributed were finding the optimum size and number of pellets in anti-aircraft shells, design of proximity fuses for anti-aircraft projectiles, sequential analysis, and sampling inspection.

George Stigler left the SRG several months before the group was dissolved at the war's end, returning to the University of Minnesota from which he had been on leave. Once there he set about trying to obtain an appointment for Friedman. Friedman wrote to him from New York in May 1945, suggesting that he could offer courses in sequential analysis and sampling inspection. He received an offer, and

taught both economics and statistics in his year at Minnesota. He and Stigler shared an office there and together wrote a critique of rent controls, "Roofs or Ceilings" (1946). Friedman recalls his year at Minnesota in *Two Lucky People*:

What I remember best about the time I spent at the University of Minnesota is sharing an office with George Stigler. We had been close friends since our student days at Chicago, but sharing an office sealed an intimacy that was to last until George died in 1991 (Friedman and Friedman, 1998, p. 149).

During the year they were together at Minnesota Stigler revised on his price theory textbook (1946). Shortly after they parted Friedman began preparing to teach price theory at the University of Chicago. It was at this point that Friedman and Stigler began in earnest discussions of price theory that stretched over several years (C. H. Hammond, J. D. Hammond 2000). Stigler wrote to Friedman in August 1946 after an exchange of letters on Marshall's *Principles*: "And in any case, only a crackpot would spend 7 months staring at the ceiling and then suddenly begin to read a book by the now ex-officemate when he knew in advance that he wanted to argue about it" (G. J. Stigler)

Conclusion

Let's review the outlines of Friedman's education and early career for marks of Chicago and Columbia influences. Setting aside for the moment questions of "schools" at the two institutions in the late 1920s, Homer Jones and Arthur Burns brought what they learned at Chicago and Columbia to their students at Rutgers. So Friedman developed connections to the two universities before he studied at either. The two individuals in the background were Jones's and Burns's mentors, Frank Knight and Wesley Mitchell. Once Friedman was at Chicago Henry Schultz became his primary professor. Schultz was not an inspiring teacher or personality, in the way his high-profile colleagues Knight and Viner were, so I want to be careful not to give him too much credit for Friedman's intellectual development. Friedman has stated that as a student he virtually held him in contempt because he regarded Schultz as not very smart (J. D. Hammond 1992a). And Friedman clearly came to Schultz's class with an aptitude and inclination toward mathematics. Arthur Burns had already introduced him to the

¹⁴ However, the statistical problems on which he worked did influence his economics. See (

Columbia-National Bureau concern for measurement. But Henry Schultz was the mathematical economist and applied statistician at Chicago in 1932. There was a better fit of interest and inclination between Friedman and Schultz than between Friedman and either Knight or Viner. So Schultz was in the right place at the right time to have an influence on Milton Friedman.

Friedman emphasizes personal finances as the reason for his transfer to Columbia and learning the importance of institutions as the benefit, but it would be a mistake to overlook the likely intellectual reason for his move. He may or may not have understood the significance at the time, but it is clear that Schultz sent him to Columbia to continue his training in mathematical economics and statistics under Harold Hotelling's tutelage. He started this training under Schultz, continued under Hotelling, and then returned to Schultz as a proficient mathematical economic theorist and statistician.

In his professional life prior to 1946 Friedman worked at the intersection of economic theory and statistics. This was the case in the beginning as he assisted Schultz with *The Theory and Measurement of Demand* (1938). It was true in the end when he taught economics and statistics at the University of Minnesota. And it was true in between when he was at the NRC, NBER, and SRC. Applying for the position at the University of Wisconsin, Friedman identified his fields as "statistics: primarily, statistical research in economic problems and application of statistical methods to economic data," and "economic theory: primarily, relationship between theoretical and empirical analysis." Had departmental politics not presented his sponsors with an insurmountable barrier, he would not only have taught statistics there, but would have revamped the statistics curriculum.

Friedman's only experience actually working in monetary economics was the hoarding project with Moses Abramovitz, and this seems to have left no traces in his subsequent scholarship. By his account in *Two Lucky People*, Friedman's inflation analysis at the Treasury in 1942 was thoroughly Keynesian, "I did not even mention 'money' or 'monetary policy!'" (1998) Of more lasting significance than the hoarding project is that he studied business cycle analysis with Burns and Mitchell, was around it as an NBER staff member, and taught it at Wisconsin. Columbia- National Bureau

1998)

business cycle analysis, not monetary courses from Lloyd Mints or James Angell, was the vehicle through which Friedman became a monetary economist (Hammond. J.D. 1999). His research program in monetary economics began in 1948 when he accepted Arthur Burns's invitation to take on the monetary portion of Mitchell's business cycles project after Mitchell's death.

