



# **Algorithmic Social Sciences Research Unit**

ASSRU

**DISCUSSION PAPER SERIES**

**9 – 2015/1**

**ECONOMIC THEORY IN 1914**

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**AUGUST 2015**

# Economic Theory in 1914\*

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27 August 2015

“What an extraordinary episode in the economic progress of man that age was which *came to an end in August 1914!*”

Keynes, 1920, pp.10-11; italics added.

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\* *Economic Theory in 1914*– the formal distinction between ‘Micro’ and ‘Macro’ was still about two decades away - was very much a monopoly of the Europeans ‘monopoly’ – with only a few isolated contributions by great American economists, and almost none by anyone else, to the lasting development of the *modern* development of the subject. Irving Fisher, being the foremost of them, but also the young Wesley Clair Mitchell. F. W. Taussig and J.B. Clarke, Richard T. Ely and Henry George, Thorstein Veblen and Frank Fetter, each eminent in his own way, by 1914, were, however, never to reach the pioneering status of a Cournot, Walras or Pareto; of Jevons, Marshall or Edgeworth; of Carl Menger or the young Schumpeter; or of a Cassel or Wicksell – all of whom have left their indelible marks on the development of *Economic Theory* (in the *post-classical* period, dubbed *neo-classical*, by Veblen, 1900, p. 261 – see also footnote 19, below).

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## **Abstract**

An attempt is made, in this paper, to outline the state of economic theory – and a part of the intellectual and cultural world that formed its background – in 1914 – and today. A vision of the development of economic theory in the next one hundred years is outlined, in a skeptical, yet *Vicovian*, mode.

**JEL Codes:** A10, A12, B10, B20, B41, E50

**Key words:** Economic Theory, Macroeconomics, Microeconomics, Monetary Economics, Ethics, Political Philosophy

## The Artistic, Mathematical and *PPE*<sup>1</sup> Worlds in 1914

“Oh! we, who have known shame, we have found release there,  
Where there’s no ill, no grief, but sleep has mending,  
Naught broken save this body, lost but breath;  
Nothing to shake the laughing heart’s long peace there  
But only agony, and that has ending;  
And the worst friend and enemy is but Death.”  
**Rupert Brooke, *PEACE*, 1914**

The complacency of pre-WWI Europe presaged *The Economic Consequences of the Peace* and Keynes, more and better than anyone else at the time, outlined (*op.cit*, p. 11; italics added) ‘the character and consequences of [it]’ by an elucidation ‘of the chief unstable elements, already present when war broke out, in the *economic life of Europe*.’

I shall, however, outline – instead – the complacency by sketching the artistic, mathematical and PPE Worlds in – and around – 1914.

Ramanujan arrived in England on 14<sup>th</sup> April, 1914<sup>2</sup>, just *before* the outbreak of the Great War – and Böhm-Bawerk died, just *after* its onset, on August 27<sup>th</sup>, almost exactly one hundred years ago. Armistice day was on the 11<sup>th</sup> day, of the 11<sup>th</sup> month of 1918, just before Eddington’s celebrated expedition to observe the solar eclipse of 29<sup>th</sup> May, 1919 – and Gandhi returned from his South African sojourn, arriving in London four days after Britain declared war on Germany, to India, in 1914.

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<sup>1</sup> **PPE: *Philosophy, Politics and Economics***, as in the Oxford degree, initially instituted as a substitute for what used to be called the *Greats*, and referred to as the *Modern Greats*. Its beginnings are in the immediate *post-WWI* era, at Balliol, which was then under the enlightened Mastership of A.D. Lindsay. I am a proud owner of the first, 1925 edition, of Lindsay’s **Karl Marx’s Capital: An Introductory Essay**, but it was his *Introduction* to the 1910 edition of John Stuart Mill’s **Utilitarianism, Liberty and Representative Government** that was most influential in the formation of my own stance on **PPE**.

<sup>2</sup> Appropriately, I would say, since it was the Tamil Hindu New Year’s day, which would have been celebrated, even in British Colonial Erode, in the Madras Presidency, Ramanujan’s home town. Almost exactly one year later, Rupert Brooke was to die in a French Hospital Ship, off the Island of Skyros, in the Aegean Sea. They were both Cambridge men in its finest pre-WW I sense.

**Der Blaue Reiter** movement flourished from 1911 to 1914, with the English translation of *Kandinsky's On the Spiritual In Art* being published also in 1914 – and *Mondrian* returned to the Netherlands, from Paris, in 1914<sup>3</sup>. *Wozzeck* was begun by Alban Berg in 1914 – to be completed only in 1922 – and came close on the heels of the origins of ‘free atonality’, exquisitely expressed in Schönberg’s 1912 composition of *Pierrot Lunaire*, presaging the twelve-tone technique the great Austrian was to pioneer, just after the ending of WW I<sup>4</sup>.

The *Art Nouveau – Jugendstil* – movement was about to come to an end (in 1915), but before it did, the end of Japan’s Tokugawa isolationism had opened enlightened European eyes – like those of van Gogh, Gauguin, Toulouse Lautrec – to an artistic form devoid of perspective (in the sense of renaissance Europe). Later, Oscar Reuteswärd, himself born in 1915, who influenced Escher, who, in turn, was also to use the geometry of Coxeter, exploited *Japanese parallel perspective* to construct his famous *Impossible* diagrams. This, surely, paralleled (sic!) Picasso’s interest in the non-Euclidean geometry of relativity in Einstein’s physics, and had much to do with the early styles of *Cubism*.

