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Chapter 54: From Keynes to Friedman via Mints: a Resolution of the Dispute

Robert Leeson

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1. The Keynes Before Keynes

Milton Friedman (chapter 2 [1956], 3-4) asserted that “Chicago was one of the few academic centres at which the quantity theory continued to be a central and vigorous part of the oral tradition throughout the 1930’s and 1940’s”. Friedman sought to “nurture” the revival of the quantity theory by linking it to this Chicago “oral tradition”. According to Friedman the “flavor” of this oral tradition was captured in a model in which the quantity theory was “in the first instance a theory of the demand for money”. Friedman added that to “the best of my knowledge no systematic statement of this theory as developed at Chicago exists, though much of it can be read between the lines of [Henry] Simons’ and [Lloyd] Mints’s writings”. He also enlisted the names of Frank Knight and Jacob Viner in support of his assertion.

It is inherently difficult to resolve a dispute over an oral tradition that may or may not have existed decades before. Friedman began his Chicago graduate studies in autumn 1932, and his primary exposure to Chicago monetary economics was through Mints’ Graduate Study of Money and Banking course (Economics 330).ⁱ Don Patinkin carefully marshalled evidence from his own Chicago lecture notes (taken from Mints’ Economics 330 in summer 1944) and from contemporary Chicago writings and thesis titles. Patinkin (chapter 6 [1972/1974], 115-6; chapter 5 [1969/1981], 246-7) concluded that Friedman’s use of the quantity theory differed significantly from interwar Chicago usage: “the basic assumption of the Chicago School analysis was that the velocity of circulation is unstable”. Simons’ writings (beginning in 1933) “represent the Chicago tradition in its pristine – and pre-Keynesian – form”. With respect to the demand function for money, Patinkin (chapter 6 [1972/1974], 115) asserted that Simons “never even mentioned this concept!”ⁱⁱⁱ However, Simons (1948 [1946], 340, n4) stated that “Empirical evidence as to secular increases in the demand for money or liquidity is, however, a precarious basis for long term policy”.

Patinkin (chapter 5 [1969/1981], 249) concluded that “by the 1940s the Chicago School had – quite understandably – been influenced by Keynesian monetary theory”. The relevant doctoral theses of the period “generally took [John Maynard] Keynes as their point of departure”. Mints (1950) analysed the asset demand for money – but this analysis, Patinkin explained, was followed by “a special appendix on Keynes’ theory of liquidity preference”. On two occasions, Patinkin (chapter 5 [1969/1981], 256; chapter 19 [1986], 120) used Friedman’s (chapter 4 [1968], 439) reference to the modern reformulated quantity theory as having been “strongly affected by the Keynesian analysis of liquidity preference” as evidence that Friedman has been obliged to retreat from his original position. Thus Michael Parkin (chapter 18 [1986]) was represented as “more Friedmanian than Friedman” for not accepting this as a “fact”.

However, as Herbert Stein (1969, 133) put it, there was a “Keynes Before Keynes”. Lauchlin Currie (1972, 139, 141) considered himself “a Keynesian from way back ... my theoretical approach had been influenced by Keynes since my London School of

Economics days in 1922-25". Currie (13 June 1979) informed Patinkin that in the early 1930s he was "using the *Treatise* in classes at Harvard".ⁱⁱⁱ Erik Lundberg (1994 [1934], 48, 51-2, 62) recalled that in Chicago in 1931-2, "Our speeches and discussions centred around the monetary formulations of the business cycles given by Hayek, Mises and Keynes ... I dare say the Keynesian side mostly won the battles". 1933 cannot be characterised as "pre-Keynesian" in so far as the demand for money is concerned because that framework was already present in the *Treatise on Money* published in 1930. Patinkin (chapter 16 [1981/1973], 282) "strongly suspected" that the Chicago "classroom teaching" of the 1940s "differed" from "that of a decade before" in some respects – but he apparently made no attempt to inspect Friedman's 1932 Economics 330 lecture notes.

These 1932 lecture notes indicate that Friedman *was* exposed to a version of the quantity theory which stressed the importance of the demand for money. Moreover, this version of the quantity theory was stated to be part of a (Cambridge) oral tradition. In 1932, Mints' placed great stress on Keynes' *Treatise on Money* (1930) and to a lesser extent on Keynes' *Tract on Monetary Reform* (1923) in which this Marshallian oral tradition was discussed. In response to Patinkin, Friedman (chapter 7 [1972/1974], 168; see also 1967, 8-9) maintained that "Keynes's discussion of the demand curve for money in the *General Theory* is for the most part a continuation of earlier quantity theory approaches, improved and refined but not basically modified. As evidence, I shall cite Keynes's own writings in the *Tract on Monetary Reform* (1923) – long before he became a Keynesian in the present sense". But like Patinkin, Friedman did not refer to his 1932 lecture notes.

This chapter uses these lecture notes to resolve this long-standing dispute about the nature of inter-war Chicago monetary economics. To avoid ambiguity, section 2 of this chapter provides a precise description of the aspects of the debate that can be regarded as resolved. Section 3 examines the existing literature (including Patinkin's work) which emphasised that the demand for money framework was, to a large extent, already present in the *Treatise*. Sections 4, 5 and 6 describe the transmission process of the quantity theory money demand approach from Keynes to Friedman via Mints. Section 4 examines the interactions between Keynes and the participants of the Harris Foundation lectures and seminars at the University of Chicago in 1931. Section 5 specifically examines the interaction between Keynes and Mints in Chicago in 1931. Section 6 examines Friedman's 1932 Economics 330 lecture notes and readings: 6.1 the course outline, 6.2 Friedman's readings and lecture notes and 6.3 the reviews of the *Treatise*. Section 7 outlines Friedman's defence against Patinkin. Concluding comments are provided in section 8.

2. Issues Resolved and Issues Not Resolved

Since this essay purports to resolve this dispute it may be helpful to summarise the six issues that can be regarded as having been resolved (2.1-2.6). No *conclusive* evidence, however, is offered with respect to Viner, Knight, Simons or Douglas (2.7).

2.1 First, the documentary evidence clearly indicates that in 1932-3 Mints organised Economics 330 around Keynes' *Treatise*. The first words that Friedman wrote were "Econ 330 Keynes". Friedman then wrote that Mints concluded that "General Framework of Keynes likely to endure much longer than details".

2.2 Secondly, within a few years the framework of the *Treatise on Money* had been replaced by the framework of what Arthur F. Burns (1946, 12) described as Keynes' "treatise on unemployment equilibrium". When Burns wrote that in the "last decade the world has moved swiftly in a Keynesian direction" he was, of course, referring to the *General Theory* as the "Keynesian" framework that endured. As Kenneth Boulding (1956, 141) put it, the 1936 Keynesian Revolution was "the Great Change in economics".

In the process, the *Treatise* came to be viewed as a stepping-stone in the "natural evolution" of Keynes' (1936, vi) thought. After 1936, much of the theoretical apparatus of the *Treatise* was "discarded" (Boulding 1956, 133). Alvin Hansen (1936, 668, 686) in his *Journal of Political Economy (JPE)* review of the *General Theory*, noted that Keynes had now "wholly abandoned ... the imposing edifice erected in a *Treatise on Money*". Hansen described economics as standing "in danger of a sterile orthodoxy"; but the *General Theory* would "stimulate thinking on fresh lines in the field of economic dynamics".

Roger Weiss (1 July 1987) wrote to Mints (on the occasion of his 100th birthday) to remind him that for post-1936 students "you worked your way patiently through the *General Theory*".^{iv} By the time Patinkin attended Mints' Economics 330 - in 1944 - the *General Theory* - not the *Treatise* - dominated monetary theory. Mints apparently devoted one lecture (17 July 1944) to deriving the fundamental equations of the *Treatise*, and a part of a lecture (19 July 1944) to Keynes' discussion of the market and natural rates of interest. Mints concluded his discussion with "By now concept of 'natural rate' pretty well evaporated".^v

Keynes (1936, v) apologised in advance if his "controversy is itself too keen". The controversy over the Keynesian framework of the *General Theory* became more intense after the publication of Friedman's (1956) *Studies in the Quantity Theory of Money*, until this alternative Chicago framework evolved into the "natural" rate counter-revolution and displaced its Keynesian competitor (Friedman 1968). Even before this counter-revolution, Roy Harrod (1951, 404) noted that the publication of *General Theory* "greatly militated against the reading of the *Treatise*". One of Keynes' American popularisers described the *Treatise* as being "confined to a pretentious monetary theory of the trade cycle" (Dillard 1948, 310).

2.3 Thirdly, one of the novel features of Keynes' work in the *Treatise* was an increased emphasis on money demand in a revised quantity theory framework. Like his followers (including Patinkin), Keynes (1936, 343-4) sought "a genuine synthesis" – but Keynes' emphasis, in this context, was the synthesis between the "twin quantity theories" one of which sought to determine the price level (or "value in exchange") and the other which sought to determine the rate of interest (or the "value in use"). This specific synthesis was, as Friedman put it, "a continuation of earlier quantity theory approaches, improved and refined but not basically modified". Patinkin (16 November 1959) complained to Friedman that "to me it seems that with perhaps one exception (Karl Schlesinger) an exposition with the contents and spirit of yours could not have been written (and was not written) before Keynes. I find it particularly difficult to accept your implication that your essay represents the kind of thing that was taught at Chicago by Knight, Viner, Simons and Mints. My own recollections are different".^{vi} Friedman's 1956 essay could not have been written (and was not

written) before Keynes of the *Treatise* – but the publication of that book preceded Friedman’s training at Chicago.

2.4 Fourthly, there was an important generational aspect to this dispute. As Stein (1969, 162) noted, both Paul Samuelson and Boulding responded to Keynes with “Wordsworthian or Keatian emotions”. Both described their feelings using the words “Bliss was it in that dawn to be alive, but to be young was very heaven”. Samuelson (1915-) was describing his reaction to the *General Theory*; Boulding (1910-95) was describing his reaction to the *Treatise*. Both were twenty-one when they encountered these respective books. Friedman (1912-) was twenty when he attended Mints’ 330 course; Patinkin (1922-95) was twenty-two.

Boulding (1956, 133) recalled that he would “never forget the excitement, as an undergraduate [at Oxford] of reading Keynes’ *Treatise on Money* in 1931”. He recounted to his biographer that the *Treatise* provoked “a spiritual experience as well an intellectual one ... *now* the world made sense; history made sense for the first time” [emphasis in original]. One of the unpleasant shocks he received upon taking up his first teaching position was that in Edinburgh, in autumn 1934, “Keynes had scarcely been heard of” (Kerman 1974, 104-5, 242).