Arthur Burns, at Rutgers, was the origin of Friedman's Marshallian price theory and methodology. Marshall ultimately had a stronger hold on him than his love of mathematics. After studying with Henry Schultz and Harold Hotelling Friedman was on track to become a mathematical economist, perhaps even like his fellow Chicago student Paul Samuelson. But he became perhaps the foremost critic of mathematical economics. If Burns planted seeds of Friedman's Marshallian price theory and methodology at Rutgers, they sprouted when he was on the NBER staff and teaching at Columbia from 1937 to 1940. His students in the Columbia Extension were the first to have Friedman teach them his version of Marshallian price theory. And it was while teaching this "Chicago" price theory at Columbia that wrote his first apologetic for Marshallian methodology (M. Friedman 1941).

Who were Friedman's friends during the period we have covered? Two stand out in particular - Rose Director and Allen Wallis. More about Rose Director later. Allen Wallis's career through the period is a mirror of Friedman's. Wallis followed Friedman in starting graduate school at Chicago and transferring from Chicago to Columbia. His career path likewise ran along the knife-edge between economics and statistics. If Friedman leaned more to the economics side, Wallis leaned to the statistics side. As for other friendships, Friedman had more contact with Columbia people than Chicago people - Moses Abramovitz, Lowell Harriss, Eli Ginzberg. He met George Stigler, as he did Wallis, when he returned to Chicago from New York in 1934, and no doubt became friends then. They were together at the Statistical Research Group and, thanks to Stigler's efforts, at the University of Minnesota. But they became fast friends, it seems, during the year at Minnesota in their shared office.

Of the two Friedmans, Rose and Milton, Rose had the deeper Chicago connections. She was an undergraduate there, and then a graduate student. She had more direct contact with the people who represent the "old Chicago" background for the "new Chicago" school, taking courses from Henry Simons, along with Knight and

Viner. She worked as a research assistant for Knight, and started a thesis under his direction. Her brother, Aaron Director, was on the Chicago faculty when she transferred from Reed College to Chicago, and her brother prompted a rift between Knight and Paul Douglas by becoming a follower of Knight. While a student she had Christmas and Thanksgiving dinners with the Knight family (1998). The Friedmans' move to Chicago in 1946 was more of a homecoming for Rose Friedman than for Milton Friedman. She had spent more time at Chicago than he and she was reunited with her brother, who returned the same year. The Friedmans were invited by her mentor Frank Knight to stay with his family while they looked for a place to live. So it seems that the main tie between Milton Friedman and Frank Knight up to 1946 was Rose Director Friedman.

What of Friedman's ideology, which is sometimes identified as the most important link between "old" and "new" Chicago? Friedman's quasi-libertarian ideology, so familiar to us now, is not evident in the biographical record from 1928 until 1946. His teachers and friends were not of any one ideological stripe, and there is little if anything in his educational record with definite ideological slant. The evidence suggests that his views of the role of government through the 1930s and 1940s were in the New Deal mainstream. Upon being told of his sister's engagement, Aaron Director wrote to Rose:

Milton is a fine person, whom I always liked. There is universal agreement on his very superior ability. What more can one ask.

I do not urge the founding of an economic dynasty, but common interests lend attraction. (Tell him I shall not hold his very strong New Deal leanings - authoritarian to use an abusive term - against him (1998)

Roofs of Ceilings, which Friedman wrote with Stigler in 1946, is pro-market, but controversy the pamphlet kicked up at the Foundation for Economic Education put the authors on the side of the "collectivists." At issue was their stated preference for greater income equality. At one point in the summer of 1946 a paragraph to this effect put publication of the pamphlet in jeopardy.

An April 1947 "junket to Switzerland to save liberalism," as Stigler described the first Mont Pelerin meeting (G. S. Stigler nd), is probably the key single event in the formation of Friedman's ideology. Friedman writes that this event "strengthened my *incipient* interest in political philosophy and public policy" (Friedman and Friedman, 1998, p. 158, emphasis added). The journalist John A. Davenport referred to the meeting as the turning point in the lives of most of the participants, an evaluation that Friedman says suits him "to a T." He quotes Davenport's description of the participants, including "a sprinkling of what became known as the Chicago School: Frank Knight, Aaron Director, and Milton Friedman, who then had some distance to travel on his road to *Free to Choose*" (quoted in Friedman and Friedman, 1998, p. 160).

Returning to our true-false statements, let's consider number (3), "Milton Friedman is a member of the Columbia School of Economics," and number (4) "Milton Friedman is an institutionalist." There was no Columbia School of economics in the manner of the Chicago School, but Columbia is recognized as one of the seats of institutionalism. Friedman took courses from two of the three people Rutherford (M. Rutherford 2000) identifies as "promoters of institutionalism," Walton Hamilton, Wesley Mitchell, and J.M. Clark. Like the institutionalists, his pre-Chicago career reflects concern for following scientific methods, with emphasis on measurement, for understanding the effects of institutions (e.g., the AMA) especially in terms of market power, for understanding business cycles, and improving methods of control. These concerns carried over into his later work, and thus into Chicago School economics.

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