Einstein himself returned to Germany in 1914, for a research position at the Prussian Academy of Sciences, a non-teaching Chair at the University of Berlin and the Directorship of the soon-to-be established Kaiser Wilhelm Institute of Physics, also in Berlin – and *Birgit Nilsson*, probably the finest example of a Wagnerian soprano, was born just before the end of WW I, in May, 1918, on the one hundredth anniversary of Norway’s ‘constitution’ day – now called its National Day.

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<sup>3</sup> Mondrian, like Kandinsky, was also *spiritually* motivated, perhaps also in a more formal way. He had joined the Dutch branch of the Theosophical Society, in 1909 and, at his death, a quarter of a century later, his only personal possession was the membership card of this society. Kandinsky, by the way, had begun his studies at the University of Moscow in Law and Economics and was so successful in his chosen subjects that he was even offered the Chair of Roman Law, at the University of Dorpat. Fortunately, like Paul Gauguin before him, who gave up his early career as a stockbroker and a tarpaulin salesman, to become one of the great modernist painters, Kandinsky, fortunately, did not accept the offered Chair, and chose to bless us with his remarkable paintings – music and spiritually underpinned artistic philosophy.

<sup>4</sup> My own maestro, Richard Goodwin had attended Schönberg’s *Harvard Lectures*, in the early 1930s, and introduced me to his – i.e., Schönberg’s – and *Hindemith*’s music, particularly the latter’s *Ludus Tonalis*, in the late 1970s. My *atonal ears*, tuned to the rhythms of *Carnatic Music*, particularly by *M.S. Subbhulakshmi*, found atonal music perfectly natural – just as obvious as *Goodwin’s own non-orthodox economics*.

– whilst Norway’s own great – and controversial – Wagnerian, *Kirsten Flagstad*, began her recital career between 1913 and 1915.

The great Henri Poincaré had died in July, 1912 – but not before setting the stage for launching George Birkhoff’s mathematical career! Poincaré published his ‘last’ (Geometric) theorem in the **Rendiconti del Circolo Matematico di Palermo**, in 1912, leaving it for Birkhoff to prove it, even if incompletely, in the 1913 volume of the **Transactions of the American Mathematical Society**.

Above all, the monumental *Principia Mathematica* had been brought to completion in 1913 and, in the same year, emulating Isaac Barrow and G.E. Moore before him, Diederik Korteweg vacated the Chair of Mathematics at the University of Amsterdam in favour of Luitzen Brouwer, whose inaugural lecture on *Intuitionism and Formalism* was to throw down the gauntlet to the *Logicism* of **Principia Mathematica** and the *Formalism* David Hilbert.

In Physics, Niels Bohr’s quantum theory, later referred to as the ‘old quantum mechanics’, became the new orthodoxy, bringing together Planck’s reluctant quantum hypothesis and Rutherford’s results on the structure of the atomic nucleus, setting the stage for the later path-breaking work of Heisenberg, Schrödinger and Dirac – all in 1913<sup>5</sup>, before Bohr himself was appointed a Docent at the University of Copenhagen, in that same year, though he was to end up in England, in October, 1914!

In literature, James Joyce, in Trieste, began his momentous journey towards **Ulysses**, beginning to write **Exiles** in 1914 and, in Austria-Hungary itself, Karl Kraus was in full flow with the publication of *Die Fackel*, in that same year- before embarking, one year later, in his monumental indictment of the war, in his **Die Letzten Tage der Menschheit**.

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<sup>5</sup> Bohr’s *correspondence principle*, later to be made famous in economics by Paul Samuelson, in his **Foundations of Economic Analysis**, was also in play in these path-breaking, defining, contributions of 1913, although the naming itself was in 1920. One of my own earliest formal publications was on Bohr’s *correspondence principle* and its almost exact analogy in what came to the economist’s version of it, via Paul Samuelson (and Hicks, in **Value and Capital**, before him – although it was not so named by the latter).

And, then, there was the death of Charles Sanders Peirce in April, 1914, while Wittgenstein began writing what eventually came to be the **Tractatus Logico-Philosophicus** - completing his manuscript just before the end of the war - two days after the formal outbreak of WW 1, later published as **Notebooks 1914-1916**.

Appropriately, neither the Peace, nor the Literature, Nobel Prizes were awarded in 1914<sup>6</sup>!

Maynard Keynes himself appeared on the economic scene, all set – in the full paraphernalia of his *apostolic* convictions<sup>7</sup> - in 1912/1914, initially taking over as Editor of the **Economic Journal**, on 1<sup>st</sup> January, 1912, after Edgeworth had resigned; then, with the appearance of his first published book, **Indian Currency and Finance**, on 9 June, 1913 and, finally, there was his only fully-fledged, publication on a strictly economic topic in any publication other than the **Economic Journal**, *The City of London and the Bank of England, August, 1914*<sup>8</sup>, his invited contribution in the November, 1914 issue of the **Quarterly Journal of Economics**<sup>9</sup>. In contrast to the gadfly that he, famously, was to become, criticizing – mercilessly – the *Treasury View*, from the late 1920s, through till the publication of what I consider his economic *magnum opus*, **The General Theory of Employment, Interest and Money** (Keynes, 1936), he was, at this time – only still 30 years of age – representing a view of the world that was *not* at variance with that of his employer, the *India Office*<sup>10</sup>.

