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Reconstructing Macroeconomics

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Legacy

Lance Taylor (1940–2022): Reconstructing Macroeconomics

Servaas Storm

INTRODUCTION

On 15 August 2022, Lance Taylor, the towering structuralist macroeconomist and a thinker of uncommon breadth, sadly passed away. His work, spanning almost six decades, stands out for its originality, creativity, (policy) relevance and theoretical rigour as well as for its fearless commitment to speak truth to power in academic and policy-making circles. This essay reviews Taylor's progression from an early development planner to a radical Keynesian macroecono-mist on a mission to reconstruct a failing mainstream macroeconomics and build a relevant, practical 'structuralist' alternative, grounded in real-world stylized facts and of benefit to broad-based and sustainable economic progress. Lance Taylor will be missed but, as this essay aims to demonstrate, his legacy will live on, through his prolific writings and through generations of heterodox economists who were mentored by him or have been influenced by his work.

THE IDEAL MACROECONOMIST

Lance Taylor once painted the following picture of the 'ideal' macroeconomist: 'Ideally, one ought to be able to teach macroeconomics at the university in the morning, advise the Minister on how to apply macroeconomics in the afternoon, and write scholarly papers on macroeconomics at night, all the while practising the same craft' (Taylor, 1988a: 25).[1] When he wrote this, Taylor probably had John Maynard Keynes in mind — the British

For generous support in reading, clarifying and correcting a first version of this paper, I am indebted to Edmar Bacha, Nelson Barbosa-Filho, Jeronim Capaldo, William Darity, Thomas Ferguson, Duncan Foley, Özlem Ömer, Ian Lance Taylor, Signe Taylor and Yvonne Johnsson Taylor. They are all absolved of any errors in interpretation or explanation that remain.

1. Taylor (1988a) wrote in a footnote that the thought is due to Roberto Frenkel.

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economist who revolutionized economics and economic policy making in the 1930s — but as a matter of fact, he came very close to this 'ideal' himself.

Let us start with teaching. Taylor taught macroeconomics and development economics to generations of students at the Massachusetts Institute of Technology (MIT), where he was a Professor of Economics and Nutrition (1973–93), and the New School for Social Research, where he was the Arnhold Professor of International Cooperation and Development (1993–2012). He mentored dozens of PhD students.[2] Many of his students fondly remember how Taylor extended 'his personal spirit of independence and desire to make economics a just science by supporting economists who sought to depart from pre-ordained paths', as William Darity (2022), who completed his doctorate with Taylor in 1978, puts it. Darity continues:

> Those of us working with him could drop off a set of notes with scribbled calculations or thoughts in his mail slot in the morning, and we would have his detailed reaction back the same day in the afternoon. I also recall visiting his office for the first time and discovering that he had a hammock installed where he frequently could be found reading the latest academic paper that caught his attention. (Darity, 2022)

Fast forward to Özlem Ömer, for whom Taylor acted as unofficial advisor for her 2018 PhD thesis (40 years after Darity), who writes: 'We exchanged thousands of detailed emails, through which I learned his approach to macroeconomic theory …. He was incredibly patient and kind. … Lance's responses were immediate and thoughtful — no matter the time of the day. He didn't want to waste any time because he had so much to share, to write and to teach' (Ömer, 2022: 174–75). Email had replaced the scribbled notes, but otherwise things stayed exactly the same. Interestingly, and consistent with his dissenting position within the economics profession, Taylor's office was not located in the building that housed the MIT Economics Department, but rather in the old, rambling, wooden building that housed the MIT Food and Nutrition Department. His office, door generally open, did indeed have a hammock and was full of books, reports and papers — while visitors, reportedly, would also often meet his Saint Bernard dog which he brought along to work.

When it comes to 'advising the Minister', Lance Taylor gave counsel to governments all over the globe, starting with Chile in 1968–69, and including Brazil, Egypt, India, Pakistan, Portugal, Nigeria, South Africa, Thailand and others. In fact, Taylor's students found it difficult to name a country he had not been to. Taylor made it a practice to collaborate with economists from the country concerned, often former students. He deeply disliked the

2. Taylor's students included Edward Amadeo, Persio Arida, William Darity, Amitava Krishna Dutt, William Easterly, Paul Krugman, Maud Naroll, Alexandros Sarriss (Harvard and MIT); and Rudi von Arnim, Laura Barbosa de Carvalho, Nelson Barbosa-Filho, Jeronim Capaldo, Özlem Ömer, Codrina Rada, Armon Rezai, Enno Schröder, Gregor Semieniuk, Daniele Tavani, Matías Vernengo (New School).

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'foreigners who fly in with policy packages for developing and post-socialist countries [and particularly those who] staff two international agencies — the World Bank and the International Monetary Fund (IMF)' (Taylor, 1997: 145). He complained that: 'Their staff members are grossly over-paid in comparison to their counterparts in developing countries. … When on missions they interact with each other more than with the economists of the country they happen to be visiting, and they communicate virtually only among themselves in the office' (ibid.: 152).

And last but by no means least, Taylor's scholarly output (presumably written at night) is impressive. By my (imperfect) count, he published eight weighty monographs, co-authored and edited around 10 books, and published hundreds of journal articles, working papers and book chapters during an academic career spanning almost six decades. On top of this, Taylor was the editor-in-chief of the *Journal of Development Economics* from 1976 to 1984, where he managed to create a high-quality publication window for economists from a variety of opposing schools of thought — a window that sadly closed after he retired from the editorial board. During the late 1980s and 1990s, Taylor was pivotal in organizing and leading various projects at the World Institute for Development Economics Research (WIDER), which provided substantive critiques of the orthodox IMF macro stabilization packages and World Bank structural adjustment programmes that were deeply damaging many countries in the developing world. He was also the recipient of prestigious prizes and gave special lectures, including the Marshall Lecture in 1986–87 (Taylor, 1988a), at the University of Cambridge, and the V.K. Ramaswami Lecture at the Delhi School of Economics in 1988 (Taylor, 1988b).