Boulding spent the intervening period (1932-4) as a graduate student at Chicago.^{vii} He was not impressed with much of the formal teaching but wrote to a friend “There are a large number of Bright Young Men in the graduate school. We meet every week in a seminar to read Mr Keynes” (cited by Kerman 1974, 236-7). George Stigler (1988, 25) recalls that students and junior faculty “of whom Albert G. Hart was the most prominent, organised a seminar and invited a stream of visiting scholars (Oskar Lange and Fritz Machlup, among others) to give talks that led to remarkable stimulating discussions”. Economics Chairman Harry Millis was prepared to transform this seminar into a departmental course; but given the state of “extraordinary intellectual ferment” that existed among the students, they declined for fear that their autonomy might be undermined.

Friedman, Stigler, and Allen Wallis (1993) avidly discussed the idea they were exposed to. Indeed, Milton and Rose Friedmans’ (1998, 35, 39-40) “most vivid memory” of their fellow graduate students was Boulding and Hart vigorously debating: “Both believed it was wasteful for only one person to talk at a time”. Friedman (correspondence to the author, 15 February 2002) has reiterated that Boulding was a dominant influence among graduate students at Chicago; a status that may have been reinforced by his having already published in Keynes’ *Economic Journal* (Boulding 1932).

Hart (1948, vii) located in John Hicks’ (1935) article on ‘A Suggestion for Simplifying the Theory of Money’ the “most direct intellectual influence” on his own *Money, Debt and Economic Activity*. Hicks (1935, 3) emphasised the marginal portfolio analysis in the *Treatise*, as “the most important part of [Keynes’] theoretical contribution”. Hart (1948, vii, 167) described Keynes as “the most fertile monetary thinker of the interwar years”. The revolution in monetary thinking occurred during Hart’s time at Chicago: “Down to the Great Depression of the 1930’s, the stability of velocity made this mechanistic [quantity-velocity] approach reasonable”. However, with the breakdown of the stability of velocity, it was necessary to analyse “people’s motives

and plans; and this is more conveniently carried out in the framework of the payments approach and cash-balance approach". In the chapter on "The Cash-Balances Approach", Hart (1948, 191-2) explained that "This chapter is about motives to hold cash ... [this] approach has a long history and has been widely used – particularly in England ... Among British economists of the twentieth century, Alfred Marshall, A.C. Pigou, D.H. Robertson and J.M Keynes (in the earlier stages of his monetary thinking) took this approach". Hart (1948, viii) also stressed the influence of Mints and Simons on his book.

It therefore seems likely that Friedman took the ideas he was exposed to in Economics 330 and used them as an organising framework with which to understand the 'macroeconomic' dislocation of the 1930s. If intense student discussion is admissible as an "oral tradition" then Friedman's assertion has some validity. A version of the quantity theory which was "in the first instance a theory of the demand for money" was apparently "a central and vigorous part of the oral tradition" at Chicago at least among graduate students in 1932-3 (and possibly until the *General Theory* made Keynes a suspect figure).

2.5 Fifthly, Friedman's initial assertion about Chicago uniqueness in this context must now appear unreliable. The *Treatise* made a profound impression on a variety of economists in a variety of universities. John Kenneth Galbraith (1971, 280) spent 1931-4 at Berkeley where "Leo Rogin discussed Keynes with a sense of urgency that made his seminars seem to graduate students the most important things then happening in the world". Boulding (1956, 133) had a similar sense of excitement at Oxford in 1931. In summer 1930, A.F. Plumptre left Cambridge with a hundred proof copies of the *Treatise*, from which he taught his University of Toronto students, including Lorie Tarshis (1977, 49).^{viii} When in 1932-3, Richard Kahn visited the United States (including a four week visit to Chicago) he reported to Keynes that "The *Treatise* plays an enormously prominent role wherever I go" (16 February 1933; cited by Marcuzzo 2001, 22).

John Williams taught Money and Banking at Harvard (Mason 1982, 419). In his forty-one page lead article review of the *Treatise*, Williams (1931, 549, 552-3, 559, 580) noted in the *Quarterly Journal of Economics* that Keynes was "turning away from old versions of the quantity theory". In Williams' view, Keynes' primary innovation related to the composition of money demand: "a shift of deposits from demand to time deposits". Thus "the concept of the idle savings deposit, and the consequent distinction between saving and investment, underlie Keynes' whole treatment and constitute a valid claim to his having broken new and significant ground in monetary theory". This was "an important advance. Fisher's equation, for example, deals exclusively with demand deposits. So far as I know all theories previous to Keynes' have failed to make use of the statistical division of deposits into demand and time ... in monetary terms, the crux of the matter is that, while banks control the physical quantity of deposits, depositors control the spending of them, and changes in quantity may be offset by changes in velocity or in direction".

Joseph Schumpeter described the *Treatise* to Keynes (JMK XIII [1930], 201) as "a Ricardian *tour de force*" and as a result tore up his own uncompleted work on monetary theory (Moggridge 1992, 593). Erik Lundberg (1994 [1934], 48, 51-2, 62) found that at Harvard in 1933, Schumpeter had "gathered around him a group of

young economists all working with modern monetary theories. During the summer I had discussions with some of them, especially on monetary questions concerning the business cycle". This contrasted favourably with what Lundberg found in Chicago in 1931-2. With respect to business cycle theory, Lundberg thought that Chicago had "very little to offer. Professor Mints touched on some aspects of the problem in his lectures on monetary theories".

It is therefore improbable that the *Treatise* – with its emphasis on money demand – informed 'macroeconomic' discussions in Chicago only. Indeed, Friedman in the preface to these volumes has retreated from his initial assertion about Chicago uniqueness. The chapters in Part 3 of this volume also tend to undermine the uniqueness assertion.

2.6 There has been much speculation about Friedman's motives. He was clearly highly stimulated by the Chicago environment of the 1930s. His teachers "left a unique imprint" on their students. In this Chicago tradition "what mattered in intellectual discourse was only the cogency of the argument". After his return to Chicago in 1946, he self-consciously modelled his teaching style on Viner's. Friedman's (chapter 2 [1956]) essay introduced a collection of dissertations written by students from his Chicago Workshop in Money and Banking. The purpose was "to supplement what I did with related work by students and colleagues. This combination gave birth to what became known as the Chicago School of Monetary Economics" (Friedman and Friedman 1998, 35, 156-7; Friedman 1983, 211; Stigler 1988, 156-7).

Friedman sought to provide an enthusiastic "teamwork approach" for his Workshop (Hammond 1996, 47).^{ix} His pedagogical mission was "to fuel intensive discussion" (Friedman and Friedman 1998, 202, 35, 41, 49). But one energising ingredient, present for Friedman's generation, was missing for students of the 1950s: extreme macroeconomic dislocation. The oral tradition linked the students of the second-generation Chicago School to their predecessors, thus assisting the cultivation of an institutional affiliation.

Friedman (1962a, viii) thought that his role was to act as an intellectual "matchmaker". Some of his students found his "magic" comparable in excitement to "a date with a beautiful woman" (Becker 1998).^x If his 'Restatement' exaggerated the degree of continuity with respect to earlier Chicago versions of the quantity theory this may have been a rhetorical flourish designed to provide an additional motivational stimulus to his students. Friedman (chapter 2 [1956], 21, 4) emphasised "the part which students have played in keeping that tradition alive and vigorous". That tradition "nurtured" his students' essays.

It was a highly successful pedagogical device. Not only did Friedman produce a cohort of students committed to analysing macroeconomics through the quantity theory,^{xi} some such as Robert Lucas (1976, 41) and Thomas Sargent and Neil Wallace (1976, 169) constructed a third generation Chicago School "rules party". So potent was this teaching style that many others "picked up the Chicago business by osmosis" (Bork 1983, 196). Stigler (1962, 71) claimed that Friedman was the intellectual leader, not merely of the Chicago School, but of a much broader church: the "Berkeley-Cambridge axis".

2.7 This chapter does not purport to offer decisive evidence with respect to Knight, Simons, Viner or Douglas. Prior to 1936, these Chicago economists *may* have used Keynes' framework to analyse the Great Depression, orally, despite the paucity of published references. Friedman's cohort had extensive social and intellectual interactions with their teachers (Stigler 1983, 168; 1988, 19; Friedman 1983, 179; Wallis 1983, 179; Director 1983, 179; Minsky 1985, 220). Paul Douglas (1931, 9; 1933, 80) described the *Treatise* as "brilliant" and "The most stimulating single work on money". Viner (chapter 47 [1932], 504) concluded that the diagnoses and remedies contained in Keynes' *Essays in Persuasion* were widely accepted as "substantially and brilliantly right". Moreover, Keynes stood "head and shoulders" above other economists as a "propagandist" whose work was "undiluted by academic scruples to disclose all the qualifications and the uncertainties of his logical argument". Keynes also displayed "fearlessness in assigning to his opponents their appropriately low intelligence quotas... Perhaps what the world has needed and most urgently needs today, is a few more Keynes". However, during a visit to Chicago, Kahn (15th January 1933) reported to Joan Robinson that Viner was "very proud of not having read more than a few passages from the *Treatise*".^{xii}

With respect to post-war published work, Viner, as Mints (1950, 116-7) pointed out, was a "proponent of discretionary authority". Viner (1947, 210-1) proposed that "until better techniques are discovered, the problem of inflation and of deflation needs to be dealt with by improvisation, by ad hoc and prompt reactions to changes in circumstances as they occur rather than by fixed policies set long in advance in accordance with long-run forecasts".^{xiii} Viner's (1958 [1954], 365) use of the quantity theory was different from that asserted by Friedman: he defended the quantity theory against Schumpeter's attacks, on the basis that the theory "is understood as holding only: (1) that an authority powerful enough to make the quantity of money what it pleases can so regulate that quantity as to make the price level approximate to what it pleases, and (2) that the possibility of existence of such a power is not inconceivable a priori".

Friedman (1962) and Viner (1962) both contributed essays to *In Search of a Monetary Constitution*. Viner's contribution to the rules versus discretion debate was entitled 'The Necessity and the Desirable Range of Discretion to be Allowed to a Monetary Authority'. Viner concluded that it was impractical to conduct monetary management "in conformity with a 'rule'", in part, because in the US "the degree of decentralisation of direct and indirect control over the quantity and velocity of money, as well as of official powers to influence the supply of near-moneys and their velocities, is nothing short of fantastic" (1962, 273, 262; see also 1961, 232-3). Viner (1962, 256-8, 261, 252) followed Simons in preferring the "flexible rule" and "judgment" associated with a price-level goal, brought about by variations in the money supply. Indeed, the bulk of Viner's paper was a highly critical commentary of Friedman's $x\%$ money growth rule. Viner could not "exorcise" from his mind Friedman's "faith" and "claims". In Friedman's analysis "an improbable constancy is being projected into the future ... Staking our future on present prophesizing seems a high price to pay for escaping from the bondage of a discretionary authority".^{xiv}

Knight (1964 [1948], xlv, xliii) also objected to the "whole project of making monetary theory the centre and starting point of systematic economics" in part because the "supply and demand curves for 'liquidity' have no solid foundation and

are not a solid basis for action but are ‘theoretical’ in the bad and misleading sense”.^{xv} According to Knight (1941, 65) “that a monetary theory of interest should be defended by economists of repute is especially mysterious in view of the facts, which are directly contrary to what the theory calls for”. Knight explained that “The monetary system can never be made automatic. An approximate constancy in general prices, or in the relation between product prices and wages, can in the nature of the case be achieved only by deliberate action, based on constant attention, correcting or offsetting incipient tendencies to expansion or contraction”. In the rules versus discretion debate over monetary policy, Knight (1960, 105) lent “rather strongly towards the side of administrative discretion and judgement, being sceptical about how far rules can be made in advance or especially how far they would be made wisely by the agencies that would in fact make them”.