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<sup>6</sup> Although the Literature Prize *was* awarded in 1939, the Peace Prize was *not*.

<sup>7</sup> Sidgwick, quoted by Moggridge (1992, p. 66; italics added):

*‘No consistency was demanded [of Apostles – i.e., members of the Cambridge Conversazione Society, to which Keynes was elected on 28 February, 1903] with opinions previously held – truth as we saw I then and there was what we had to embrace and maintain, and there were no propositions so well established that an Apostle had not the right to deny or question, if he did so sincerely and not from the mere love of paradox.’*

<sup>8</sup> Where Keynes (*op.cit.*, p. 48), referred to the calamity that befell Europe in 1914 as ‘the catastrophes of August, 1914’.

<sup>9</sup> As Moggridge correctly observed, at the end of 1910 (*op.cit.*, p. 203; italics in the original):

*‘There were only three internationally established, English language journals - the Economic Journal, Journal of Political Economy and Quarterly Journal of Economics.’*

Moggridge went on to point out, in a footnote to the above observation that, ‘The *American Economic Review* did not begin to appear until 1911.’

<sup>10</sup> I do not think this was a conscious attempt to accept views with which he disagreed – true to his *Apostolic convictions*; it was just that his opinions at the time coincided with those of the

Britain declared war on Germany on 4<sup>th</sup> August, 1914. Almost appropriately, Keynes' early and decisive influence in British Monetary Policy had already taken a firm foothold in the 'corridors of power', in Whitehall, the day before – a Bank Holiday, Monday. Keynes, at the written<sup>11</sup> request of Basil Blackett, had written a memorandum for the Chancellor of the Exchequer – Lloyd George at that time – advising the treasury against the suspension of gold payments, as proposed by the clearing banks.

It is a supreme example of one undeniable fact of the frontiers of economic theory, in 1914: monetary factors were decisive. *Keynes after Wicksell*, **not** *Lucas after Keynes* (and Friedman), was the key to the development of an innovative macroeconomics, tightly tying theory with policy – a knot that has been loosened, if not untied, in the hundred years that have elapsed.

This is very much an *Eurocentric* narrative, for that was the way the story of *economic theory* in 1914 seemed, even at that time, to the pioneers of the field. Just like the tiresome triptych of logicism, formalism and intuitionism characterizing metamathematical philosophy, it was to Vienna, Lausanne and Cambridge that the narrator of the origins of neoclassical economic theory turned, or to France, England and Scotland, for the pioneering work of the classical economists. To that extent it may lead to an *anti-Vico stance*, emphasizing, even if implicitly, an *ahistorical*, non-humanistic tradition, embracing a *Whig interpretation* of intellectual history. This is *not* my intention; *I am a Vicovian*. There is – there must be – another, more enlightened, more encompassing of diverse traditions, mode of telling the story I want to tell. But I fear I am intellectually incompetent to fulfill my own desired objective. What is offered is a jaundiced history – interpreted, however inadequately, in its noble Italian sense of *Storia* – and always remembering Vico's wise precept: '*Corsi e ricorsi*'.

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India Office view of economics, particularly tinged by a partiality to economic events that were important to British Colonial India.

<sup>11</sup> The romantic account of this particular Keynesian monetary policy intervention was first 'propagated' – possibly inadvertently – by Russell (1952), but it is surprising to find it reappearing, in all its poetic splendour (and the concomitant license to be economical with the 'truth') in Davenport-Hines (2015, pp. 74-5). A detailed economic account of this particular event, and Keynes' decisive role, can be found in Moggridge (1992, pp. 234-7), which is far superior to the cursory description in Skidelsky (1983, pp. 289-290).

## The State of Economic *Theory* – One Hundred Years Ago ...

“----- But now I am talking of beginning a book, and have long had a thing upon my mind to be imparted to the reader, which if not imparted now, can never be imparted to him as long as I live ... - I'll just mention it, and begin in good earnest.

The thing is this.

That of all the several ways of beginning a book which are now in practice throughout the known world, I am confident my way of doing it is the best - ... - for I begin with writing the first sentence – and trusting to Almighty God for the second.”

**Tristram Shandy**, Vol. VIII, Ch. II.

Just as the Germans fired the first shots that opened the senseless hostilities of the *Great War* in 1914, the indefatigable, inimitable, Dennis Robertson - a classicist in economics who, today, would be a proverbial 'Elephant in a China shop', if he was dropped from the heavens, in the midst of his own former Trinity College economists - submitted, *in August 1914*, his famous **A Study of Industrial Fluctuation** (note: *Fluctuation* - not *Fluctuations!*) for a Fellowship election at Trinity (Robertson, 1915).

There is not a single mathematical equation or formula in this wonderfully 'modern' book, with a message that is still relevant - although there are graphs, charts and tables 'galore'. The one graph was 'prefaced' with the characteristic Robertsonian wit: 'Diagrammatic representation, though not completely satisfactory, will perhaps be found useful by some.'