BUT ALWAYS A COUNTRY BOY

Unlike Keynes, Lance Taylor always remained a 'country boy', as he once told me. He and Yvonne Johnsson Taylor, his wife of almost 60 years, own Black Locust Farm in Washington, Maine, a property of approximately 90 acres of fields and wooded land, lying in the headwaters of the Medomak River watershed.[3] The farm, with its architecturally striking custom-designed house (Foley, 2022), is known for its cashmere goats and its practice of logging with oxen, using low-impact forestry techniques. The farm was mostly run by Yvonne, who worked as a psychiatrist in rural Maine, but Lance lent a regular helping hand. Readers of his books of course know

3. 'Fronting on a large brook which feeds directly into the upper portions of the Medomak River, the property protects the health of the river and provides crucial habitat for both large and small animals as well as the richly diverse bird life of the area'. This description is from 'Washington's Black Locust Farm protected in perpetuity' in the *Knox County Village Soup Courier-Gazette*, 13 November 2012.

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that he customarily acknowledged the support of the canine, caprine, equine, porcine, gallinaceous and anserine critters at the farm (e.g. Taylor, 2004: ix) — singling out the geese for their insights in neoclassical growth theory. As Duncan Foley (2022), Lance's New School colleague and co-author remembers:

> Lance had what one might call a casual approach to every-day dress, though he appeared for public talks well turned out even with rather jaunty accessories. It was not unusual, however, for him to appear in his office in the working clothes of a Maine farmer. On some of these occasions, particularly when travel delays or cancellations disrupted work plans, I would try to persuade Lance that graduate students were at least as interesting as goats in the hopes of getting him to spend more time in New York, but I made no headway on this issue.

It is worthy of note that Yvonne and Lance Taylor donated their farm as a conservation easement in order to protect and preserve it as a natural reserve for future generations.

Whatever his talents as a part-time farmer, however, Lance Taylor will be remembered principally as an accomplished practitioner of economics and a policy advisor who was equally skilled with abstract economic theory, complex modelling approaches, political economy analyses and pragmatic planning. It is impossible to do justice to his many contributions to macro- and development economics; in this essay, I single out key contributions, against the background of his academic biography.[4]

BEGINNINGS

Lance Jerome Taylor was born on 25 May 1940 in Montpelier, a small town in rural Idaho, where his parents ran the local weekly newspaper (Taylor, 2000). He received a BSc with honours in mathematics from the California Institute of Technology[5] in 1962, but decided not to continue in science, because 'I have minimal mechanical talent and thereby could not be an experimentalist, while I was not quick enough at mathematics to do theory' (ibid.: 665). A 'marvellous course in macroeconomics' by Alan Sweezy (a left-Keynesian economist and the older brother of Paul Sweezy[6]), who gave his students Keynes' *General Theory* to read, persuaded him to go into economics. 'I think in retrospect that it sunk into some place deep down in my subconscious', said Taylor, adding that, 'Basically, I got into economics because of him' (quote from Lavoie, 2015: 250).

4. This essay draws heavily on Taylor's (2000) autobiographical note, as well as Taylor (2016) and an interview with Marc Lavoie (Lavoie, 2015).
5. Since he grew up in the environs of a newspaper, he was interested in journalism and as a student, he wrote articles for the Caltech monthly magazine *Engineering and Science*, including memorable pieces on 'The Great Rose Bowl Hoax' (January 1961) and 'Caltech's Immunochemistry Center' (April 1960).
6. Paul Sweezy was a prominent Marxist economist and founding editor of *Monthly Review*

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Following a Fulbright scholarship year at Lund University in Sweden, where he married Yvonne in 1963, Taylor worked on his PhD under the supervision of Hollis Burnley Chenery, who was a student of Wassily Leontief and a pioneer in using input-output analysis for development planning. According to Taylor (2000: 666): '[Chenery] passed along his practical view that economics should be applied to help poor people in poor countries, and also displayed a relatively open attitude towards dissent (many of the Harvard graduate students tending toward radicalism in the 1960s received a modicum of intellectual protection from him)'. Taylor did not view himself as a left-Keynesian economist at that time (Lavoie, 2015); he just wanted to 'apply economics to help poor people in poor countries' — quite in line with Chenery's American liberal Democratic leanings.

Using formal econometric methods, Taylor's PhD thesis analysed how sectoral production structures changed as economic development proceeded, which led to early papers on patterns of growth in *The Review of Economics and Statistics* (Chenery and Taylor, 1968), and *The Quarterly Journal of Economics* (Taylor, 1969).[7] Taylor's work laid (part of) the foundation for Chenery et al.'s (1974) *Redistribution with Growth: An Approach to Policy* and Chenery and Syrquin's (1975) *Patterns of Development, 1950–1970*, two influential books on economic development published by the World Bank during the McNamara era.

After finishing his thesis, Taylor worked in Chile's Planning Office in 1968 and 1969 as part of an advisory mission led by Paul Rosenstein-Rodan; this was just before Allende was elected. In Santiago de Chile he worked on dynamic multisector programming models, publishing technical papers in *Econometrica* (Kendrick and Taylor, 1970) and the *Review of Economic Studies* (Taylor, 1970).[8] Looking back, Taylor did not hold these papers in high regard, considering them to be rather standard works.[9] In general, he felt that 'there is no sense in being overwhelmed by algebraic fireworks' (Taylor, 2000: 665). Taylor bundled his expertise on models for development planning, a 'term that has long since vanished from polite economic discourse',[10] in a widely used book which he co-authored with Charles Blitzer and Peter Clark (Blitzer, Clark and Taylor, 1975).