However, since this essay highlights the perils of the regression line approach to the history of thought, no definitive judgement is offered with respect to Douglas, Knight, Simons or Viner. Likewise no definitive judgement is offered with respect to Mints’ written work. Friedman’s primary exposure to monetary economics at Chicago was through Mints’ 330: the evidence presented here is sufficient to absolve him of the charges laid by Patinkin and Johnson. However, constraints of space and time prohibit a systematic examination of these other aspects of the issue, which would, of course, be a valuable contribution to the literature.

3. *The Demand for Money prior to the General Theory*

To Friedman’s students he displayed “the missionary’s zeal in the worship of truth” (Becker 1991, 145). Patinkin (to Hicks 19 August 1957) also shared an “open-minded search for the truth”.^{xvi} Patinkin (chapter 5 [1969/1981], 242) sought to use the “true nature of the Chicago monetary tradition” as a powerful weapon to attack Friedman. But in a letter to Phillip Cagan commenting on his forthcoming contribution to *Studies in the Quantity Theory of Money* (Cagan 1956), Patinkin (16th May 1955) modestly acknowledged what he regarded as an intellectual weakness: “seeing how my own thinking frequently gets compartmentalized – and fails to recognize in one context what it recognizes in another”.^{xvii}

What Patinkin apparently failed to adequately realise – in the compartment of his dispute with Friedman - is that the *General Theory* created a structural break in Chicagoan reactions to Keynes and that the concept of liquidity preference was largely contained in the *Treatise*. The history of monetary economics – like the Keynesian Neoclassical Synthesis - develops through “irony” and “error” (Patinkin 1952, 269-70).^{xviii}

Patinkin (1981, 3, 16-7, 247, n17) was at Chicago between 1941-7, the last two years as a doctoral student and research associate at the Cowles Commission. He used his recollections of these years to further undermine Friedman’s assertion: “In so far as the empirical estimation of the demand function for money was undertaken at Chicago, it was done so under the auspices of the Keynesian model builders of the Cowles Commission, which was then located at the University of Chicago. See in particular Lawrence Klein [1947, 1950a]”. At Cowles “Truth in the form of maximum-likelihood estimates identified and enthroned” battled “Error in the form of simultaneous equation error ... Armed with this truth Lawrence Klein developed his econometric models of the United States economy (1947, 1950[a])”.

In 1944, as Patinkin attended Mints' Economics 330, Klein, supervised by Samuelson, wrote his MIT doctoral dissertation on the *Keynesian Revolution*. Patinkin (1981 [1947], 155, n) read and commented on what he described as Klein's "excellent" thesis in manuscript form. In his discussion of the *General Theory*, Klein (1950b, ix, 97, 8, 16) emphasised that "the interest theory of this system is the solution to the entire set of equations *which is based on the liquidity-preference building block* [emphasis in original]". But Klein also emphasised that "the major theoretical innovation of the *Treatise* was an analysis of the functions of money and the motives which lead people to hold cash balances ... the foundations of Keynes' later liquidity preference theory of interest".

Klein's (1950b, 96, 101) thesis also reflected some of the polemics of the emerging modern configuration. Referring to the reviewers of the *General Theory* Klein described Knight as one of "the mob in the stoning of the revolutionary dissenter" and Viner as someone who "did not agree with the theory of liquidity preference ... He was not able to give up the quantity equation".

In "1923, as a faithful pupil of the classical school", Keynes (1936, 334-5) argued that "the claim to cure Unemployment involves the Protectionist fallacy in its grossest and crudest form". But in the *General Theory*, Keynes (1936, 339, 341-4, 351) sought to unravel and undermine the "domination of the classical school" and to locate antecedents to his emphasis on money demand. With fixed exchange rates, the interest rate could not be used to facilitate "full employment" and had been sacrificed "to the operation of blind forces". In contrast, mercantilists opposed high interest rates: "they were even aware that the rate of interest depended on liquidity-preference and the quantity of money". Between these two positions stood economists with varying degrees of confusion. David Hume had "a foot and a half in the classical world", while the "great" John Locke had managed to have "one foot in the mercantilist world and ... one foot in the classical world". One of the defining characteristics of those who had (partially) escaped the "classical" nonsense was an understanding of liquidity preference. Not only had Locke failed to proceed to "a genuine synthesis" but he was also "confused" and "overlooked altogether the possibility of *fluctuations* in liquidity preference" [emphasis in original]. As usual Keynes added some provocative spice to his analysis: "One recurs to the analogy between the sway of the classical school of economic theory and that of certain religions".

In the *General Theory*, Keynes (1936, 174, 194-5) explained that "the concept of *Hoarding* may be regarded as a first approximation to the concept of *Liquidity-preference*". Liquidity preference was "substantially the same as that which has been sometimes discussed under the heading of the Demand for Money ... In my *Treatise on Money* I studied the total demand for money under the headings of income-deposits, business-deposits, and savings-deposits, and I need not repeat here the analysis which I gave in Chapter 3 of that book". Keynes (1936, 176, n3, 179) specifically associated Knight with a theory of interest which was "precisely in the traditional, classical mould". In Keynes' judgement, Knight and the other "classical" theorists were guilty of propagating a "nonsense" and had failed to "furnish material for a theory of interest". When "we introduce the state of liquidity-preference and the quantity of money ... then the whole position becomes determinate".

Knight scribbled “Nonsense” and sometimes even stronger comments throughout his copy of the *General Theory* (Patinkin 1981, 289). In his milder published review, Knight (chapter 50 [1937], 122, n22) objected to the tone of the *General Theory*: “it has become quite the fashion to account for differences in intellectual positions by psycho-analysing, or somehow ‘explaining’ one’s opponent (and the example of following the fashion having in this case been set by Mr Keynes)”.^{xix} In 1940, Knight opposed the award of an honorary degree to Keynes on the grounds that “His work and influence seem to me supremely ‘anti-intellectual’” in that he had sought to pander to the “prejudices” of “the man-in-the-street” (cited by Patinkin 1981, 301).

As Harrod (1951, 409) pointed out, “the greater part of the doctrine of the *General Theory* on liquidity preference is to be found quite clearly set out in the *Treatise*”. In the *Treatise* Keynes (1930, 249) discussed the motives for “the main variation in the total demand for money”. In the *Econometrica* article which launched the IS-LM formalisation of the *General Theory*, Hicks (1937, 147) declared that that it was “the liquidity preference doctrine which is vital” in distinguishing the “classical” from the Keynesian equations: “Liquidity Preference transports us from the ‘Treasury View’ to the ‘General Theory of Employment’”. Both Knight and Viner took exception to Keynes’ analysis of money demand: “His use of the term ‘liquidity’ to designate everything that makes it desirable to hold money ... does not seem to be an advance or justifiable”. Keynes’ assertion “that the rate of interest does, at any time, equilibrate the desirability of holding cash with the quantity of cash, is not only badly worded ... but is definitely besides the point” (Knight chapter 50 [1937], 112). Viner (chapter 48 [1936], 158-9; [1964], 258-263) complained about Keynes’ “gross oversimplification” of the issue. However, the focus of Chicagoan opposition remained the *General Theory* not the *Treatise*.

In ‘Some Notes on Liquidity Preference’, Kahn (1954, 250, 245) explained that Keynes never really escaped from the idea of a “stable” money demand relationship. Kahn sought to undermine Dennis Robertson’s attempt to put liquidity preference theory on stronger grounds by replacing the speculative motive for holding money. He was responding to Robertson’s (1946, 25) assertion that “the older Cambridge theory is kinder to ‘liquidity preference’ than is Mr Keynes” of the *General Theory*. Kahn concluded that “Sufficient has been said to demonstrate the unsuitability of thinking of a schedule of liquidity preference as though it could be represented by a well-defined curve or by a functional relationship expressed in mathematical terms or subject to econometric processes. Keynes himself often gave way to the temptation to picture the state of liquidity preference as a fairly stable relationship, despite his intuitional horror of undue formalism, but his treatment at least can be justified by the need at the time for a forceful and clear-cut exposition if it was to carry any weight at all”.

Kahn (1984, 171, 53, 51, 59, 137) heard Keynes lecturing from early drafts of *Treatise* and “found his lectures extremely puzzling, based, as they were, on the Quantity Theory. (The great change occurred in the Summer Term of 1932)”. Kahn complained that the *Tract* was “far more strictly monetarist than Marshall and Pigou”. But Keynes then “spent a considerable part of the next twelve years of his life in a struggle to escape from the stranglehold of the Quantity Theory”. When the *General Theory* was published, “that was the end of the Quantity Theory until its recent

resuscitation. Keynes in his long fight for release had conquered". In this battle for mental liberation the *Treatise* represented "an intermediate phase". Kahn reflected that "the origins of the liquidity preference theory of the rate of interest go back to Marshall ... In a primitive, but extremely interesting form, the theory is to be found in a section of the *Treatise*".^{xx}

Patinkin (chapter 45 [1975], 260; 1976, 7, 136, 45, 81) also described the *Tract*, the *Treatise* and the *General Theory* as Keynes' interwar "trilogy ... The Saga of Man's Struggle for Freedom from the Quantity Theory". Keynes had inherited this quantity-theory tradition "from his teachers at Cambridge". Patinkin cited the preface to the French edition of the *General Theory* in which Keynes stated that "the following analysis [of money and prices] registers my final escape from the confusions of the Quantity Theory, which once entangled me". Patinkin provided what he regarded as "conclusive evidence that a significant shift took place in Keynes' views on the efficacy of monetary policy between the *Treatise* and the *General Theory*". In the *Treatise* there was "the unmistakable ring of the quantity theory" plus "the essence of the theory of liquidity preference".