Nor were there any in Keynes (1913), and despite Lucas invoking Mitchell (1913), for his metaphor of the *Signal Processor*<sup>12</sup>, to justify the formalization of the rational agent, as a signal processor, maximizing the expected values of a 'well-behaved' utility function, there is no evidence whatsoever in the 600 – and some - pages of **Business Cycles** that such a thing was even envisaged by that great founding father of the NBER.

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<sup>12</sup> As Lucas (1981, p. 9), boldly asserts:

“If Wesley Mitchell could view agents as ‘signal processors’ in 1913, then I saw no reason to regard my own adoption of this viewpoint in 1972 as unduly speculative.” Either Lucas is referring to a different Wesley Mitchell or he has not read Mitchell (1913) or, possibly, a different writing by this distinguished author, but also in 1913! I am inclined to think that Lucasian scholarship is less than reliable, as was the case with his references to Hayek and equilibrium business cycle theory, in the same book (*ibid*, pp. 21507)

What, alas, Lucas – and many others at the so-called frontiers of research in economic theory and behavioural economics – missed was the exceptionally prescient *Survey* on what can now only be referred to as a forerunner to the utility (sic!) of a seriously psychological, evolutionary, institutional and neurological underpinning for traditional, ‘hedonistic’, economic theoretical flourishes in Mitchell (1914) – together with an equally prescient critique of marginal utility theory, by Veblen (1909), with special attention paid to J.B. Clark’s attempt to found a marginal productivity theory of distribution, now a bastion of the orthodox frameworks of every variant of neoclassical economics<sup>13</sup>.

Mitchell ended his fundamental investigation of the foundations of human behavior, as incorporated in the orthodox economic theory of the time<sup>14</sup> – i.e., 1914 – with the clearly non-Lucasian observation (*ibid*, p. 47; italics added):

“[I]n embracing this opportunity [to profit by and to share in the work of contemporary psychologists] economics will assume a new character. It will cease to be a system of pecuniary logic, a mechanical study of static equilibria under non-existent conditions, and become a science of human behavior.”

It is particularly pleasing to the mind, despite the unfortunate connotations of the year of publication invokes – 1914 – to remember that this prescient classic by Mitchell is succeeded, in the same issue of the QJE in which it appeared, by Maynard Keynes’s own nascent contribution to a field in which he was to stride like a colossus, in the interwar period: an institutional analysis of monetary experiences (Keynes, 1914).

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<sup>13</sup> It is not without significance that Mitchell (as mentioned earlier) and Veblen – as well as John Dewey - were among the distinguished founding faculty, in 1919, of what eventually became the New School for Social Research (NSSR), of which I was a member (although not for long in the past – and not for long, at all!).

<sup>14</sup> Apart from cosmetic accretions of a naïve mathematical kind, orthodox economic theory has the same underlying simplistic *hedonistic* assumptions for the psychological underpinnings of behavior and preference modelling. The exceptions are provided by the *bicycle repair shop* – as I refer to them – of neoclassical orthodoxy, now called (*Modern*, non-computational and, indeed, non-subjective probabilistic in any of the rigorous senses of de Finetti or Savage) *Modern Behavioural Economics* (whose founding father, Ward Edwards, was more careful in the foundations he sought, especially in subjective probability theory, to build a theory of subjective expected utility).

It is far from an exaggeration to say – even to claim – that any serious understanding of the changing monetary stances adopted by Keynes, both in the foundations of the monetary theory he continued to fashion, and re-fashion, and – more importantly – on the monetary policy frameworks he developed, with imaginative flair and theoretical audacity, in the whole interwar period (extending into the early post-WW II years of the founding of the IMF), can best be understood via his intensive work, in the two years in the India Office (16 October, 1906 – 5 June, 1908 – though his ‘last day’ at work was 20 July)<sup>15</sup>.

Wicksell was debating his monetary policy proposals, in the pages of the **Ekonomisk Tidskrift**, with its founding editor, David Davidson, and the German edition of the second edition of first volume of his *Lectures* appeared in 1913, with a revised version of the German edition of the second volume of the *Lectures*, appearing in 1913<sup>16</sup>. Cassel had just formulated what is still a controversial topic - *Purchasing Power Parity* theory, and in 1918 the German version of his **Theoretische sozialökonomie**<sup>17</sup> was published.

Irving Fisher was refining his version of the *Quantity Theory* (Fisher, 1912), Schumpeter had just published his own enduring classic: **Theorie der Wirtschaftlichen Entwicklung** (1912), Pareto was about to publish **Trattato di Sociologia Generale** (1916) and Böhm-Bawerk, after successfully 'banishing' his prize pupil, Schumpeter, from any hope of a Professorship in Vienna,

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<sup>15</sup> The Under Secretary of State for India, at the time Maynard Keynes was employed at the India Office, Arthur *Godley* – later Lord Kilbracken – was *Wynne Godley's paternal grandfather*. I have often claimed that *Wynne Godley* was the supreme Keynesian of his generation, especially in his imaginative monetary analysis of the macroeconomic dynamics of advanced capitalist economies. Anand Chandavarkar's outstandingly sympathetic account of Keynes & India is a rich source of information on Keynes' intensive apprenticeship in monetary economics, monetary institutions and monetary policy (cf. Chandavarkar, 1989).