The experience of living in Chile in 1968–69 proved life-changing. 'I learned, more or less, how a highly inegalitarian developing country works and got interested in distribution issues when I was there', Taylor noted (Lavoie, 2015: 251). In Chile, he wrote, 'I derived my basic economic views'. These views were 'heavily influenced by the structuralist ideas of the

7. Some 20 years later, McCarthy, Taylor and Talati (1987) analysed patterns of trade in developing and developed economies (1964–82). Almost two decades later again, Taylor revisited his 'growth patterns' work in Ocampo, Rada and Taylor (2006).
8. In addition, Taylor published an article with Bacha, exploring different avenues to obtain the shadow price of foreign exchange (Bacha and Taylor, 1971).
9. Following his mentor Chenery, Taylor gave up on optimization models in the early 1970s.
10. These are Taylor's (2016: 495) own words.

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Economic Commission for Latin America that in the late 1960s were very much in the Santiago air. ECLA economists, in turn, owed intellectual debts to Kalecki and Kaldor' (Taylor, 2000: 666).

CHILE, BRAZIL, MACRO CLOSURES AND CONTROVERSY

After teaching for three years at Harvard, Taylor spent 1972 visiting the University of Brasilia, working on a World Bank project[11] to construct a computable general equilibrium (CGE) model to analyse why rapid growth went hand-in-hand with regressive distributional change in Brazil. Together with Edmar Bacha, whom he knew well from his work in Chile's Planning Office, Taylor co-authored an influential paper titled 'The Unequalizing Spiral: A First Growth Model for Belindia' (Taylor and Bacha, 1976). The name 'Belindia', coined by Bacha, expressed the dual-economy nature of Brazil — a country in which a small minority of the population lived as well-to-do people did in advanced modern economies, such as Belgium, while the vast majority lived the way that low-income people lived in India. Taylor's team pioneered the construction of CGE models (Taylor, Bacha, Cardoso and Lysy, 1980), parallel to similar efforts for South Korea by a team led by Irma Adelman and Sherman Robinson (Adelman and Robinson, 1978).[12]

It must be mentioned here that publication of the CGE model analysis of Taylor, Bacha, Cardoso and Lysy 'was held up for more than a year by Alan Walters, then a high-level Bank bureaucrat and later a key advisor to Margaret Thatcher' (Taylor, 2016: 499). Walters found Taylor's modelling approach 'politically unacceptable'. His unwillingness to publish Taylor's model analysis was no error, however. Consciously or unconsciously, Walters understood that Taylor's work laid the axe at the root of the World Bank's self-image that it was providing neutral, 'technical' policy advice to client governments. The point was that Taylor, jointly with Frank Lysy, had offered proof that the newly developed CGE models are not 'neutral' policy tools to explore the data or numerically examine the possible repercussions of policy changes or institutional changes (Taylor and Lysy, 1979). Rather, these models are, always and everywhere, 'non-neutral', that is, they 'are designed as quantified illustrations of their designers' conceptions of the economic

11. Chenery moved to the World Bank in 1972 as vice-president for development policy. He set up an active research group, which put a lot of effort into developing CGE models.
12. As Taylor (2016) recalls, the models for Brazil and South Korea functioned somewhat differently, with changes in internal terms of trade bearing the main burden of macro adjustment in the Korea specification, while solutions for Brazil emphasized shifts in sectoral levels of economic activity and income redistribution via forced saving. It turned out that the differences in model adjustments originated not from structural differences between Brazil and South Korea, but from differences in the macroeconomic closure rule imposed on the respective CGE models.

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world. Each model becomes a rhetorical tool, a means to expound in detail its builder's ideas about the key linkages in the "real" economy out there' (Taylor, 1995b: 271).

Specifically, Taylor and Lysy (1979) show that economists always have to superimpose a particular 'macroeconomic causal structure' or '*closure*' on their model, and the choice of a specific closure rule will affect the way the model works and significantly influence the *qualitative* character of the model results.[13] The reason, as Taylor (2016: 496) explains, is that 'CGE models are stupid. They do what their closures tell them to do'. In Taylor's view, this does not make CGE modelling useless, but it does imply that the economist building the model has to have an informed prior understanding (a 'vision') of the economy in question in order to choose the most appropriate closure rule given the specific historical and institutional context. Taylor is basically restating Keynes' claim that economists must be *vigilant observers* and that economics is an art, and not an ersatz natural science: 'Economics is a science of thinking in terms of models joined to the art of choosing models which are relevant to the contemporary world. … Good economists are scarce because the gift for using "vigilant observation" to choose good models, although it does not require a highly specialised intellectual technique, appears to be a very rare one' (Keynes, 1938/2012: 297).

Taylor, who was a master in vigilant observation, learned an important lesson: 'As my little dust up with Alan Walters exemplifies, politics has always been part of the CGE world, not least in the World Bank which after all is based in Washington DC' (Taylor, 2016: 500). Walters, whose father was a communist and who himself became Mrs Thatcher's 'finest of friends', could not stop the publication of Taylor et al. (1980). He neverthe-

13. Equilibrium in an economy with *n* industries means that there exists a price vector for which it is true that the *n* sectoral supplies and demands are balanced. However, in addition to these sectoral balances, the equilibrium outcome needs to satisfy (ex-post) (macroeconomic) national accounting restrictions, most prominently the condition that total investment is equal to total saving. This condition is not automatically met and hence, when designing CGE models, economists have to impose (from the outset) the mechanism(s) by which investment and saving will be balanced. Taylor and Lysy (1979) show that the choice of mechanism is *not neutral*. Neoclassical economists assume that both saving and investment are a function of the real interest rate and that there exists a real interest rate for which saving and investment are equal; this loanable-funds specification implies that all savings will be converted into investment, allowing the economy to continue to operate at full-employment income. With this closure, policy changes can (by design) impact the economy only by advantaging particular industries over others and by benefiting particular income groups while hurting others; the aggregate level of economic activity will not be affected, however. On the other hand, Keynesian economists, such as Taylor, assume that investment is autonomous (to an extent); as a result, savings have to adjust to (autonomous) investment by means of (multiplier) changes in the level of (real) income. With this closure, policy changes will affect the level of economic activity, the industry structure and income distribution, all at the same time.