In autumn 1932, Keynes delivered lectures at Cambridge on 'The Monetary Theory of Production' (Patinkin 1976, 72).^{xxi} In those lectures, Keynes (JMK XIII [1932], 397-8) referred to "the state of liquidity-preference ... which tells us what ... the rate of interest exclusive of risk-allowance, will be, given to [the ?] quantity of money". Keynes also discussed a fall in output "in accordance with the argument in my *Treatise on Money*. Consequently the demand for money in the active circulation will fall, which in turn will affect the state of liquidity preference so that there will be a lowering *cet. par.* of the rate of interest corresponding to the given quantity of money" (Keynes cited by Patinkin 1980, 18). Patinkin (1976, 72) commented that "The voice is that of the *General Theory*: but the analytical framework is still largely that of the *Treatise*".

Patinkin (1976, 33) explained that "One of the standard tasks with which every student of Keynes' writings is confronted is that of tracing the intellectual relationship between the *General Theory* and the *Treatise*". Patinkin also noted that "economists who did their graduate training after the appearance of the *General Theory* – that is, the vast majority of professional economists today – are unlikely ever to have studied the *Treatise* systematically". As an historian, Patinkin qualified for this minority status. As someone who did his graduate training between the *Treatise* and the *General Theory*, so too did Friedman.

4. 1931: Keynes and the Chicago School

Keynes spent a fortnight in Chicago (22 June-2 July 1931) attending the Harris Foundation lectures and seminars on "Unemployment as a World Problem" against the background of two parallel banking crises, in both Europe and in Chicago. The 1931 European financial crisis had started with the failure of the Credit Anstalt bank in Vienna on 11 May. This financial contagion began to spread to Austria's neighbours, including Germany. From late May, the Reichbank began to suffer heavy losses of reserves. On 20 June 1931, President Hoover proposed a two-year moratorium on war debts and reparation payments. On 24 June 1931, the Reichbank obtained a central-bank credit of \$100 million which temporarily calmed the markets. This "unexpected" development forced Karl Pribram (1931, 112, 118) from the

University of Frankfurt, to rewrite part of his Harris Foundation lecture. With respect to unemployment, “the situation has nowhere reached such a critical state as in Germany. And this reflection brings us back to the hopes of recovery attached to the execution of Mr Hoover’s relief action”.^{xxii}

Between December 1929 and the end of 1932, two thirds of banks in Chicago failed, a higher proportion than any other major US city (Phillips 1994, 17). When Roosevelt received the Democratic nomination in Chicago in June 1932, the city was in the midst of a banking crisis: “great crowds gathered at the banks” (Hoover 1952, 170; Kennedy 1973, 40-42). Keynes (JMK XX, 555-7, 571) was shocked by the banking crisis that he found upon his arrival in Chicago. On the same day that he gave his first Harris Foundation lecture he wrote to Hubert Henderson: “Quite apart from the immediate situations, German or other, the effect on the situation here which I had most underestimated before I came was the position of many banks in the country ... Owing to the number of banks which have actually failed there is great unrest among depositors. There is a possibility at any moment of bank runs breaking out in different parts of the country, similar to what was lately experienced at Chicago. The consequence is that depositors not infrequently take their money out in cash and keep it in a safe deposit box. This has been particularly marked in recent weeks in the Chicago district, where safe deposit boxes are no longer obtainable. Everyone agrees that there must be at least \$400,000,00 to \$500,000,000 being actually hoarded by the public in the shape of currency in boxes. The same movement which has been occurring in Chicago might break out at any time in the Middle West if suspicions as to the position of the banks were to increase”. On his return to Britain, Keynes reflected that “The Chicago situation is largely a reflection of a quite appalling real estate collapse from which it may take years to recover”.

Keynes (1931a, 3, 4, 27, 35, 40, 16-7) began his Harris lecture in apocalyptic fashion: “We are today in the middle of the greatest economic catastrophe – the greatest catastrophe due almost entirely to economic causes – of the modern world. I am told the view held in Moscow that this is the last, the culminating crisis of capitalism and that our existing order of society will not survive it”. Keynes dissented from this pessimism: “I believe that our destiny is in our own hands and that we can emerge from it if only we choose - or rather if those choose who are in authority in the world”. He explained that a “secure basis for a return to an equilibrium of prosperity” could only be achieved by increasing the volume of investment and allowing a revival of the price level. He suggested that interest rates needed to be reduced via an increase in “the quantity of liquid assets” through open market operations which “involves technical questions of some difficulty with which I must not burden this lecture”.

The United States (and presumably Chicago) in 1931 had a profound impact on Keynes (JMK XX [1931], 586): “Before I went to the United States I was disposed to hold with some confidence that the first impetus to recovery in the rest of the world would have to come from America. I held this view so firmly that it was sometime before I even questioned it. But eventually it was put to me point blank in discussion that perhaps the opposite was true. And in the end I came to wonder whether this might not be the more probable opinion. We may have to drag along what seems an endless period until something happens to stir the dry bones elsewhere then in North America”.^{xxiii}

Keynes' Harris lecture certainly made an impression on J. Laurence Laughlin, the founding chairman of the Chicago economics department and the founding editor of the *JPE* (1892-5). In *The Federal Reserve Act its Origin and Problems*, Laughlin (1933, 222, 229, 231-2) abused the quantity theory, Fisher and his "unquestionable error ... the American inflationist school of Irving Fisher has called in for reinforcement ... John Maynard Keynes". Keynes' "remarks on the abandonment of the British gold standard and the sacerdotal nature assigned to the influence of the quantity of money on prices are scarcely credible". Presumably referring to the Harris lectures, Laughlin continued: "Coming to this country [Keynes] was, of course, given a hearing in magazines and as a speaker, but his method of going off into difficult ground, where it was hard for the untrained mass to follow kept him from making much of an impression. On the gold standard and its substitution by sterling, he could not easily be followed ... Such exposition sounds most like the theorising taken from Alice's Adventures in Wonderland. It would seem as if Keynes in this process has stepped off the firmer earth into the violent instability of dreams. It is too fantastic to be taken seriously".

But Patinkin (chapter 46 [1981/1979], 293-4) asserted that the Harris lectures "apparently did not bring [Keynes] into contact with the Chicago School ... Henry Simons (who was then an assistant professor) did participate in several of the round tables, but he too did so actively only once and inconsequentially (*Reports*, p. 88). Only Lloyd Mints (then also an assistant professor) played a more active role". Given the pivotal importance of Mints' Economics 330 in the dispute over Chicago oral tradition this seems a surprising assertion. Virtually all of the Chicago economists were listed as members of the 1931 roundtable group, including Garfield Cox, Aaron Director, Harry Gideonse, Frank Knight, Harry Millis, Samuel Nerlove, Henry Schultz, Chester Wright, Quincy Wright and Theodore Yntema (Davis 1971, appendix B). The evidence suggests that the Harris lectures unambiguously brought the Chicago School into contact with Keynes, oral traditions and the quantity theory-money demand nexus.

Simons contributed to the session led by Hansen (24th June) on 'Business Cycles, Price Levels and Unemployment'. Hansen (1931, 59-60) argued that "one of the things that tends to prolong the depression at the present time as against earlier periods is the fact that takes a longer time to reach a readjustment in the internal price structure, because our price and wage systems are becoming increasingly rigid. That means there is a longer lag, a longer time before you reach a new equilibrium in the internal price structure, which I think is a fundamental condition for an increase in the rate of investment". Hansen (1931, 62) dissented from the analysis provided by the *Treatise*: "It seems to me that the maladjustment between the rate investment and the rate of savings, which Mr Keynes discusses so clearly in his book, is fundamentally to be found not on the saving side, but on the investment side". The proposal to increase wages, Hansen (1931, 64-5) argued "invert[ed] cause and effect ... this thesis entirely overlooks all the fundamental principles which I am not willing to abandon, that we have had worked out through a long development of economic theory of the relation of money and prices, a theory, in other words, of the value of money. You cannot control the price level by raising the price of one agent of production. That, in a nutshell, is the point".

Keynes (1931a, 73-4) responded: “I find it very difficult to discuss this question without making a distinction between the level of prices and the level of costs ... The quantity theory, I think, is essentially an equilibrium theory. When the two are in adjustment, when costs and prices are adapted to one another, the level of the two of them depends on the quantity of money”.

Keynes (JMK XX [1931], 580) later reflected that at the Chicago conference the majority opinion favoured the view that the wage-price nexus operated in reverse: “I heard the question of the advisability of wage reductions discussed in a large gathering of academic economists. The voice of the ‘equilibriumists’ ... was heard, but I think it would be true to say that the balance of opinion was decidedly in favour of the view that the immediate advantages to employment from wage reductions would not be large and were outweighed by other considerations (social and the effect on the price level in relation to monetary indebtedness)”.

Lewis Lorwin (1931, 84) asked Keynes about his preference for an “indirect” solution to unemployment by manipulating the interest rate as opposed to more “direct” methods. Keynes (1931a, 84) replied: “I use that because I am speaking in the country which is the last home of individualism”. Wright, Director, Cox, Simons and Mints all took part in the subsequent discussion. Keynes (1931a, 92) thought that this discussion “brings us back to the question asked about individualism, whether private capitalism is capable of solving the problem completely. I do not feel at all certain.” Referring to the idea that “the conditions which lead to prosperity have within them the seeds of depression ... so long as you have as a guiding force the desire for profit”, Wright (1931b, 93) asked Keynes “whether at least that degree of inevitability is inherent?” Keynes (1931a, 93) responded: “I should agree that the capitalistic society as we now run it is essentially unstable. The question in my mind is whether one could preserve the stability by the injection of a moderate degree of management; whether in practice it is beyond our power to do this, and that we will have to have some further plan of control. I should like to try the central bank method first, uncertain how far in practice it would lead us. If that proved to be incapable of keeping things reasonably steady, but I should go in for a very great degree of state control of the rate of investment”.

As a result of this questioning, Keynes (1931a, 94) outlined two aspects of the philosophy to which Simons and the “rules party” objected. Keynes advocated discretionary macroeconomic management to “keep the price index and the employment index steady”. Hansen (1931, 94) asked whether it was not the case that “in our present state of knowledge we have no guide at all dependable, and consequently the system you propose is a purely Utopia one?”

Keynes (1931a, 94) defended himself by explaining that “statistics are becoming more adequate ... I think we economists have given the practical business men very little real help in the past. If they were aided by more complete statistical data, then I think we should find central banks doing their best duty”. When asked by Hansen (1931, 94) about the reliability of the “judgment” of the central bankers, Keynes (1931a, 94) replied: “I think we already know enough to give them general suggestions ... Painful experience works wonders. It is really the economists who are primarily at fault. We have never given any sort of scientific conclusions, such as you would expect. So long as the supposedly experts fail to agree among themselves, it seems to me

reasonable for the practical business men to pay only moderate attention to them". Magnusson (1931, 96) asked him: "Must we not be very careful in our use of the word 'scientists'? Are we justified in really flirting with the word?" In reply, Keynes (1931a, 96) explained that "Ours is a very complex science. It possesses the subject matter of science".