<sup>16</sup> I myself have only read the Sommarin-edited, third editions, of these two classics, in Swedish, and the original German version of **Geldzins und Güterpreise**, all three of which are in my proud possession! The little of the Kahn translation of the latter that I have looked at gave me a profound sense of dissatisfaction with the result, and, in particular, of the *Introduction* by Ohlin.

<sup>17</sup> It was the defining book from which the German academic audience of the 1920s learned Walras – but a book about which Schumpeter was reputed to have remarked that it was (Solow, 1956, p. 87), ‘90 per cent Walras and 10 per cent water (or was it 10 per cent Walras and 90 percent water?’! I belong to those who believe in the latter percentages!

died in that very significant month and year of *August, 1914* - although Carl Menger lived on till after WW I.

Apart from the Austrian Marxist dissenters<sup>18</sup> – who ‘could only live on furtively in the underworlds’ of the social democracy of Otto Bauer, Rudolf Hilferding (*pace* Keynes, 1936, p. 32) - and, perhaps with the exceptions of Veblen<sup>19</sup>, on the one hand, and Tugan-Baranovsky, Rosa Luxemburg and Vladimir Dimitriev<sup>20</sup>, on the other, the dominant economic theory<sup>21</sup> of 1914 was that which had already been codified by the neo-classical ‘school’ of its eminent Cambridge, Austrian and Lausanne theorists.

It is a pity that there was no coherent codification of the important contributions of Rudolf Hilferding to the theory and institutional evolution of finance capital in a capitalist economy, with the growth and capital theories of Tugan-Baranovsky and Rosa Luxemburg<sup>22</sup>, which could have provided, at an early stage, the Keynesian alternative that came in the aftermath of the Great Depression, although the neo-Wicksellians – Lindahl, Myrdal and Lundberg, in particular – had devised a framework for dynamic monetary policy, without any underpinning in Marxian

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<sup>18</sup> The only other ‘national’ Marxians I have a modicum of knowledge is that of the Japanese, but I believe much of the development of Marxian economics in Japan came about in the post WW I period – particularly after the rice riots of 1918. Incidentally, Japan – in my opinion, for entirely ‘selfish’ reasons – joined the ‘Triple Alliance, quite immediately after war was declared on the Axis Powers, in early August, 1914.

<sup>19</sup> Who, in fact, coined the term *neo-classical* (Veblen, 1900, p. 261) – with a hyphen, as in the case of Frisch and *macro-economics*, in his Oslo lecture notes of 1933.

<sup>20</sup> Dimitriev’s Ricardian formalisms influenced Bortkiewicz, whose lectures in Berlin, in the early post WW I years, were attended by the young Wassily Leontief. My friend and mentor, Mario Nuti, as my Director of Studies in Economics at King’s College, Cambridge, in 1974, introduced me to the imaginative works of Dimitriev. When, at one point, Nuti and I discussed the then emerging theory that was eventually to be called the *Sonnenschein-Debreu-Mantel (S-D-M)* theorem, his spontaneous reaction was: ‘*But this is in Dimitriev!*’. Sure enough it is, but as a theorem on *excess-profit functions*, rather than as one on *excess-demand functions*, as in the S-D-M theorem(s).

<sup>21</sup> The distinction between micro and macro was to be made only in the ‘turbulent’ 1930s.

<sup>22</sup> Schumpeter’s theory of innovation, too, could – and should – have been part of this ‘codification’ – but that had to wait till Goodwin (1951), within a Harrod-type dynamic extension of the multiplier-dominated, static, GT. But Harrod’s dynamic theories were based on fairly primitive Newtonian mechanics, without any knowledge of the then current frontiers of dynamical systems theory and quantum electro dynamics (QED).

theory. Those, like Kalecki, who developed the non-equilibrium, macrodynamic, Marxian, framework – rejecting, without too much fuss, *Say's Law* (in the sense of Keynes) and working within an implicit assumption of ‘financial fragility’, anticipating Minsky by decades - on the foundations laid by Hilferding, Tugan-Baranovsky and Luxemburg, remained – forever – ‘in the furtive underworlds’ of heterodoxy, albeit a noble one.

Finally, the most important event, on the eve of August, 1914, from the point of view of monetary theory and policy, was the establishment of the Federal Reserve System, with the Federal Reserve Act of 23<sup>rd</sup> December, 1913, in the US<sup>23</sup>. It far exceeds in significance the creation of the European Central Bank and an Euro Currency area, from every point of view, but particularly in the monetary policy ramification in this era of so-called globalization of currency markets (even if not of labour markets and, to a lesser extent, commodity markets).

It will not be too much of an exaggeration to claim that the Federal Reserve Act of December, 1913 and the birth of Modern Macroeconomics – especially at the hands of Wicksell<sup>24</sup>, with his explicit rejection of *Say's Law* and a codification of the *Fallacy of Composition*, even if with an underpinning in Böhm-Bawerk's Austrian capital theory – were the result of the bimetallist controversy, and the 20-year deflation that almost accompanied it, from 1873 to 1893. Thus, the golden era of the gold standard – with its close ‘cousin’, the gold exchange standard – came to occupy the seemingly impregnable institutional framework for the conduct of monetary policy in almost all the (then) advanced industrial countries.

It was to take the monetary disaffection and disorientation caused, first, by the hyperinflation in the immediate post WW I years and, then, the Great Depression, before these golden fetters were

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<sup>23</sup> Two excellent contemporary accounts are given in Sprague (1914) and Willis (1914).