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less got his way in the long run, especially after 'Anne Krueger's palace coup at the World Bank' (Taylor, 2016: 507). From then on, CGE models were widely promoted as 'neutral policy tools' by the World Bank and the IMF to advocate their Washington Consensus policies. But as Taylor (ibid.: 496) pointed out, the neoclassical macroeconomic closures of the models used by the World Bank and the World Trade Organization have to an extent been rigged to make them generate the qualitative results that the modellers think they should have. As Taylor (ibid.: 500) wrote: 'I would argue that some of the Bank's modeling work went beyond research into design of packages aimed to sell the purported benefits of liberalization, but I'll leave that judgment to others'.

In fact, by assuming full employment, World Bank CGE models would always produce net welfare *gains* from trade liberalization in any country in any time period, since actual real-world contractionary effects could not occur in these models because of the neoclassical closure chosen (see Kohler and Storm, 2017). Raza, Taylor, Tröster and von Arnim (2016) present a structuralist CGE model for the assessment of the Transatlantic Trade and Investment Partnership (TTIP); its key assumptions with regard to the determination of output, income and employment are fundamentally different to the key assumptions of mainstream CGE models — and they arrive at fundamentally different results.

In retrospect, Taylor's realization in the 1970s that (CGE) modelling is never a neutral exercise, but always involves prior choices — based on 'vigilant observation' by the model builder — which affect the model outcomes, provided the foundation and inspiration for all his later work. From then on, he would always explicitly explore how (prior) theoretical choices influence model outcomes and, hence, affect policy recommendations. And he would always justify his choice of a particular closure, given the structural and institutional context of the economy under investigation. The art of doing economics is to make it relevant for the real world.

THE MIT YEARS (1973–1993)

During his years in Chile and Brazil, Taylor read widely — 'Sraffa, Robinson, Kaldor, Kalecki and a lot of anthropology' (Taylor, 2000: 667) — ironically, mostly work by economists based in Cambridge, England.[14] Returning from Brasilia to Cambridge, Massachusetts, Taylor joined MIT as a tenured professor in the Departments of Economics and Nutrition in 1973 and became the editor-in-chief of the *Journal of Development Economics* in 1976. Several themes dominate Taylor's work in the 1970s and 1980s: a focus on industrial structure and structural change; a continuing emphasis

14. An early indication of Taylor's interest in Cambridge economics is the paper by Bacha, Carneiro and Taylor (1977) on 'Sraffa and Classical Economics'.

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on the balance of payments as a central constraint on development; an explicit concern with income distribution (and distributional conflict) as a driver influencing economic growth; and a lack of automatic self-correcting mechanisms to resolve structural imbalances and deal with external shocks. These structural factors impose constraints on economic performance, but may also contribute to economic growth. Taylor's point (in his own words) is that 'you cannot just describe an economy with production functions, demand and supply functions and maximising this or that, and that instead institutions and history matter' (Lavoie, 2015: 251).

Taylor developed novel two-sector models of a developing economy, which distinguished between a price-clearing agricultural sector and a demand-determined, quantity-clearing industrial sector and included Engel curves (for consumption demand), to analyse perennial problems of economic development highlighted by Kalecki, Kaldor, Preobrazhensky and Sylos-Labini (Chichilnisky and Taylor, 1980). And with Paul Krugman, then an MIT graduate student, Taylor wrote a now classic paper showing that currency depreciations are likely to be contractionary in semi-industrialized economies: after all, in the real world, the increase in import prices (of essential consumer items and capital goods) lowers real incomes and, hence, demand and output, especially if exports are not very sensitive to the exchange rate (Krugman and Taylor, 1978). Taylor's work of the 1970s was brought together in his first monograph, *Macro Models for Developing Countries* (Taylor, 1979).

During the 1970s and 1980s, Taylor deepened his work on CGE models. His 1974 paper written with Stephen J. Black provided the first practical (policy) application of general equilibrium modelling, in the form of a 35-sector model for the Chilean economy (Taylor and Black, 1974), based on Leif Johansen's (1964) classic, *Multi-sectoral Study of Economic Growth*. Solving large-scale non-linear numerical models was no sinecure in a time of expensive, time-consuming, room-sized mainframe computing, and Johansen's solution algorithm, which involved log-linearizing the non-linear equations in the model, was not very efficient. Taylor developed a new and more efficient iterative solution algorithm, involving a combination of Gauss-Seidel and Newton-Raphson methods, that proved very powerful in approximating general-equilibrium outcomes (Taylor, 1983). He used the new algorithm to build CGE models for Egypt (Taylor, 1982), Pakistan (McCarthy and Taylor, 1980) and India (Taylor, Sarkar and Rattsø, 1984). The simulations based on the CGE model for Egypt, with a broadly Kaleckian specification, showed that abolishing the existing food subsidies would lead to output contraction and adverse nutritional change. As Taylor recalls: 'These results did not strike me as surprising, but provoked debate with people opposed to subsidies because of their alleged microeconomic inefficiencies. My report (never published *per se*) became a *mini-cause célèbre* when Cairo erupted in food riots after an attempt to end the

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subsidies in January 1977. Ill-planned distributional shifts can have substantial macroeconomic effects' (Taylor, 2000: 667–68).[15]

The models he developed in collaboration with students and colleagues were orientated towards practical development policy issues. These model analyses, centred on distributional conflicts within the structural constraints in terms of productive, export and import, and land ownership structures characteristic of industrializing economies, proved useful to quantify effects of policy changes and forced one to think about the relative importance of different causal chains. Edited collections of these papers were published as Taylor (1990) and Taylor (1993).