5. 1931: Keynes and Mints

In the June 23rd seminar on 'Public Works Construction and Unemployment', Keynes (1931a, 303) stated that he thought "the argument for public works in this country is much weaker than it is in Great Britain. In Great Britain I have for a long time past agitated very strongly for a public works program, and my argument has been that we are such a centre of an international system that we cannot operate on the rate of interest ... In this country you haven't a problem of that kind. Here you can function as though you were a closed system ... For such a system I would use as my first method operating on the long term rate of interest ... I think in this country deliberate public works should be regarded much more as a tonic to change the state of business conditions, but the means of getting back to the state of equilibrium should be concentrated on the rate of interest".

Mints had an extensive exchange with Keynes during the Harris Foundation seminars. Keynes led the discussion on 'Is it possible for Governments and Central Banks to do Anything on Purpose to Remedy Unemployment?' Chairman Quincy Wright (1931b, 461) invited the audience "to take up the cudgels with Mr Keynes". Mints (1931, 479) asked Keynes: "Your means of reducing a long-term rate of interest has been an indirect means. I wonder what you would say to a more direct means, namely purchasing industrial and public utility bonds by the member banks themselves".

Mints did not receive a satisfactory reply. Later, Keynes (1931a, 493) stated that "the forces of supply are the savings of the community: the forces of demand are the amount of construction that will take place at different rates of interest, and I want to fix the rate of interest at the point where the supply and demand meet". Mints (1931, 493-4) pressed Keynes again: "I should like to revert for a moment to the question of the relative importance of lowering the interest rate and public works. As I understand your argument, you want to reduce the interest rate in order to bring about equivalence between saving and investment. As a matter of fact, won't public works bring about precisely the same results, not through decreasing the rate of interest, but increasing the rate of return for business firms, thereby increasing the rate of investment, even at current rates of interest?"

Keynes (1931a, 494) replied: "Certainly; therefore I am in favour of an admixture of public works, but my feeling is that unless you socialise the country to a degree that is unlikely, you will get to the end of the public works programme, if not in one year, in two years, and therefore if you're not prepared to reduce the rate of interest and bring back private enterprise, when you get to the end of the public works programme you have shot your bolt, and you are no better off. I should use the public works programme to fill in the interregnum while I was getting the interest down. The public works program would in itself increase business profits, and therefore relieve people from that exceptional unwillingness to borrow. I should be afraid of that as a sole remedy. I should be afraid it would work itself out, come to an end, and then we should be back where we were unless we decided on a very definite further action".

According to Kahn (1974, 368-9), Keynes had previously been “curiously conventional for a genius”. Influenced by Kahn’s (1931, 1933) multiplier articles, Keynes gradually began to embrace a position much closer to that espoused in 1931 by Mints. By 1951, it appears that Mints’ pre-*General Theory* advocacy of public works had undergone a transformation. Dennis Robertson (1951, 466-7), in a review of Mints’ (1950) *Monetary Policy for a Competitive Society* suggested that Mints’ opposition to public works looked as if it was “tinged with fanaticism”.

Samuelson (1996, 149-150, 154-5) may have witnessed part of this transformation during his undergraduate years at Chicago (1932-5). He was taught undergraduate monetary economics by Mints using Robertson’s *Money* and another text from which he “was taught $MV=PQ$ ”. When, in 1935, he was considering whether to go to Harvard graduate school he was “warned by Lloyd Mints that Seymour Harris in macroeconomics was an inflationist ... Mints must have had some keen sense of smell, because after Harris did get tenure he became a flaming Keynesian”.^{xxiv}

But in Chicago, Keynes (1931a, 27, 35, 40, 16-7) explained that a “secure basis for a return to an equilibrium of prosperity” could only be achieved by increasing volume of investment and allowing a revival of the price level. Keynes suggested that interest rates needed to be reduced via an increase in “the quantity of liquid assets” through open market operations which “involves technical questions of some difficulty with which I must not burden this lecture”. Keynes explained that he was limited by “the medium of oral exposition” adding that “Those who may wish to pursue the matter further I must refer to my *Treatise on Money*”. There is common agreement that in June 1931, Keynes essentially repeated the analysis contained in the *Treatise* (Patinkin 1976, 68; Moggridge 1992, 518; Skidelsky 1992, 391; Dimand 1988, 143-4; Klein 1950b, 35).

Lorie Tarshis (1996, 55) recalled that on 10th October 1932, Keynes arrived for the first lecture of a course that had been scheduled as ‘The Theory of Money and Prices’; but announced that the lecture series had a new title: ‘The Monetary Theory of Production’, a change that Keynes declared was “significant”. Tarshis reflected that this was “the opening bugle of the Keynesian revolution”. In October 1932, before the modern configuration had fully emerged, Friedman scribbled on his 330 bibliography: “Look up Keynes’ lectures for Harris Foundation on reserve at E11 under Q. Wright’s name”. Friedman, like other attentive 330 graduate students, presumably wrote these words in at Mints’ suggestion.

6. 1932-3: Mints and Friedman

6.1 Economics 330 Course Outline

There are in effect two relevant Economics 330 bibliographies in the Friedman archives.^{xxv} The first is the version that Mints presumably circulated in the first class of the course and the second is the version that Mints actually used for the course (which consists of the first plus Friedman’s handwritten additions).

The only two items in the first bibliography that are added to in the second relate to Irving Fisher’s *Purchasing Power of Money* and Keynes’ *Treatise*. With respect to the first, Friedman (to Patinkin 19 July 1972) recalled “that Mints paid a great deal of

attention to Irving Fisher's work and in particular to the book on the *Purchasing Power of Money* in the monetary course that I remember taking from him. Certainly I recall when I left Chicago after being a graduate student there in the period from 1932 to 1935, I left with a definite opinion that Fisher was one of the great men of the time and one of the great contributors to monetary analysis. Perhaps I got that somewhere else, but I think I got it in large measure from Mints' course".^{xxvi} Since Mints informed Patinkin (1981, 285) that "I have always had the greatest respect for Irving Fisher" Friedman's recollection appears to be justified.

Amongst the 19 items on the second section of the first bibliography were "Fisher, *Purchasing Power of Money*, chs. 2-5" which Friedman corrected by hand to read "2-5 + 8". Chapters 2-5 largely outlined the equation of exchange. The purpose of chapter 8 ("Influence of quantity of money and other factors on purchasing power and on each other") was "to set forth the causes determining the purchasing power of money ... It is proposed in this chapter to inquire how far these propositions are really *causal* propositions" [Fisher's emphasis]. The chapter concluded that "we find nothing to interfere with the truth of the quantity theory that variations in money (M) produce normally proportional changes in prices" (Fisher 1922 [1911], 149, 151, 183).^{xxvii}

Patinkin (chapter 5 [1969/1981], 245, 250) concluded that the Chicago quantity theory was "first and foremost, not a theory of the demand for money, but a theory which relates the quantity of money (M) to the aggregate demand for goods and services (MV), and thence to the price level (P) and/or level of output (T); all this in accordance with Fisher's $MV=PT$ ". According to Patinkin's notes from Mints' 1944 lectures: "Mints prefers following statement of quantity theory: P is the dependent variable (in the long-run) of the equation $MV=PT$. But in the short run all variables tend to move together".

At one level, the structure of the 1932 version of 330 appears to support Patinkin's account. According to the course outline there were three sections. The first section was devoted to "The functions of money and banking (a) the origins of money; (b) the functions of money (c) the functions of banking"; the second to "Statement of theories concerning the relation of money and banking to the price level"; and the third to "Appraisal of these theories by means of (a) logical analysis; (b) examination of the process of changes in the price level".

At a deeper level, the evidence supports Friedman's memory. In the first bibliography there are two entries for "Keynes, Monetary Reform": the first under section II, "Statement of theories concerning the relation of money and banking to the price level" ("pages 81-95") and the second under "Some general references on the theory of international prices" ("pp. 95-116"). Both entries come from chapter 3 ('The theory of money and of the foreign exchanges').

Keynes had been teaching the material contained in chapter 3 of the *Tract on Monetary Reform* at Cambridge since 1911 (Skidelsky 1992, 153; 1983, 214-21; Moggridge 1992, 197-200). In that year, Keynes (JMK 1983, 11 [1911], 375-76) in his review of Fisher's *Purchasing Power of Money* stated that "the theory of money, as it has ordinarily been understood and taught by academic economists in England for some time past, is considerably in advance of any published account of it. It is hardly an

exaggeration to say that monetary theory, in its most accurate form, has become in England a matter of oral tradition. These preliminary remarks are necessary in order to explain that it is from the standpoint of this oral tradition, rather than from that of any printed book, that an English economist must approach Professor Fisher's very important contribution to the subject".

Chapter 3 of *Monetary Reform* began with the statement that "The quantity theory of money ... is fundamental. Its correspondence with fact is not open to question". Keynes (1923, 74, 84-6, 95-116) explained that the supply of money was "under the direct control (or ought to be) of the central banking authorities" but that the public's holding of cash and deposits was "not directly controllable, and depends on the mood of the public and the business world". Keynes then argued that "Cyclical fluctuations" were characterised primarily by changes in the latter and not the former. Stabilising the price level, Keynes argued, required the authorities to vary the money supply so as to "counterbalance" the movements of money demand.

6.2 Friedman's Readings, 330 Lecture Notes and Examination Paper

At the end of the course, Mints required his students to answer four examination questions from a total of five. The first two were invitations to critically examine statements made by Frederick Hayek and Ralph Hawtrey (the second relating to Fisher's equation of exchange). The third was an invitation to examine the *ceteris paribus* assumption of the quantity theory. Question 4a was: "Discuss the relation between the k of Keynes' earlier equation and the velocity of circulation". 4b was "Discuss the statement that changes in the velocity of circulation of goods cannot bring about changes in the price level because of the fact that they necessarily bring about compensating changes in the velocity of circulation of money". Question 5 was "According to Keynes' analysis what would it be necessary to do in order to eliminate the business cycle? State and support your opinion of Keynes' conclusion".

Milton and Rose Friedman both took this examination, which was scheduled immediately following Viner's examination. Rose Friedman recalled that Viner was "an extreme disciplinarian in the classroom. Some students found the course forbidding and lived in fear of the man and of his subject. I found the course stimulating but the man forbidding, in part because the tales I had heard as an undergraduate about how tough he was. The gossip was that he failed at least a third of the class every year". Because her brother, Aaron Director, was on the faculty she "was nervous about embarrassing him by not making the grade ... I was so nervous at the end of Viner's exam that I could not read the questions in Mints's exam". When Mints saw her paralysed in his examination room "he came over and asked what was wrong. I explained my problem. In a very fatherly way, he said, 'Just relax for a few minutes and you'll be fine'. But that didn't happen. When Mints came around a second time when I was in no better mental condition, his answer was, 'You can write a paper on Keynes's *Treatise on Money* instead'" (Friedman and Friedman 1998, 35, 38). This could only be interpreted as an act of kindness if the *Treatise* was such a prominent component of the course as to be easily accessible even to a student suffering from Viner-paralysis.

