

JHET INTERVIEWS: ANTHONY WATERMAN

BY

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Anthony Michael Charles Waterman is currently Retired Fellow, St. John's College, Winnipeg; Emeritus Professor of Economics, University of Manitoba; and Senior Member of Robinson College, Cambridge. Born in Southampton, England, on June 4, 1931, he was Teaching Fellow in Economics and Political Science (1959 to 1962), then Assistant Professor of Economics, St. John's College (1962 to 1964); Associate Professor of Economics, St. John's College and the University of Manitoba (1967 to 1972); and Professor of Economics, University of Manitoba (1972 to 2006). He was also a Lecturer in Theology, St. John's College, Winnipeg (1975 to 1976, 1988, and 2003 to 2006), and Director of the Institute for the Humanities, University of Manitoba (1992 to 1995, 1998 to 2000). He was a Research Scholar in Economics at the Institute of Advanced Studies, Australian National University (1964 to 1967), and Tutor in Theology at St. Mark's Collegiate Library, Canberra (1965). His book *Revolution, Economics and Religion: Christian Political Economy, 1798–1833* (1991a) was awarded the Morris D. Forkosch Prize for Best Book in Intellectual History by the *Journal of the History of Ideas* (1992). In 2007 he was made a Distinguished Fellow of the History of Economics Society; and, in 2014, an Honorary Member of the European Society for the History of Economic Thought.¹ The following interview was conducted via email during August and September 2020.

Emmett: What led you to study economics when you went up to Cambridge?

Waterman: My incompetence in the laboratory. I went up in 1951 to read for the Natural Sciences Tripos, and specialized in chemistry, botany, and zoology because I wanted to do research in molecular biology, which was very much in the air at that time. It was during my years as an undergraduate that James Watson and Francis Crick, working a few yards away from our science faculty lecture rooms and laboratories, discovered the double helix. But since all science undergraduates had to spend six hours a week in the laboratory for each of their courses, I had eighteen hours a week, which meant every afternoon, Monday to Saturday—when most of my fellow students were playing various sports, punting with young ladies on the river, or simply relaxing. I shouldn't have minded in the least had I liked or done well in the lab. But I was hopeless: 15% of the

¹ To view a basic summary of Anthony Waterman's life, publications, and current working papers, visit <https://amcwaterman.com/>. The list of his publications is available as an online appendix to this interview.

theoretical yield in organic chemical preps; unusable plant sections for the microscope; bungled dissections of frogs, rats, and cockroaches. We were supervised by demonstrators, mainly female graduate students, who made little effort to hide their contempt for my ineptitude.

Towards the end of my first term I was complaining about this to a friend I had known in the army. “Why don’t you do what I did?” he asked. “Switch to economics. You get all the pleasure of scientific thinking without the pains of laboratory work.” Since I had come to realize that becoming the kind of scientist that I had hoped to be would mean spending the rest of my life in the lab—and that I should never become expert—I followed his advice. I switched to Part I of the Economics Tripos in January 1952 and have never regretted it.

Emmett: You had the opportunity to spend a year with Joan Robinson as your supervisor. Please describe her as a supervisor.

Waterman: I have written about this in detail elsewhere (Waterman 2003a). With one exception, Joan Robinson was the most intelligent person I have ever met. She instantly grasped the implications of a set of assumptions, followed them through to a degree of complexity far beyond the grasp of any ordinary mind, saw at once the weakness in any line of argument, and was incapable of understanding why the rest of us were unable to follow. But I was a lazy and incompetent student, and my weekly essays were pretty feeble. She patiently tried to help me, but I had never really grasped what economics is all about.

The most valuable lesson she or anyone else taught me at Cambridge was to grow up. It is thanks to Joan Robinson alone that I went down at the end of that year intellectually and morally equipped to begin life as an adult.

Emmett: Who else did you meet among the economists while at Cambridge?

Waterman: In my first year I had been supervised by my director of studies, Alexander (Sandy) Youngson Brown, a kindly and hospitable Scottish economic historian and expert on the American economy; and in my second year by Andrew Donald Roy, a theoretical statistician. In all three years my fellow student was John Chown—a man among boys in our college—who got a starred First in Part II and won the Adam Smith Prize. He was already talking about linear programming and game theory, and could have become a distinguished theoretical economist. But instead he chose to go into business, and became a very rich man, a munificent patron of the arts, and an Honorary Fellow of our college [R. B. Emmett: see Chown (1994, 2003)].