Taylor's 1983 book provided a synthesis and a first serious attempt at codification of his 'structuralist' macroeconomics, both for the short and the long run.[16] It contained his pioneering work on models describing the economic interactions between an industrialized North and a primary-resources-exporting South (Taylor, 1981), which was heavily influenced by ECLA's structuralism and which, in turn, inspired a cottage industry of North–South analyses in the 1980s (e.g., Conway and Darity 1991; Dutt 1989a, 1989b). Retaining a modified version of the neo-Keynesian IS-LM model (with exogenous money supply) in parts of the book did not help his overall cause (Bacha, 1985). Nevertheless, Taylor's treatment of the foreign-exchange constraint on industrialization and of structuralist inflation models was illuminating, and his chapter 4, which discusses a CGE model for India, was outright brilliant; in the words of Bacha: 'More than fifteen years of experience in applying multisectoral models in different parts of the developing world are neatly packed by Taylor in no more than thirty pages. All the tricks of the trade are presented in a masterful exposition, which should be a treat for students of development economics and economic planners alike' (Bacha, 1985: 540). Taylor further contributed two (long) chapters to the two-volume first edition of *The Handbook of Development Economics*, edited by Hollis Chenery and T.N. Srinivasan; the chapters, co-authored by Persio Arida, one of his PhD students, dealt with short-run

15. The 'bread riots' that erupted in Cairo, Suez, Alexandria and other cities in mid-January 1977, were a popular uprising against the sudden increase in food prices after public subsidies on basic foodstuff were cut. Prices of bread, sugar, tea, cooking oil and rice rose by between 25 and 50 per cent. Food subsidies were abolished by the Egyptian state as a condition for receiving funds from the IMF and World Bank, which insisted that Egypt's public debt had to be lowered and its economy and foreign trade be liberalized. Around 80 persons were killed, over 550 were injured and approximately 1,200 were arrested during the protests. The revolt was suppressed and the order of the Sadat regime was eventually restored by the Egyptian army (Soliman, 2021).
16. It is important to note that Taylor's work in the MIT days was part of a larger neo-structuralist movement in economics at that time — informed by earlier structuralism, but with a strong push towards formalization and, as a result, contributing to the shift in economics away from the more inductive historical analyses characteristic of the original structuralist approach of Prebisch and Chenery. I am grateful to Andrew Fischer for making this point.

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macroeconomics and long-run income distribution and growth (Taylor and Arida, 1988, 1989).

The monetary tightening in the American Federal Reserve during 1979–81, to combat inflation in the US, triggered debt crises in many (highly indebted) countries in Latin America and Africa. In the aftermath of the global fallout of the Volcker shock, Taylor devoted his work in the 1980s and 1990s to analysing and criticizing stabilization, liberalization and privatization policies which were imposed on developing countries as conditionality for debt relief and financial support by the IMF, the World Bank and the US Treasury. The economies 'helped' by these Washington institutions had to undertake drastic measures for fiscal consolidation and trade and capital account liberalization, which contributed to a prolonged recession, rising inequality and poverty, and a lost decade of development in those countries. Under the aegis of WIDER and working with Gerald Helleiner, Taylor organized 18 comparative studies of IMF-sponsored economic stabilization policies in developing countries; the results of the studies are reviewed in Taylor (1988a, 1989) with the aim of identifying alternative stabilization policies that work better than the ones imposed by the IMF.

Finally, Taylor published his lectures at MIT in *Income Distribution, Inflation and Growth* (Taylor, 1991). In this and other books, it is evident that Taylor approaches economics from a systems perspective that is more common among engineers and applied mathematicians than among economists. As Foley (2022) points out:

> He instinctively approached practical issues through the lens of dynamical systems models of typically two or three dimensions, a realm where Lance was completely at home and 'spoke the language'. (Not everyone was so gifted in this respect, and Lance had a tendency to assume a degree of familiarity with the properties and analysis of low-dimensional dynamical systems models that challenged the backgrounds of his readers and students ….).

(This certainly rings true for the author of this essay, who has spent quite a few hours consumed by the effort of understanding various of Taylor's theoretical models, but in the end always learned massively from these efforts.)

The 1991 book proved to be Taylor's final act in Cambridge, Massachusetts. Importantly, from a sole focus on developing countries, his emphasis gradually shifted to macroeconomic theory more generally, as applied to both developed and developing countries. Thus, while mainstream economists commonly and unthinkingly apply theories constructed for developed countries to developing-country contexts, Taylor (1991) began to apply his 'structuralism' to Northern economies and to the US in particular.

MOVE TO THE NEW SCHOOL (1993)

Over time, Taylor grew increasingly dissatisfied with the extreme emphasis on mainstream economics at MIT (Taylor, 2000: 670). He believed that, after

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1980, macroeconomics became basically irrelevant: 'mainstream macroeconomics to a large extent did become a second-rate applied mathematics aimed at problems with minimal social content. A pity' (Taylor, 2010: 253). He decided to leave. 'Lance set off some shock waves across the profession when, as a full professor, he left MIT, the department at the apex of the profession, to take a position at the New School', writes Darity (2022), adding that the 'New School had a distinguished faculty in its own right, but somewhat marginalised because of their commitment to heterodoxy. Lance found the New School to be a far more supportive and inspiring environment for the work he was doing in the final thirty years of his life'. Indeed, his already superlative productivity appears only to have increased after his move.

At the New School, Taylor worked on a critique of the mindless 'get the prices right' structural adjustment programmes imposed by the World Bank on many developing and (then) new transitional countries. Excellent summaries of this critique of trade and capital account liberalization, privatization of public enterprises, deregulation of finance, and fiscal austerity under the umbrella of the Washington Consensus are available in Ocampo and Taylor (1998) and Taylor (1997). As Taylor (1997: 151) pointed out, the IMF and World Bank do not pay for the costs of their policy errors: 'A [World Bank or IMF] staff member flying home in a chastened frame of mind represents one sort of response to a liberalization attempt which collapsed; a local health worker trying to help malnourished infants recover from the effects of a drastically lower national income is quite another'. As always, Taylor identified policies for progressive redistribution and growth that should replace IMF-World Bank dogma, while acknowledging the limits imposed on macroeconomic policy by productive and financial structures, income distribution and the way in which countries are integrated into the global financial system. These alternative strategies for economic development are explored further in Ocampo, Rada and Taylor (2006).