<sup>24</sup> The facile bracketing of Irving Fisher as a ‘co-founder’ of what we today refer to as Macroeconomics is something to which I do not subscribe – but that is a story that must await a different occasion, for its telling! Imaginative and interested readers may want to read *Frank Baum's* ostensible children's classic, **The Wizard of Oz** (published, appropriately, on 17<sup>th</sup> May, 1900), and *William Jennings Bryan's* fiery, yet futile, *Cross of Gold* speech (of July, 8, 1896 – only one year before Wicksell's first foray into Monetary Theoretically underpinned Monetary Policy, in the form of an *Editorial* in the leading Swedish daily newspaper of the time, the *Dagens Nyheter*), in this context!

discarded, but always to hover in the wings of orthodoxy and its eternal extolling of the virtues of monetary neutrality, in policy, against a jaundiced vision of a monetary production economy through the eyes of a mythically well-functioning ‘real’ economy in which money was simply a veil!

## .... and its State Today – One Hundred Years Later

“Some one said: “The dead writers are remote from us because we *know* so much more than they did.” Precisely, and they are that which we know. ....  
What is to be insisted upon is that the poet must develop or procure ***the consciousness of the past*** and that he should continue to develop this consciousness throughout his career.”

T.S.Eliot, *Tradition and the Individual Talent* (bold italics, added)<sup>25</sup>.

Cambridge, Yale, Vienna, Stockholm and Lausanne were the centres of the world of economic theory - in 1914. Economic policy, too, has spatially transmogrified itself, to be centred in Washington DC, Frankfurt and Tokyo, but, soon, may well be decided in Beijing and New Delhi.

How *times* have changed - and *space* has conformed, not even in non-Euclidean ways! Now, one has to go to Chicago or Minnesota, New York or Boston, Palo Alto or Pompeu Fabra - and carry with one a plethora of mathematical tools<sup>26</sup> and concepts that have made nonsense of the once noble discipline - as Hicks (1983) called it, in *A Discipline, Not a Science*.

Mitchell’s plea for an economic theory, underpinned by a theoretically sound psychology, seems to have been answered by the practitioners – and claims – of a version of behavioural economics, without sacrificing the altar of the neoclassical triptych: preferences, endowments and technology. Veblen’s passionate advocacy of an evolutionary approach to economic theory – to

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<sup>25</sup>**The Sacred Wood**, 1920

<sup>26</sup> The late Georgescu-Roegen, himself supremely competent in mathematical economics, told me, in the early 1980s, of his sadness, to read in the answer script of an able graduate student at his University, referring to ‘*Lagrange, the economist*’! In my own teaching experience at Cambridge University, in the early years of this century, I was intrigued to find that even final year undergraduates had to master the ‘*Euler equation*’ of the (classical) calculus of variations – but had no idea of its economic theoretic genesis at the hands of Ramsey, helped by Keynes! Across the Atlantic, I was to find that the *Euler equation* was, now replaced by a blind adherence to Bellman’s *Principle of Optimality*, accompanied by equally admirable ignorance of the ‘*tenet of transition*’, motivated economically, and devised earlier, by Rufus Isaacs.

which Marshall was not unsympathetic – has become a new orthodoxy at the hands of evolutionary game theory.

The supreme dominance of the *Fundamental Theorems of Welfare Economics*, in the policy nihilism that is the hallmark of orthodox economic theory, would, I am sure, induce discomfort in Marshall and Pigou, if not also in Edgeworth. The ‘old’ welfare economics they carefully – even ‘lovingly’ - developed, so that the economic theory they fashioned as a development of Ricardian equilibrium economics, could serve as a basis for enlightened policy, became the ‘new’ welfare economics at the hands of Kaldor and Hicks. This was basis for the development of the so-called fundamental theorems of welfare economics – although the mathematical framework in which it was encapsulated, primarily by Arrow and Debreu (but not in their fundamental joint paper of 1954) – which is the basis for the nihilistic policy frameworks of every kind of orthodoxy, from Hayek to Lucas, via Friedman.

How much of the *economic theory* that is being taught, and practiced, via an underpinning of economic policy – both monetary and real – couched in monumentally irrelevant mathematics, would be strange and unfamiliar to our neoclassical masters? To Jevons and Marshall, to Walras and Pareto, to Menger and Wicksell, to Edgeworth and Fisher? They – none of them – may well be sure-footed in the non-computational, uncomputable, undecidable, unsolvable mathematics that encapsulates the formal economic theory they fashioned, in the golden decades – decades in which the gold standard ruled - culminating in the tragic year of 1914. But they would be eminently comfortable in the safely ensconced orthodox economic theory of today – although Marshall may be an outlier and Wicksell a dissenter!

## **Whither Economic Theory – in the 21<sup>st</sup> Century?**

“If you are reading this in the year 2100, ..., I ask you: Who else told you what the macroeconomics of your century would look like, in advance, *with such accuracy and economy?*”

Lucas, 2000, p. 267; italics added.

For someone who thinks there is no such thing as a distinction between macroeconomics and microeconomics, that there is only *Economic Theory* (Lucas, 1987, pp. 167-8), the above

‘forecast’ can easily be bracketed with John Stuart Mill on value theory, on the eve of the so-called marginal revolution and J. J. Thomson – later Lord Kelvin – on the ‘minor anomalies’ of black body radiation and the Michaelson-Morley results, on the eve of Planck’s and Einstein’s theories of quantum mechanics and relativity theory.