Chown and I got to know Peter Bauer, whom I met up with again thirty years later when he visited Canada. Though I went to very few lectures, I do remember one or two by Nicholas Kaldor, in particular one on the capital theory of Friedrich Hayek (of whom he had been a student.) And I did attend all the lectures on the American economy by Professor Corwin D. Edwards, who spent a year at Cambridge in 1953–54 before going on to Chicago. Harry Johnson was then a Fellow of Kings and writing his path-breaking articles on international economics, which he delivered as lectures. I got to know him in my last months in Cambridge when I was about to move to Canada; and fifteen years later, when I had become an academic economist in Winnipeg, we became better acquainted. Harry made it his business to know every Canadian economist personally.

But the big name in my final year was Milton Friedman, Fulbright Fellow at Gonville and Caius College. I shall never forget the excitement and sense of occasion at his Marshall Lecture in a large hall, standing room only; Joan Robinson and Nicky Kaldor in the front row loudly barracking him in the question period, Milton smiling and imperturbable, politely giving as good as he got. When I got to know him in the 1980s, he spoke very appreciatively of Joan, in particular of her willingness to recognize him as a fellow scientist and ally in the pursuit of truth.

Emmett: At some point you went to Eastern Europe shortly after the end of WW II and before travel there became too difficult. What did you learn and did it have any impact on your future decisions?

Waterman: Travel had already become difficult in 1949, but I got visas for Hungary and Czechoslovakia because I went with a “delegation” of young communists to the second World Peace Festival organized in Budapest by the World Federation of Democratic Youth. Before joining the British delegation, I warned them that I was quite literally a card-carrying member of the Young Conservatives, but my new friends were undeterred: “That doesn’t matter in the least, Comrade! If you’re sincerely committed to world peace, we should love to have you.” So I joined the “delegation” and traveled with them to Budapest on very slow trains on wooden seats and with no food.

After the festival I went to Bratislava in what was still Czechoslovakia. An “old boy” of my school was then the British Council representative in that city, where he lectured in English at the local university. He had arranged that I stay with the (“bourgeois”) family of one of his students as a guest. After a week or so I went on to Brno, capital of Moravia, where I was a guest of the local British Council representative and his wife. And then on to Praha, where I stayed another week and saw four operas in the Národní divadlo. Then back to England for my last term at school before joining the army.

I learned a lot about the abominable tyranny of life under communism: constant fear of sudden arrest and disappearance; deliberate persecution of “bourgeois” families and individuals; inexplicable shortages of some consumer goods; luxury items—when available—reserved for Party officials; inability to trust one’s neighbors, any of whom might betray one to the Party; frequent, well-organized “spontaneous demonstrations”—thousands of Party members and their hangers-on marching in step through torch-lit streets carrying vast banners with images of Lenin, Stalin, and the local dictator, chanting slogans in a ritual modeled on the Nazi Nuremberg rallies of the 1930s.

It was an instructive experience for an eighteen-year-old schoolboy. Though I had never found socialism an attractive idea, certainly not under the postwar Labour government in Britain, that experience pushed me in a libertarian or at any rate a liberal direction for the next thirty years.

Emmett: What led you to move to Canada?

Waterman: During the Long Vacation of 1953, I visited Canada, staying as a guest in Sarnia, Ontario, with my distant Canadian cousins. I got a laboring job in one of the petrochemical plants and made enough money to pay all my travel expenses to and from England. I fell in love with Canada during that visit and also with my fourth cousin, who was spending the summer in her parents’ picturesque cottage on the shore of Lake Huron. I decided it would be a waste of time to go back to Cambridge. I would go up to Red Lake, become a diamond driller, save \$10,000, return to Sarnia, start a business, and

marry my cousin. Her mother implored me to return for my final year: “Your mother would never forgive me if you didn’t.” What could I say? Very unwillingly I went back for my final year, vowing to return the following summer, which I did. So I have my mother-in-law to thank for that crucially important year with Joan Robinson.

Emmett: What was your experience in working in Canadian industry?

Waterman: I married, and lived in Sarnia for a couple of years, working for a firm of chartered accountants in order to master the rudiments of accountancy. Then I got a much more highly paid job as an economic analyst in Montreal, in the head office of Canadian Industries Limited (C-I-L).

This innocently named firm is an instructive case. During the Great Depression of the 1930s, the world chemical industry was cartelized. DuPont was to have the Americas; ICI, the British Empire; and IG Farben, the rest of the world. But Canada is both “Americas” and “British Empire.” So DuPont and ICI set up a jointly owned subsidiary to monopolize the Canadian chemical industry. It flourished during World War II, making explosives, ammunition, and other war goods; and after the war its many operating divisions produced, in addition, heavy chemicals, paint, plastics, synthetic fibres, fertilizers, and other things. I was hired by the Chemicals Division, which made heavy chemicals (caustic soda, chlorine, sulphuric acid, etc.) for the paper and manufacturing industries, and was placed in its Control Department.