Together with Alice Amsden and Jacek Kochanowicz, Taylor put together a critique of the 'shock-therapy' stabilization-cum-liberalization packages then imposed in post-socialist economies, most prominently by the 'Harvard boys' (Jeffrey Sachs, Lawrence Summers and Andrei Shleifer), and the IMF and World Bank. The analysis by Amsden, Kochanowitz and Taylor (1998) of the 'transition to the market' under Yeltsin echoed similar warnings by Keynes (1933) concerning the 'transition to central planning' under Stalin:

> We have a fearful example in Russia today of the evils of insane and unnecessary haste. The sacrifices and losses of transition will be vastly greater if the pace is forced … for it is of the nature of economic processes to be rooted in time. A rapid transition will involve so much pure destruction of wealth that the new state of affairs will be, at first, far worse than the old, and the grand experiment will be discredited. (Keynes, 1933: 765)

Sadly, the three authors were proven right in their analysis by the disastrous economic performance of Russia during the 1990s: Russia's real GDP de-

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clined by more than 44 per cent in 1989–98 (according to World Bank data), while death rates from non-natural causes sharply increased. Unfortunately, the argument of Taylor and his co-authors had little impact on actual policies, because they ran so strongly against Washington Consensus orthodoxy. Even more worryingly, the Harvard boys and the IMF and World Bank escaped all professional or ethical accountability for one of the biggest disasters caused by social engineering in world history.

With John Eatwell, Taylor made the case for effective international regulation of global financial markets (Eatwell and Taylor, 2000). Since most economies have liberalized their capital accounts, often urged to do so by the IMF, they have become exposed to the vagaries of inherently fragile financial markets, in which key actors base their decisions on guesses about how other investors will behave. To stabilize financial inflows, monetary authorities in many countries resort to deflationary policies (high interest rates), depressing economic growth and imposing unnecessary societal costs when crises occur. Eatwell and Taylor argued that this deflationary bias in macro policy could only be removed with the help of appropriate international regulation of global finance.

Following the turn of the millennium, while continuing his work on developing economies (Ocampo, Rada and Taylor, 2006; Rada and Taylor, 2006; Taylor, 2001, 2006), Taylor's main research focus shifted decisively to analyses of the US economy. Inspired by Goodwin's (1967) 'growth cycle model', Taylor embarked on a research trajectory analysing the relationship between economic growth, effective demand, social conflict and income distribution in the USA. Barbosa-Filho and Taylor (2006) and Taylor (2012) argue that repetitive 'profit squeeze' cycles[17] exist for the US economy; Taylor, Foley and Rezai (2019) present a model of demand-driven long-run growth, based on a synthesis of Goodwin's profit-squeeze cycle, Kalecki's conflicting claims model and Kaldor's technical progress function. Taylor also worked on American fiscal policy (Taylor, Proaño, de Carvalho and Barbosa-Filho, 2012), and (rising) income and wealth inequality in the US (Taylor and Ömer, 2019; Taylor, Rezai, Kumar, Barbosa-Filho and Carvalho, 2017).

In 2004, Taylor published his magnum opus, a tome of 442 pages, titled *Reconstructing Macroeconomics: Structuralist Proposals and Critiques of the Mainstream* (Taylor, 2004). The book, based on his lectures to New School students, has two goals. One is to present a critical review of main-

17. In such an endogenous profit-squeeze cycle, wages rise when demand and output grow; the wage increase exceeds the increase in labour productivity and, as a result, the wage share will rise and the profit share will go down. The net effect on aggregate demand of the rising wage share (declining profit share) is negative, because business profits are squeezed and business investment drops off. Economic growth slows down and wages stagnate. However, because wage growth declines faster than productivity growth, the wage share will now go down, whereas the profit share will go up. The higher profit share raises investment, which raises demand and output, and the cycle will start anew.

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stream macroeconomics (monetarist, new classical, new Keynesian and recent growth theory) from a structuralist perspective. The second and more important purpose of this book is to create a 'paradigm' of theories from the structuralist approach. The core idea of Taylor's structuralist approach is that an economy's institutions and distributional relationships across its productive sectors and social groups play essential roles in determining its macro behaviour. The main characteristic of his theories is that they are based on the Keynes-Kalecki principle of effective demand and reject the presumption of full employment of labour and capital, namely Say's law. Taylor returns to the radical roots of Keynesianism, consigning mainstream macroeconomics to the 'Museum of Implausible Economic Models'.

While at the New School, Taylor also published two important review articles, providing deep (re-)interpretations of the work of Luigi Pasinetti (Taylor, 1995a) and Wynne Godley (Taylor, 2008). Both these appreciative reviews constituted efforts to reformulate the alternative macroeconomic approaches of Pasinetti and Godley in terms of empirically *applicable* models, in line with Taylor's lifelong mission.

LANCE TAYLOR'S REVENGE

The self-congratulatory complacency of leading mainstream macroeconomists (exemplified by Blanchard, 2008) was destroyed by the global financial crisis of 2008–09, which revealed the unbearable uselessness of mainstream thinking. Taylor was not surprised, of course, given his low opinion of what was passing for macroeconomics. In response to the global crash, he wrote *Maynard's Revenge* (Taylor, 2010), a combative and tightly argued book on the failure of mainstream economics to explain the real world.[18] Modern macroeconomics, as Taylor argued, is either nothing more than playing games with models, or nothing less than apologetics for neoliberal political trends. Modern finance in particular comes under his sustained assault as 'an intellectual elixir for deregulation and the proliferation of exotic financial instruments that led into the boom and crash' (ibid.: ix). Taylor begins this remarkable book[19] by asserting his view that Keynes was 'correct about how to do macroeconomics' (ibid.: vii); but in the rest of the book, Taylor goes far beyond Keynes, showing how Keynes' ideas have been extended by his many disciples into an impressive body of thought. Indeed, as Perry Mehrling (2012) gently observes:

18. Taylor's (2010) book contains accounts of virtually all important macroeconomic theories in wonderfully lucid prose. Taylor made serious efforts to study economic theory in a historical sense and compare treatment of its elements across time — this is an outstanding characteristic of his work, as Thomas Ferguson appositely pointed out to me.
19. D'Arista (2011) provides a useful review.