Not only were the last required words of the course about Keynes, but also the first words that Friedman wrote in his notes were "Econ 330 Keynes". Mints concluded that: "General Framework of Keynes likely to endure much longer than details. 1.

Equality of Investment + Savings. Is this idea something entirely new? Mints says no". The evidence suggests that in autumn 1932 Mints allocated more attention to the *Treatise* than he had intended to. The *Treatise* appeared as item 18 in the original bibliography under section II with the required readings listed as "Vol I, chs. 9-12 and 14". Friedman underlined the whole of item 18 and crossed out the original chapters and replaced the entry with "chs. 9-19". Under section IIIa. Friedman added "Keynes Treatise vol I Pages 53-120 (part. 53-88), also 221-239". Friedman initially took thirty pages of notes from chapters 9-19 of the *Treatise*, and then took an additional fifty-one pages of detailed notes from volume one and six pages of notes from volume two.

Chapter 19 of the *Treatise* began with the observation that "The experience of postwar period led many of us to advocate stability of the price level as the best possible objective of practical policy. Amongst other things, this would mean an attempt on the part of the banking authorities to eliminate the credit cycle at all costs". Chapter 10 ('The Fundamental Equations for the Value of Money') began with the observation that "The Fundamental Problem of Monetary Theory is ... to treat the problem dynamically, analysing the different elements involved, in such a manner as to exhibit the causal process by which the price level is determined, and a method of transition from one period of equilibrium to another. The forms of the Quantity Theory, however, on which we have all been brought up – I shall give an account of them in detail in Chapter 14 – are but ill adapted for this purpose" (Keynes 1930, 293, 133).

Chapter 14 was devoted to 'Alternative Forms of the Fundamental Equation'. Section 1, outlining 'The "Real Balances" Quantity Equation', almost perfectly capture Friedman's (chapter 2 [1956], 3-4) description of the Chicago oral tradition in which it was vitally important to explain "why people are willing to hold the particular nominal quantity of money in existence ... The quantity theory is in the first instance a theory of the demand for money". In section 2 of chapter 14 ('The "Cambridge" Quantity Equation'), Keynes (1930, 229) explained that he was doing little more than capturing a Cambridge oral tradition: "The 'Real-balances' Equation discussed above is descended from a method of approach long familiar to those who have heard Professors Marshall and Pigou in the lecture-rooms of Cambridge".^{xxviii} It appears that chapter 14 made a special impression on Friedman. Under his notes entitled "1. 'Real-Balances' Quantity Equation" Friedman provided what appears to be the only cross-reference in these fifty-seven pages: "[see notes on Monetary Reform]".

Keynes (1924, 336) explained that Alfred Marshall's "main ideas became known to pupils in a general way, with the result that there grew up at Cambridge an oral tradition, first from Marshall's own lectures and since his retirement from those of Professor Pigou, different from, and (I think it may be claimed) superior to, anything that could be found in printed books until recently". Keynes then added a footnote: "Professor Irving Fisher being the first, in several instances, to publish in book-form ideas analogous to those which had been worked out by Marshall at much earlier dates".

Keynes (1924, 338) summarised the Marshallian approach to money as reflected in *Money Credit and Commerce*: "Marshall also expounded long ago the way in which distrust of a currency raises prices by diminishing the willingness of the public to hold

stocks of it – a phenomenon to which recent events have now called everyone’s attention; and he was aware that the fluctuation in the price level, which is an accompaniment of the trade cycle, corresponds to a fluctuation in the volume of ‘ready command’ which the public desire to hold”. After ‘ready command’ Keynes added a footnote: “This is Marshall’s phrase for what I have called ‘real balances’”.

In 1932, Mints required his 330 students to read Marshall’s *Money Credit and Commerce* and Friedman took two pages of notes from chapter IV, ‘Total Value of the Currency Needed by a Country’. Friedman wrote: “Function of Currency. A. Money demand not for own sake but its possession gives ready command of general purchasing power in a convenient form ... Total value of a country’s currency, multiplied into the average no. of times of its changing hands for business purposes each year, is of course = to the total amount of business transacted in that country by direct payment of currency in that year. But this identity statement does not indicate the causes that govern the rapidity of circulation of currency: to discover that we must look to amount of purchasing power which the people of that country elect to keep in form of currency”.

In his 330 bibliography, Friedman wrote “read” underlined four times alongside “Hansen Business Cycle Theory, chs. 1 and 6” and took thirty pages of notes from that book. Hansen (1927, iv, 3, 7) explained that his purpose was to enable the student “to cut a path through the tangled mass of apparently contradictory explanations of the business cycle”. In Chapter 1 (‘A Classification of Business Cycle Theories’) Hansen identified “three broad type of business cycle theories”. The first two types believed that the business cycle was a “function of the capitalist economy”; the first seeking remedies through redistributing income in a more egalitarian fashion; the second focusing attention on the inherent nature of technology. The third type of explanation saw the business cycle as “a function of the money economy”.

In Chapter 6 (‘The Money Economy as a Cause of the Business Cycle’), Hansen (1927, 139, 143-4) explained that Hawtrey’s “theory of the business cycle may be said to be the culmination of the line of analysis which we have been tracing”. The central element of this type of theory was that “It is the *flow* [Hansen’s emphasis] of purchasing power that is important, not the outstanding aggregate of money units. The ‘unspent margin’ in terms of money units, is made up of the money in circulation and the bank credit outstanding ... Hawtrey’s ‘command over wealth which the people hold in reserve’ appears to be similar to J. M. Keynes’s ‘volume of real balances ... [which] may fluctuate violently even though there is little change in the volume of cash or in the reserve policy of the banks”. Hansen (1927, 144) proposed that this Hawtrey-Keynes type of theory be called “deflations and inflations of real balances”.

In 1932, Mints also prescribed “Pigou, The Value of Money, in the Quarterly Journal of Economics for 1917-18, pp. 38-65”. Two decades later Mints coedited an AEA volume of *Readings in Monetary Theory* in which Pigou’s essay was reprinted (Lutz and Mints 1952). In the 1950s Friedman presumably had an opportunity to reread Pigou’s article since he recommended the Lutz-Mints volume to his students (Hammond 1999). Pigou (1952 [1917-8], 163, 183, 173-4) explained that he was “not in any sense an ‘opponent’ of the quantity theory or a hostile critic of Professor

Fisher's lucid analysis". But to "tackle" the problems associated with the value of money "without tools is like going into a modern battle unhelmeted and unarmed. The 'quantity theory' furnishes a tool which in the skilled hands of Professor Irving Fisher has accomplished great things. But less experienced craftsmen need, I think, a better – a more completely fool-proof tool. It is this that, in the preceding pages, I have endeavoured to provide".

The bulk of Pigou's article was devoted to the demand for money, its supply and the interaction between the two. Having derived "the demand schedule for money ... the dry bones of my equation of demand" Pigou explained that "it remains to explain the relation in which that equation stands to the 'equation of exchange' made familiar in the 'quantity theory' – an equation, by the way, which would itself be more properly described as an equation of demand". Pigou claimed that the money demand formulation of the quantity theory was "a somewhat more effective engine of analysis ... I offer this specification of it in order that those interested in monetary theory may test its powers in actual work upon concrete problems".

In 1932, Mints also prescribed "Robertson, *Money*, revised edition, chs. 2, 3 and 4". Two thirds of a century later it remained, in Friedman's judgement, "one of the most lucid and profound presentations of the central principles of monetary theory" (Friedman and Friedman 1998, 247). In contrast, Samuelson (1996, 148-9) used Robertson's *Money* to support Patinkin's assault on Friedman.^{xxix} However, in chapter 2 on "The Value of Money" Robertson (1928, 39, 30, 37) explained that he was describing "the underlying psychological forces determining the value of money ... *given the conditions of demand for money*, its value depends on the quantity of it available". The "truth" of the matter was that "in estimating the demand for money we must take into account not only the volume of goods to be disposed of within a given time, but also the frequency with which each of them changes hands ... the magnitude of the demand for money, like that of the demand for bread, turns out to be the result of a process of individual weighing-up of competing advantages *at the margin*" [Robertson's emphases].^{xxx}

Patinkin's (chapter 5 [1969/1981], 255) "main point" was that Friedman (chapter 2 [1956]) presented "an elegant and sophisticated statement of modern Keynesian theory ... whose analytical structure as it now exists stems from the publication during the 1930s of Keynes' *Treatise on Money* (vol 1, pp140-46)" plus Hicks (1935, 13-32) and Keynes (1936, 166-72, 22-9). But years before the *General Theory*, Keynes (1924, 337) stressed that this marginal portfolio analysis of an individual's demand for money was part of the Marshallian heritage. Hicks (1935, 3) also emphasised that in the *Treatise*, Keynes had "put substance" into the analysis of "choice at the margin ... by his doctrine that the relative preference depends upon the 'bearishness' or 'bullishness' of the public, upon their relative desire for liquidity or profit". This was "the most important part of his theoretical contribution".

Thus Patinkin (chapter 5 [1969/1981], 242, 255) argued that Friedman's (chapter 2 [1956]) supposed "reformulation" of the quantity theory was "a misleading designation" because "what Friedman has actually presented is an elegant exposition of the modern portfolio approach to the demand for money which, though it has some well-known (albeit largely undeveloped) antecedents in the traditional theory, can only be seen as a continuation of the Keynesian theory of liquidity preference".

Friedman (chapter 2 [1956]) was “in direct continuation of this intellectual line of descent”. Yet Patinkin included the *Treatise* in this lineage.

6.3 Reviews of the *Treatise*

On the back of his 330 bibliography Friedman wrote a list of reviews of the *Treatise* which included the Keynes-Robertson and Keynes-Hayek exchanges, plus reviews from Pigou, Hawtrey, Williams, Josiah Stamp and Charles Hardy. Mints recalled that in the 1930s, he, Simons, Knight and probably Director met weekly at Hardy’s home. Samuel Nerlove observed that Hardy exerted an “exceedingly significant” influence on both Mints and Simons, having taught the latter (cited by Patinkin 1981, 284-5). Homer Jones (9 October 1962) wrote to Margaret Porter that during his time at Chicago in 1933-4 “Hardy’s book on the Federal Reserve System was regarded as the best critique of the policies and actions of that central bank”. Hardy was also an early critic of the New Deal, which he described as an attempt to “substitute centralised authority of one sort or another for what is left of free competitive enterprise” (cited by Saunders 1966, 54). These libertarian credentials were later reflected in Hardy’s appointment as the founding treasurer of the Mont Pelerin Society (Hartwell 1995, 45). Friedman (chapter 7 [1972/1974], 164, n19) appears to be justified in describing Hardy as a Chicagoan “at one remove”.