Coupled to two other ‘visions’ or ‘opinions’ of alternative standard bearers of orthodox economic theory, this forecast makes economics an antiseptic, anti-sceptical, anti-social, anti-historical and anti-humanistic *discipline*<sup>27</sup>. The first, by that arch purveyor of irrelevant general equilibrium theory, Frank Hahn (1983, p. 1; italics added):

“The most serious challenge that the existence of money poses to the theorist is this: the *best developed model of the economy* cannot find room for it. The best developed model is, of course, the Arrow-Debreu version of a Walrasian general equilibrium.”

The other, by a loyal Lucasian, Thomas Sargent<sup>28</sup> (1987, p. xix; italics added):

“[A]s economic analysts we are directed by, if not prisoners of, the mathematical tools that we possess.”

None of these arch high priests of varieties of orthodox economic theory and economic analysis are even remotely concerned with a mathematics that can foster ambiguity – i.e., they are, essentially, anti-sceptical of the soundness of the kind of mathematics they deploy. That ‘the best developed model of the economy cannot find room for [money]’ is, surely, an indictment of the nature and kind of model that is considered ‘best developed’? It is considered ‘best developed’ only because it is mathematical in a most irrelevant way, for a subject that seems to have lost all its roots in political and ethical philosophy, in history and in the broad humanistic traditions of its origins.

And, then, what are ‘the mathematical tools we possess’ and who are the ‘we’? Obviously, Sargent alludes to economic analysts, when he refers to ‘we’, and, then, it becomes clear that all empirical (sic!) modelling, based on a mathematically underpinned theory, is also constrained by

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<sup>27</sup> I refer, once again, with determined conviction, to Hicks (1983).

<sup>28</sup> A recipient of the Nobel Memorial Prize in Economic Sciences (sic!) in 2011, for work in furthering the empirical foundations of macroeconomics, even while the economies of the World were still reeling from the aftershocks of ‘2008’, much of it – surely – due to the over-reliance on the models emanating from the newclassical stables!

the mathematical tools we possess'. But what are these 'mathematical tools'? Are they not evolving and do they not have a history?

At the frontiers of economic research – both theoretical and empirical – experimental, computational and simulational techniques dominate<sup>29</sup>. The mathematical foundations of these techniques are, contrary to orthodox practice, completely irrelevant to the mathematics of general equilibrium theory.

Exactly one hundred years separate the publication of Corrado Gini's crowning research on what eventually came to be almost popularly used as the *Gini Coefficient* (Gini, 1914) and Thomas Piketty's much-hyped treatise on *Inequality* (Piketty, 2014). The peculiarity of Gini's admirable measure of inequality and the economic theoretical foundations of Piketty's noble advocacy of a policy for sustained efforts to achieve 'more' equality is that they are both *non-monetary*. The theoretical foundations of Piketty's model(s) lie in varieties of real growth theory – themselves based on dubious mathematics and even more questionable steady-state visions.

On the other hand, even during the hey day of Keynesian stabilisation policies, in the fifties and sixties, the aims were full employment and stability of the monetary standard; the achievement of a quantifiable measure of acceptable equality was not part of the policy frameworks that were implemented, even in ostensible social democracies.

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<sup>29</sup> Hahn (1994, p. 258; italics added), 'confessed':

"My guess is that the age of theorems may be passing and that of *simulation* is approaching. Of course there will always be *logical* matters to sort out, and our present expertise will *not be totally obsolete*. But the task we set ourselves after the last war, to *deduce all that was required* from a number of axioms, has *almost* been completed, and while not worthless has only made a small contribution to our understanding."

This statement, although welcome as a skeptical stance on the relevance of currently orthodox theory, is – itself – too loose and confused in too many ways, to be taken too seriously. First of all, the notion of simulation must be predicated upon a model of computation; secondly, the kind of logic used in orthodox mathematical economics is irrelevant for computationally underpinning simulation is a rigorous way; thirdly, what does Hahn mean when he writes 'deduce all that was required'? How does he – or anyone else – know how 'much' is to be 'deduced', what is 'required' and what the legitimate *methods of deduction* can be used in computationally underpinning a theory that forms the foundations of simulation?

But, surely, the theories of this coming century will be – or should be – dominated by considerations of the widening aspects of *inequity* and *inequality*. The wornout dichotomy between *equity* and *efficiency* has played a part in the policy nihilism that has been the hallmark of orthodox economic theory at the frontiers.

I see the frontiers of research in economic theory and economic analysis, today, being dominated by varieties of *game theory*, different kinds of *behavioural economics*, *experimental economics*, *computational economics*, *neuroeconomics* and so-called agent-based economics. None of these are monetary in the senses in which economic theory in 1914, was – developed, especially, at the hands of Knut Wicksell, Gustav Cassel, Rudolf Hilferding, Irving Fisher and Maynard Keynes. All of these are based on some kind of equilibrium notion – unlike Schumpeter's valient efforts to find a way to break out of the equilibrium of the circular flow and develop an evolutionary theory of growth. None of these are institutional in the noble senses in which that notion was instrumental in the kind of economic theory advocated by Veblen and Mitchell.