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> what Lance identifies as the characteristic methodological moves of Keynes seem to me more descriptive of Lance's own work than of Keynes himself. But Lance is certainly not the first person to look at Keynes and see himself! … Lance's Keynes is more Taylor than Keynes in another respect as well, namely his emphasis on the centrality of distributional concerns for macroeconomics. … Maynard Keynes' Revenge is also Lance Taylor's Revenge.

RETIREMENT (2012–2022)

In 2012, aged 72, Taylor retired from the New School as Professor Emeritus, but continued his teaching, research and writing. He and Duncan Foley launched a project to investigate how nations can reconcile their needs for growth, stability and sustainability. The Foley–Taylor team proved to be rather productive, publishing a series of critical and insightful papers deeply challenging the mainstream economics approach to global warming,[20] including a recent piece in *Nature Climate Change* (Semieniuk, Taylor, Rezai and Foley, 2021). According to Foley and Taylor, mainstream climate economics suffers from a logical inconsistency and poses a false trade-off between climate action and economic growth.

Using neoclassical growth models, people like William Nordhaus compare scenarios of climate change mitigation to an (in their words) 'optimal' business-as-usual (BAU) benchmark and argue that climate change mitigation (which requires extra savings for green investments) has an *opportunity cost* in terms of future economic growth foregone. However, this is misleading (in terms of neoclassical logic itself) since the BAU scenario is not an 'optimal' one, because it includes the negative externality driven by the emission of greenhouse gases (GHG). The presence of this (increasing) negative externality means that market prices are too low (because they do not account for the social cost of carbon emissions) and hence, 'well-being' is overestimated (because the prices used to calculate it are distorted). It follows that correcting this negative externality has no real economic opportunity cost — contrary to what all climate-economy models, due to their faulty design, are implying. What is more, economic well-being of both current and future generations can be raised using resources diverted from conventional investments. In other words, correcting the GHG externality confers a *net benefit* to humanity rather than imposing a cost, as faulty neoclassical dogma wants us to believe. In 2014, Taylor and Foley were awarded the Leontief Prize for their joint work on climate economics, which fundamentally calls into question the foundations of all climate-economy analyses used by the Intergovernmental Panel on Climate Change and national governments.[21]

20. See, in chronological order: Rezai, Foley and Taylor (2012), Foley, Rezai and Taylor (2013), Taylor, Rezai and Foley (2016), Rezai, Taylor and Foley (2018) and Taylor, Semieniuk, Foley and Rezai (2021).
21. In spite of this, in 2018, Nordhaus received the Nobel Prize in economics for his — flawed — research on climate change economics.

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Taylor also continued to produce first-rate work on the US economy: his papers deal with the debate on secular stagnation (Taylor, 2017), rising inequality (Taylor and Ömer, 2019), a critique of Modern Monetary Theory (Taylor, 2019), and rising inflation (Taylor and Barbosa-Filho, 2021). Most of these papers were published as working papers by the Institute for New Economic Thinking (INET) in New York. Through his engagement with INET, his work got greater exposure than before, especially reaching the younger generation; Taylor enjoyed this, and was extremely productive, publishing dozens of widely circulated blogs and a number of interviews in just a few years.

The synthesis of this research is provided by Taylor's final book, *Macroeconomic Inequality from Reagan to Trump*, written with Özlem Ömer (Taylor and Ömer, 2020). Taylor's argument is that rising US income and wealth inequality have been driven by wage repression and structural change benefiting the top 1 per cent of households. US inequality is shown to have increased slowly but very steadily over four decades (starting with Reagan) and Taylor's analysis shows that it will take decades to reverse it; there is no quick fix. What is interesting is that (with the help of Ömer) Taylor builds a 'structuralist' simulation model for the US, based on national product and income accounts, flow of funds and full-balance sheet accounting, that in important ways goes back to the simulation models he built for his PhD and the Belindia model. His structuralist take strongly suggests that the US has become a dual economy, consisting of a dynamic sector with high productivity growth and well-paid jobs, and a stagnant, services-based, subsistence sector which absorbs the labour surplus at very low wages. Turning the Lewis model on its head, his final book on the US goes full circle back to his earlier work in the 1960s on the developing world.

Lance Taylor was diagnosed with cancer in February 2020. During the long period in which he underwent treatment, he used to send round updates on his medical condition to a few friends and colleagues. In those emails, he would also mention what he was working on, and indeed, his papers kept coming. His last update arrived on 14 May 2022. On 1 June 2022, he published his final piece on the INET website: an obituary for neo-Keynesian macroeconomist Axel Leijunhufvud (1933–2022). Lance Taylor passed away on 15 August 2022, in Washington, Maine, leaving behind his wife Yvonne, two children and three grandchildren.

LEGACY

Lance Taylor's legacy will live on, through his prolific writings and through generations of heterodox economists, mentored by him and inspired by his work. It is difficult to overstate the importance of Taylor's role in constructing a relevant and viable alternative to the orthodox macroeconomic approach. Moreover, he did this during the post-Thatcher/Reagan era in which

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real-world-oriented economic approaches were radically purged from the academy, and he succeeded in keeping the (radical) Keynesian tradition not only 'alive', but also 'kicking'. His legacy is a synthesis of theoretical insights from Kalecki, Kaldor, Goodwin, Marx and Keynes in terms of applicable formats that are and remain relevant to the real world. Taylor revived and revitalized the applied policy-oriented modelling approaches pioneered by Cambridge economists Richard Stone and Wynne Godley, but also by his mentor Hollis Chenery, offering consistent accounting frameworks (such as social accounting matrices, or SAMs) that bring out the production structure of the economy, the distribution of income and the composition of demand, and that can be used to provide the context for the analysis. Luckily, Taylor provided us with robust guidelines on *how to do* economics.