In the first part of his review, Hardy (1931a, 150-2) predicted that Keynes’ work would be the most influential book published since the war and would “profoundly” modify the “serious work of the next generation on business cycles, central banking, and international finance”. In the second part, Hardy (1931b, 394) argued that Keynes’ analysis should be “supplemented by Professor Fisher’s well-known theory as to the relation between the rate of interest and the anticipated depreciation or appreciation in the value of money ... Keynes’ rejection of Fisher’s doctrine on this point (II, 202) reflects such a complete and obvious misunderstanding of the whole point that they can hardly be other than a *lapsus calami*”.

Robertson’s (1931, 409-410) review was highly critical of several aspects of the *Treatise*. But he also concluded that “I have no doubt that Mr Keynes is right in laying stress on hoarding as a dominant feature of trade depression. In this respect I feel sure his work is of high significance ... Where I suspect there is still work to be done is in clearing up the nature of the forces which lead the spirit of hoarding down”. Keynes (1930, 138) had previously explained that his fundamental equations “resemble all other versions of the Quantity Theory”. In his reply to Robertson, Keynes (1931b, 419) made it clear that he was moving still further in the direction of focusing on the demand for money within this quantity theory framework: “I should like to repeat that the amount of the hoards of the public is as much outside their control as is the quantity of money, and for the same reasons ... This is why it is so important to distinguish the forces determining the quantity of hoards (which is the affair of the banker) from the forces determining the propensity to hoard (which is the affair of the public). The old quantity equations did not reveal this to me ...”.

The first part of Hayek’s review provoked Keynes (JMK XIII [1931], 243-266) both privately and publicly. As Patinkin (1976, 58) pointed out, “as a result of these foregoing criticisms” Keynes was jolted further down the path towards the *General Theory*. But Hayek (1932, 34-5) made clear in the second part of his review that Keynes’ discussion of hoarding was “the most interesting aspect of his theoretical

analysis ... there is no doubt that he is here breaking new ground and that he is opening up new vistas ... the practical importance of this phenomenon is much greater than most economists used to suppose”.

Friedman found at Chicago a “vibrant intellectual atmosphere of a kind that I had never dreamed existed” (Friedman and Friedman 1998, 35). The excitement associated with his monetary education must have been intensified both by spatial proximity to the Great Depression and by temporal proximity to these debates: the second part of Hayek’s review was published February 1932, eight months before the start of *Economics* 330.^{xxxix}

7. 1968-74: Friedman’s Defence

Patinkin and Stanley Fischer worked on ‘The Chicago Tradition, the Quantity Theory, and Friedman’ in the year following Friedman’s AEA presidential address. Upon receiving a draft from Patinkin, Friedman (5 December 1968) replied that: “I continue to regard what I wrote as a reformulation of the quantity theory of money, just as I continue to regard Keynes’ Monetary Reform, and large parts of his Treatise, and some parts of his Gen. Theory, as the writings of a quantity theorist ... I would argue that much of K’s analysis of liquidity preference is a carry-over from his earlier quantity theory orientation and only the absolute liquidity preference element as truly Keynesian”.^{xxxix}

Friedman offered the same defence at a social gathering on 16 March 1971, attended by Homer Jones, Gary Becker, David Meiselman, Robert Gordon and Fischer. That night Fischer wrote to Patinkin describing what had transpired: “The major points which Milton made is that there is nothing particularly Keynesian about the liquidity preference function, and that the demand for money sections of the General Theory are simply a slightly inferior version of Keynes’ views in the Tract. In response to arguments that the interest rate and rate of inflation were to be found as arguments in the velocity function only in Lavington and Pigou (or most explicitly in those two authors) he pulled the Tract off the shelves and with the aid of Gary Becker found some parts under the chapter on ‘Inflation as a Tax’ which were quite suggestive. Anyway, Milton argues that there is nothing inconsistent in having a demand-for-money function similar to that of the General Theory and being a quantity theorist, quoting as evidence Keynes of the Tract who claimed that there was no disputing the quantity theory”.^{xxxix}

Friedman (chapter 7 [1972/1974], 171) subsequently cited the chapter on ‘Inflation as a Method of Taxation’ in his response to Patinkin. In correspondence, Friedman (5 December 1968) told Patinkin that “I find your description of the oral tradition entirely acceptable and much better and more comprehensive than mine. In extenuation, I can only say that the 1956 essay did not set out to be an essay in history of thought but an introduction to a collection of studies. Unquestionably, however, had I had your paper before me when I wrote that paper, I would have written the first part of it differently”.^{xxxix} Fischer (16 March 1971) reported to Patinkin that Friedman “said that there was only one thing to which he seriously objected – and that was the implication that he had made up the ‘Chicago tradition (oral)’ out of whole cloth”.^{xxxv}

Fischer continued: “When pressed on the point of the instability of velocity emphasised in Simons and Mints, Milton agreed to Simons, but was more hesitant

about Mints. Both Becker and Meiselman said that Mints of the early 50's did not believe that velocity was unstable, and Homer Jones said that Mints of the late 20's also emphasises the stability of velocity ... Milton was fairly careful: he seemed to argue that the only statements about the oral tradition which are to be taken seriously are those at the beginning of the article, before he begins to number points. Thus he would say that the oral tradition essentially was the approach that money matters, and little more".^{xxxvi}

Friedman (1912-) was only a decade older than Patinkin (1922-95); but when the 1972 *JPE* symposium appeared (Gordon 1974), four decades had elapsed since he attended Mints' Economics 330. In contrast, Patinkin was in his mid-40s when he became so agitated by what he perceived to be the conflict between his own memory and Friedman's introductory essay. He was in his mid-30s when he first noted and commented (in correspondence and in conversation) on the discrepancy. As a younger man in his prime, Patinkin was confident in the accuracy of his own recollections and stated that Friedman's account "strikes no response chord in my memory" (Patinkin chapter 6 [1969/1981], 242). Friedman (to Patinkin 5 December 1968) was left wondering whether "I can trust my retrospective memory".^{xxxvii}

Perhaps Friedman was taken aback by the vehemence of the attack by someone he regarded as a friend. In addition, Patinkin was an historian of economic thought; Friedman was not. Indeed, Friedman (12 July 1951) described himself to Lionel Robbins as "a tyro in the history of thought".^{xxxviii} Besides, the *JPE* symposium was *A Debate with His Critics* (plural). Fischer (16 March 1971) reported to Patinkin that Friedman indulged in "some minor grumbling about not having the time to be involved in polemics".^{xxxix} This may explain why he did not examine his 330 lecture notes or course outline. More importantly, in the early 1970s Friedman was entering his period of peak influence: 'The Transition from Fixed Exchange Rates to Money Supply Targets' (Parkin 1977).

8. Concluding Remarks

Memory, as Friedman has acknowledged, is not an entirely reliable source of historical information (Friedman and Friedman 1998, 115, 123, 112). Patinkin (1976, 64) was also justified in concluding that "an author is not necessarily the best authority on the history of the development of his own work; and by definition he certainly is not an *objective* authority" [Patinkin's emphasis]. However, the archival material clearly indicates that Friedman's account of the oral tradition contains a large kernel of truth with respect to Mints in 1932, even though he may have exaggerated the extent of this tradition by invoking the names of Knight, Simons and Viner.

Patinkin (1977, 125) regarded the history of economic thought as an "empirical science" and suggested that a "regression line" approach was warranted. But when Martin Bronfenbrenner disagreed with his evaluation of Simons' influence, Patinkin (chapter 5 [1969/1981], 246) noted that "Bronfenbrenner's recollections refer to the period 1934-36 whereas mine are for 1941-46" adding "I am not sure it is relevant". It was a reasonable first approximation for Patinkin to extrapolate backwards from 1944, although the presence of a structural break in 1936 rendered his extrapolation unreliable. It was, in any case, an inadequate substitute for an examination of the 1932 archival material.

Friedman (correspondence to the author 29 October 1999) regards “the fuss over the Chicago oral tradition” as “much ado about very little” which has produced a lot of “wasted paper”. But as Stigler (1988, 153-4) pointed out (in a brief reference to the dispute over the oral tradition) Friedman was “quite talented in outraging his intellectual opponents”. Moreover, Friedman used the quantity theory “as a powerful weapon to attack the Keynesian theory”. Viner (chapter 46 [1936], 152) noted that Keynes had identified liquidity preference as a “source of trouble” for the economy; Friedman identified (apparently) stable money demand functions as a major source of trouble for Keynesians.

Keynes (1922, vi) edited a series of books written by those who perceived themselves to be “orthodox members of the Cambridge School of Economics”. Robertson (1922, viii), the author of the handbook on *Money*, defended Keynes’ (JMK 11 [1911], 375-76) assertion about the quantity theory “oral tradition” as “an almost pardonable exaggeration”. Patinkin was not inclined to be so tolerant towards Friedman.^{x1} To Patinkin it was as if Moses had presented a ‘Restatement’ that perverted the wisdom transmitted to him on Mount Sinai. The intensity of the resulting controversy can only be adequately explained by reference to the passions engendered by the modern configuration of economics.

Both sides of the Keynesian-monetarist debate claimed that the evidence supported their conclusions in “a strikingly one-sided way” (Friedman 1963, 8; Desai 1981, 203). However, Patinkin performed a great service by undertaking such a one-sided historical examination. Had he been more dispassionate, and not played the role of ‘economist-as-matador’ the dispute may never taken place and we would presumably know a lot less about the evolution of monetary thought than we do today. Hence the dispute over the oral tradition illustrates the pervasiveness of the principle of unintended consequences. Patinkin, like Friedman, was “led by an invisible hand to promote an end that was no part of his intention”.

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NOTES

ⁱ Friedman's lecture notes are currently in his possession and have not been processed into his archives at the Hoover Institution.

ⁱⁱ Stanley Fischer, his research assistant, wrote a memorandum for Patinkin in spring 1968 stating that "I've found no explicit mention of the demand for money" in Simons' writings. Don Patinkin Papers, Box 2.

ⁱⁱⁱ Don Patinkin Papers, Box 41.

^{iv} Don Patinkin Papers, Box 2.

^v Don Patinkin Papers, Box 3.

^{vi} Don Patinkin Papers, Box 32.

^{vii} Kahn (15 January 1933) wrote to Joan Robinson from Chicago: "The two Commonwealth students are a terrific godsend to me. Boulding of Oxford is a nice, unkempt kind of youth, and is regarded as good, particularly by Knight". Richard Kahn Papers, RFK/13/90/1/44-51.