Niels Bohr, the legendary Danish physicist, is alleged<sup>30</sup> to have said: *Prediction is difficult, especially of the future*. I shall, therefore, boldly venture into this world of difficulties and predict that none of these frontier fields will be part of the economic theory or economic analysis that will be of concern to the economist of 2114! On the other hand, I would also like to indulge in hopes: it is my wish that the economics of 2114 is more humane, based on enlightened political and ethical philosophy and less reliant on anti-septic, anti-computable, anti-constructive mathematics and anti-intuitionistic logic.

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<sup>30</sup> I qualify this attribution with the word 'alleged' because, by now, it is well-known that Bohr had relied on earlier Danish sources for this quote.

## References

Chandavarkar, Anand (1989), **Keynes & India: A Study in Economics and Biography**, The Macmillan Press, London.

Davenport-Hines, Richard (2015), **Universal Man: The Lives of John Maynard Keynes**, Basic Books, New York.

Fisher, Irving (1912), **The Purchasing Power of Money: Its Determination and Relation to Credit, Interest and Crisis**, The Macmillan Company, New York.

Gini, Corrado (1914), *Di una misura della concentrazione indipendente della distribuzione del carattere*, **Atti del R. Istituto Veneto di Scienze, Lettere ed Arte**, Vol. LXXIII, pt. II, pp. 1203-1258.

Goodwin, Richard. M (1951), *The Nonlinear Accelerator and the Persistence of Business Cycles*, **Econometrica**, Vol. 19, No. 1, January, pp. 1-17.

Hahn, Frank (1983), **Money and Inflation**, The MIT Press, Cambridge, Massachusetts.

Hahn, Frank (1994), *An Intellectual Retrospect*, **BNL Quarterly Review**, # 190, September, pp. 245-258.

Hicks, John. R (1983), *A Discipline not a Science*, Chapter 32, pp. 365-375, in: **Collected Essays on Economic Theory – Volume 3: Classics and Modern**, Basil Blackwell, Oxford.

Keynes, John Maynard (1913), **Indian Currency and Finance**, Macmillan and Co., Ltd., London.

Keynes, John Maynard (1914), *The City of London and the Bank of England, August, 1914*, **Quarterly Journal of Economics**, Vol. 29, No. 1, November, pp. 48-71.

Keynes, John Maynard (1920), **The Economic Consequences of the Peace**, Harcourt, Brace and Howe, New York.

Keynes, John Maynard (1936), **The General Theory of Employment Interest and Money**, Macmillan and Co., Ltd, London.

Lucas, Robert. E, Jr., (1981), **Studies in Business-Cycle Theory**, Basil Blackwell, Oxford.

Lucas, Robert. E, Jr., (1987), **Models of Business Cycles**, Basil Blackwell, Oxford.

Lucas, Robert. E, Jr., (2000), *Some Macroeconomics for the 21<sup>st</sup> Century*, **Journal of Economic Perspectives**, Vol. 14, No. 1, Winter, pp. 159-168.

Mitchell, Wesley Clair (1913), **Business Cycles**, University of California Press, Berkeley.

Mitchell, Wesley Clair (1914), *Human Behavior and Economics: A Survey of Recent Literature*, **Quarterly Journal of Economics**, Vol. 29, No. 1, November, pp. 1-47.

Moggridge, D. E (1992), **Maynard Keynes: An Economist's Biography**, Routledge, London.

Pareto, Vilfredo, (1916), **Trattato di Sociologia Generale**, G. Barbéra, Firenze.

Piketty, Thomas (2014), **Capital in the Twenty-First Century**, Harvard University Press, Cambridge, Massachusetts.

Robertson, D. H (1915), **A Study of Industrial Fluctuation: An Enquiry into the Character and Causes of the so-called Cyclical Movements of Trade**, P.S. King and Son, Ltd., London.

Russell, B. A. W (1952), *Maynard Keynes and Lytton Strachey*, **The Listener**, vol. 48, 17 July, pp. 97-8.

Sargent, Thomas. J (1987), **Macroeconomic Theory** (Second Edition), Academic Press, New York.

Schumpeter, J. A (1912), **Theorie der wirtschaftlichen Entwicklung: Eine Untersuchung über Unternehmergewinn, Kapital, Kredit, Zins und den Konjunkturzyklus**, Duncker & Humblot, Leipzig.

Skidelsky, Robert (1983), **John Maynard Keynes – Volume 1: Hopes Betrayed, 1883-1920**, Macmillan, London.

Solow, Robert. M (1956), *Review of Elements of Pure Economics*, by Leon Walras, translated by William Jaffé, **Econometrica**, Vol. 24, No.1, January, pp. 87-89.

Sprague, O. M. W (1914), *The Federal Reserve Act of 1913*, **Quarterly Journal of Economics**, Vol. 28, No. 2, February, pp. 213-254.

Veblen, Thorstein (1900), *The Preconceptions of Economic Science*, **Quarterly Journal of Economics**, Vol. 14, No. 2, February, pp. 240 – 269.

Veblen, Thorstein (1909), *The Limitations of Marginal Utility*, **Journal of Political Economy**, Vol. 17, No. 9, November, pp. 620-636.

Willis, Henry Parker (1914), *The Federal Reserve Act*, **American Economic Review**, Vol. 4, No. 1, March, pp. 1-24.