A first important piece of advice is that economists should have a healthy dose of scepticism of econometrics. Taylor's scepticism was not based on a misunderstanding of the issues at stake, but rather on a clear understanding of the validity and philosophical underpinning of the assumptions made for applying econometric methods. Similar to Keynes (1939), in a review of Tinbergen's work, Taylor understood the limiting nature of the assumptions that econometric analyses build on. Even if he did not spell out his reservations, Taylor's point is that methods designed to analyse repeated sampling in controlled experiments under fixed conditions are not easily extended to a basically unpredictable, uncertain, complex, unstable, interdependent and ever-changing social reality.

According to Taylor, even in countries with long, credible time series for the national accounts and ample input-output data, there is no compelling reason to believe in predictions from any one collection of equations from econometrics. The problem is that 'any number of theoretical structures can be forced on a nation's one existing set of data with impressive goodness of fit' (Taylor, 1995b: 275). As a result, projections forward in time will diverge strongly, depending on the theoretical structure chosen. The same holds true for developing countries, where time-series data tend to be more problematic and exhibit structural breaks due to debt crises or terms of trade changes.

Taylor himself did not need to use econometrics to understand the nature of economic relationships or the behaviour of an economic system. Instead, he started off emphasizing the 'macro-foundations' of economic analysis, using the fact that double-entry accounting imposes structure on economic data.[22] In other words, even if the 'economy' is a complex evolving system, so that we cannot forecast with precision anything that will happen 12 months from now, we do know that, 12 years from now, value added generated in production equals income, and that income, in turn, matches final demand. Hence, updating the numbers in a SAM *under reasonable*

22. I am grateful to Nelson Barbosa-Filho for reiterating the importance of macro foundations in Taylor's approach.

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assumptions about what is going to happen in the next few years will usually provide as good an economic forecast as anyone can expect (Taylor, 1995b: 276).

In addition, Taylor always considered stylized empirical facts, derived from Chenery-type pattern-of-growth analyses and from accounting frameworks integrating distributional, industry-level and macro-level data. He would also take into account technological, physical and sociological constraints on the decision making of household classes, industries and the state. An economist, in his view, should be able to convincingly connect the abstract and the concrete, and to do this, adequate empirical knowledge is essential. As Foley puts it:

> As a result of years and decades of work on practical problems, Lance had accumulated a treasure-house of relevant statistical data and stylized facts. It became second nature for me in collaborations with Lance to begin by asking him what the signs and magnitudes of key parameters of a model were likely to be. Who knew what a reasonable elasticity of investment with respect to the profit rate might be for a middle-income developing country, or what the half-life of carbon dioxide in the atmosphere is? Lance knew. (Foley, 2022)

A second sound guideline given by Taylor is that 'a degree of humility is appropriate for model-builders in the face of Keynes's "dark forces of time and ignorance which envelop our future"' (Taylor, 2016: 496). Models, after all, are stupid and do what their closures tell them to do, and hence can easily generate economically implausible results. Models are useful insofar as they can execute quantitative thought experiments, e.g., which 'effects' will dominate responses under what sets of circumstances. But even then, model results are useful only in combination with experience, intuition and insight and when appropriately contextualized.[23] At best, (CGE) models can be considered as ad hoc numerical exercises, contingent upon the modeller's choice of a macro closure rule, which are consistent and balanced in accounts — nothing more.[24] In his words: 'there is every reason not to take the results of any particular model too seriously. But the range of results may tell you something about the possibilities at hand' (ibid.: 512).

A final set of guidelines can be taken from Taylor's focus on applicability and the public interest. From his brilliant review of Amartya Sen's (1982) book on social choice theory (Taylor, 1984), one can distil Taylor's view of what is useful research and what is not. For instance, he complains that 'how not but not how to model economic behaviour is [Sen's] pervasive theme' (ibid.: 191). One must ask, writes Taylor (ibid.: 194) 'whether all this theory can be pried from the pages of *Econometrica*, and turned into something of relevance to decisions beyond academic tenure'. In his view, economics

23. Models should also be manageable. 'How one can understand what is going on with a million variables [in a CGE model] is a mystery to me' (Taylor, 2016: 501).
24. Taylor (2016) offers a brilliant history of CGE modelling, arguing that all CGE models are built in a Keynesian framework and have nothing to do with micro-founded Arrow-Debreu general equilibrium theory.

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would be worth a lot more if it were deformalized, de-mathematized and 'enhanced in relevance by restrictions that reflect class and hierarchy, macro-interactions and analysis of robustness of social structures in the world in which we happen to live' (ibid.: 195).

LAST WORDS

Lance Taylor was a thinker of uncommon breadth, a valued teacher, a cherished colleague and a remarkable scholar who stood, gently but firmly, in unconditional opposition to the reactionary nature of mainstream economics. Lance's work has been exceptional in many ways — in terms of the clarity and consistency of his models, and his ability to combine theory and empirical analysis. I think he is one of the finest examples, along with Nicholas Kaldor, of how one can productively and relevantly work on the basis of stylized facts. And the fact that Lewis's dual-economy hypothesis, Minsky's financial constraints, Kalecki's social conflict, and Keynes' demand analysis have (slowly) come back into the mainstream research agenda just proves that Lance was right all along.[25]

He was easy-going, gentle and good humoured as a person, and there was always a twinkle in his eyes. But he was fearless in his advocacy of a relevant and realistic economics. He has been essential to keeping alive the (Cambridge) post-Keynesian research programme in (development) economics during the past four decades. Thanks to Lance, no one can say that there is no credible, applicable alternative to orthodox macroeconomic thinking (Storm, 2021). Severe illness took him away too soon, but those of us who knew Lance will never forget the times we shared with him. Lance himself would have had none of this. Here, in his own words, is what he likely would have said in response to my assessment of his many vital contributions to economics:

> In all these areas, people tell me that they found this paper or that book 'inspiring'. Compliments are nice to hear, but they refer less to the brilliance of my publications than to the intellectual poverty of economics as a whole. With most of the profession tied up with the latest theoretical fad or econometric wrinkle, senders of straightforward messages are rare. (Taylor, 2000: 671)

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25. Thanks to Nelson Barbosa-Filho for making this point.

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