^{viii} From the 1930s to at least the 1950s, Dennis Robertson examined Cambridge undergraduates with questions about the relationship between the *Treatise* and the quantity theory (Johnson 1975, 114).

^{ix} Gary Becker (1991, 144) recalled that as an Assistant Professor, he spent half his time assisting Friedman in running the workshop; which involved he and Friedman searching second hand stores for used Marchant and Monroe calculating machines for graduate students to use.

^x "Being a student of Milton's was magic indeed. People would always ask me, Why are you so excited? Are you going out on a date with a beautiful woman? I said, no, I'm going to a class in economics" (Becker 1998).

^{xi} One of the contributors to *Studies in the Quantity Theory of Money* criticised Gardiner Ackley's analysis of inflation and the theory of administered pricing. At the "heart" of Selden's (1959b, 455-6) criticism was that Ackley had failed to embed his discussion within "the framework of generally accepted macro-tautologies". Selden, one of the self-confessed "reactionaries", corrected Ackley's supposed error by analysing the issue through the quantity theory. This revealed that the traditional theory of inflation was "alive and kicking".

^{xii} Richard Kahn Papers, RFK/13/90/1/44-51.

^{xiii} Viner also advised the CEA about post war counter cyclical fiscal stabilisation (Strayer 1950, 837, n14).

^{xiv} One Mt Pelerin supporter, citing Viner, described the ‘Anachronism of the Liquidity Preference Concept’ (Hahn 1947, 204, n3).

^{xv} In ‘Theory of the Firm and of Investment’ Hurwicz (1946, 131-2) stated that Knight’s *Risk Uncertainty and Profit* had “served to give a more realistic theory of the demand for cash, inventories and the like”.

^{xvi} Don Patinkin Papers: <http://scriptorium.lib.duke.edu/economists/patinkin>.

^{xvii} Cagan (13th April 1955) had highlighted an elementary error in Patinkin’s reasoning about the relationship between prices and money during hyperinflation. Patinkin (16th May 1955) informed Cagan that he “felt hopelessly stupid ... All this makes me now feel that I am missing the main point of your study. Maybe I’ll just have to wait to read it in its entirety when it is published”. Don Patinkin Papers, Box 25.

^{xviii} In his discussion of real balances, Patinkin (1952, 269-70) raised “the interesting question of how this set of forces, [emphasised by Haberler and Pigou] could have been overlooked by Keynesian economists, in general, and Keynes himself, in particular. Questions of this type can rarely be answered satisfactorily – and perhaps should not even be asked. Nevertheless, I think it is both possible and instructive to trace through the exact chain of errors in Keynes’s reasoning which caused him to overlook these factors”. Keynes’ “fundamental error” related to the relationship between real cash balances and consumption. Keynes erred by concentrating “exclusively” on the tendency of real cash balances “to lower interest rates” through the liquidity function. Patinkin then added a footnote: “the following passage [from the *General Theory*] is especially interesting: ‘It is, therefore, on the effect of a falling wage– and price-level on the *demand for money* [Patinkin’s emphasis] that those who believe in self-adjusting quality of the economic system must rest the weight of their argument; though I am not aware that they had done so’”. Patinkin concluded that “looking back on the nature of these errors, we cannot but be struck by the irony that they should have emanated from the man who did most to demonstrate the fundamental inseparability of the real and monetary sectors of our economy”.

^{xix} On 19th April 1937, he wrote to Roy Harrod explaining that his review had stopped a long way short of expressing his real anger (Besomi forthcoming).

^{xx} Eprime Eshag in his thesis on *From Marshall to Keynes an Essay on the Monetary Theory of the Cambridge School* noted that “Keynes’ propositions on incentives to liquidity were largely obtained from Marshall’s analysis of the demand for money” (1963, 65; see also Bigg 1990, 99; Bridel 1987, 28, 130). Patinkin (chapter 36 [1974], 20, n17) disagreed with Eshag’s conclusions. Joan Robinson (1933, 77) complained that the “simple minded reader [of the *Treatise*] finds that the Quantity Theory has led him to concentrate too much on Demand”. George Shackle (1967, 215, 209) concluded that the *Treatise* provided “a better account of liquidity preference, because more impregnated with the feel of markets and their constant tip-toe alertness to every breath of suggestion, than is to be found in the *General Theory*”. In Shackle’s judgement, the *Treatise* was “in large part, an analysis of the economy’s total need for a stock of money into various sources of demand”.

^{xxi} On November 14th 1932, Keynes delivered a section of a lecture headed “Parameters of the Money Economy”. In notes taken from these lectures, Robert Bryce recorded: “Quantity [Theory] of Money [has] these [three] 3 fundamental factors – of market and psychology and attitude to[wards] future liquidity preference, expectation of quasi-rent – and state of time preference”. From Keynes’ lecture on December 4th 1933, Lorie Tarshis recorded: “‘liquidity preference’ - really the demand for money – the way of summing up the eagerness of people to hold their wealth in money rather than other forms ... Motives for holding money, as in Treatise ... We now have the essential determinants of the rate of interest – A (L [liquidity] Pref[erence]) – W (State of News) – M (Quantity of Money) ... This is Keynes ‘quantity equation’ ... Keynes thinks it best to relate M to [the rate of interest]” (Rymes 1985, A39, J33, J36).

^{xxii} Pribram (1931, 62) also referred to Fisher’s (1926) “very interesting” ‘Phillips curve’.

^{xxiii} Keynes may also have been stimulated by the assertion that “there is and can be no economic Einstein” and by the statement that the “the pure doctrine of laissez-faire had gone and we could no longer think in the abstract terms of Ricardo” (Phelan 1931, 155, 191). As he was pondering how to maximise the influence of the work that would, from late 1933, be called *The General Theory* (second draft table of contents), he met Albert Einstein, the author of another theory with a similar name and a similar claim: “The old theory is a special limiting case of the new one” (Einstein, cited by Clark 1984, 257). Keynes had used the Einstein analogy before (JMK IX [1929], 91), and was aware of the rhetorical possibilities of presenting his revolution as the social science equivalent of the revolution that had conquered the physical sciences in the inter-war period: “The classical economists resemble Euclidean geometers in a non-Euclidean world ... the postulates of classical theory are applicable to a special case only and not to the general case, the situation which it assumes being a limiting point of the possible positions of equilibrium ... We are thus led to a more general theory which includes the classical theory with which we are familiar, as a special case” (1936, 16, 3, vii).

^{xxiv} Currie (5 August 1971) explained to Alan Sweezy that his career had been blocked at Harvard by Harold Burbank, Gottfried Haberler and Harris who “didn’t get on the [Keynesian] bandwagon until it was perfectly safe to do so and he had his position secured at Harvard”. Lauchlin Currie Papers, Correspondence, Alan Sweezy file. Tavlas (chapter 34 [1997], 170, n10) recounts that Harris (whose surname was Cohen before he changed it) was the only Jewish member of the Harvard Economics department of the 1920s who received tenure.

^{xxv} There is a third 330 bibliography which obviously relates to a later version of the course. Milton Friedman Papers, Box 5.

^{xxvi} Don Patinkin Papers, Box 32.

^{xxvii} In the third bibliography the entry reads “Fisher, Purchasing Power of Money, chapters 1-6 and 8”. Thus it seems likely that Fisher figured slightly more

prominently in the course from autumn 1932 onwards. Milton Friedman Papers, Box 5.

^{xxviii} The remaining sections of chapter 14 discussed the Fisher quantity equation and its relationship with the Cambridge quantity equation.

^{xxix} Samuelson (1996, 148-9) stated: “it’s not true, I’ll say categorically, what Milton Friedman at one time tried to sell: that there was a very subtle Chicago oral tradition on the demand for money and monetary theory. Read Robertson’s handbook on *Money*, and you will have plumbed the depths of Chicago’s monetary sophistication”.

^{xxx} Robertson (1928, 17) prefaced this chapter with the same words from Humpty Dumpty that Patinkin (chapter 6 [1972/1974], 111) later used as the preface to his assault on Friedman (When *I* use a word ... it means just what I choose it to mean”).

^{xxxi} On Roosevelt’s inauguration day, 4th March 1933, thirty-eight states had closed their banks and, for the first time since 1848, the Chicago Board of Trade shut its doors (Leuchtenberg 1963, 39). Re-establishing confidence in the money supply and the banking system was Roosevelt’s first priority. Friedman recalled that the collapse of the monetary system and the associated calamities “did not pass unnoticed in the Economics Department” (Friedman and Friedman 1998, 40). In April 1933, Knight (1933, 244) wrote in the *JPE* that “the devil in person could not have invented a device more obviously ‘intended’ than is commercial banking to increase the amplitude of any incipient swing by an indefinite multiple”.

^{xxxii} Don Patinkin Papers, Box 2.

^{xxxiii} Don Patinkin Papers, Box 32.

^{xxxiv} Don Patinkin Papers, Box 32.

^{xxxv} Don Patinkin Papers, Box 2.

^{xxxvi} Don Patinkin Papers, Box 2.

^{xxxvii} Don Patinkin Papers, Box 32.

^{xxxviii} Friedman Papers, Correspondence, Robbins file.

^{xxxix} Don Patinkin Papers, Box 2. Perhaps Friedman was growing weary of his opponents. On 30 December 1970, the *New York Times* reported that Johnson’s Ely Lecture was an indication that Friedman’s influence over policy was waning (Silk 1970). In March 1971, Friedman had apparently just heard that Johnson’s Lecture (chapter 8 [1971]) was to be published in both *Encounter* and the *American Economic Association Papers and Proceedings*. The previous month, Murray Rothbard (1971, 3, 4) described Friedman as the “Establishment’s Court Libertarian ... In many ways we have Milton Friedman to thank for the present monster Leviathan State in America”.

^{x1} There are some similarities between Robertson's relationship with Keynes before and after the writing of the *General Theory*, and Patinkin's relationship with Friedman before and after 1956 (although Patinkin had never been Friedman's student or long term colleague). Patinkin (1980, 10) referred to the Keynes-Robertson "vendetta" as "an originally close relationship steadily deteriorating over the years into repeated disagreements, inability to communicate, and mutual distrust – all exacerbated by deep emotional forces whose nature it is not for economists as such to analyse" (see also Blaug 1986, 205; Danes 1987, 210). Earlier, Patinkin (1958, 316-7) in his rather contemptuous account of the revival of the liquidity preference-loanable funds dispute had referred to the "psychology of intellectual processes". In his History of Thought course at the University of Western Ontario, Patinkin complained, or at least noted, that "economists seem to have some deep need to use terms like 'classical', 'neoclassical', 'Marxian', 'Keynesian'". He also stated that "tracing development of thought – how the mind works – history of ideas" was a "Useless subject – you've been warned". Don Patinkin Papers, Box 20 (see also Backhouse 2002).