The three and a half years I spent with C-I-L were among the most fruitful and instructive of my life. I usually worked in a small group of six or seven others, all of whom were honours economics graduates. And though I have worked in universities and colleges in Canada, Australia, Britain, and the USA, I have never enjoyed better conversation than with my colleagues in Chemicals Control.

My regular task when I began was to prepare the first draft of the general manager’s quarterly profit forecast; and then to write the first draft of his quarterly report to the president, explaining why he had failed to make the profits I forecasted. I was also asked to do many smaller jobs: to explain why our price index gave perverse results; to advise the sales manager on a pricing policy to defeat competition from small dealers in Toronto; to advise the accounting manager on suitable rates of depreciation of fixed assets in the general ledger. But because at the heart of all our work was the estimation of rates of return-on-investment—no small problem in a multi-product firm—I was drawn inevitably into research. What is the value of the capital employed in every process? Two or three of my colleagues and I puzzled over this, with help from the *Harvard Business Review*, which was interested in that subject just then. Dated time was of the essence of the problem, because some of our plant and equipment—such as our synthetic ammonia plant in Cornwall, Ontario—took years to bring on-stream, and was expected to produce for many more years. Therefore the time-shape of (discounted) cost and income streams was crucial. And so in 1957 my colleagues and I inadvertently discovered the capital-theoretic phenomenon of “reswitching,” utterly unaware that Paul Samuelson, Joan Robinson, and other academic economists at the two Cambridges were debating the same issue at exactly the same time.

Intellectually stimulating as all this was, it was my encounter with computers that was of the greatest value in my subsequent career. Sir Robert Watson-Watt, who claimed to have invented the electronic computer, was to give a seminar in Montreal. The large corporations sent their bright young men to smell it out. We all reported to our employers

that we could see no useful function in business for the computer. But about six weeks later a memo went around our company: we had acquired an IBM *xyz* computer; it was in room *abc* together with a tame programmer; anyone with ideas about what to do with it should go to talk with the programmer. Why was our advice flouted? Because the head offices of all the great corporations were then in Montreal; the CEOs met for lunch at the Engineers' Club; Alcan would say to CPR, "When are you guys getting a computer? Ours came last week" and the spirit of emulation impelled each corporation to acquire this useless and expensive equipment.

At that time I was about to leave C-I-L to do something quite different. So I spent my last two months with the company in the computer room, much to the relief of the programmer, who was isolated, ignored, lonely, and without anything to do. He explained everything to me, taught me FORTRAN, and helped me program some of my quantitative research problems. That experience was of lasting benefit to me. My Bachelor of Theology thesis included a problem in temporally variable rank correlation for which I was able to devise a program. And my doctoral research in Australia required much time-series analysis for which I had the services of a professional programmer.

Emmett: Please tell us about your decision to leave industry and enter the priesthood.

Waterman: I was a fairly recent convert to Christianity, and, like some other male neophytes at that time, found it attractive to imagine that I had a vocation to the priesthood. The Bishop of Montreal was willing to ordain me after study at Bishop's University. Our son was nearly two; the three of us would occupy a vacant rectory in the Eastern Townships. Some kind of financial support would be forthcoming.

Emmett: Did you have any inkling you would be returning to doing economics?

Waterman: Not when these arrangements were proposed. But a few weeks later I got a letter addressed to me at my office in C-I-L from a man I had never heard of, describing himself as the "Dean" of a college I had never heard of, saying that he understood I was an economist, that I wished to study theology with a view to ordination, that I had a wife and child to support—and would I consider coming to his college and lecturing in economics whilst preparing to be ordained? The Bishop of Montreal had no objection, and my wife thought it sounded better than the Eastern Townships, so I said yes, and moved to St. John's College, Winnipeg, to become Teaching Fellow in Economics and a first-year theology student. Apart from the move to Canada in 1954, this was the most momentous decision of my entire life.

Emmett: Please tell us about your decision to enter graduate study in economics.

Waterman: It wasn't my decision. It was that of my bishop: Archbishop Howard Clark, Metropolitan of Rupert's Land and Primate of Canada, who had taken me over from Montreal. I had done well in theology, and the college wanted to send me to the General Theological Seminary in New York to take a doctorate and become an academic theologian. But Archbishop Clark vetoed it. According to those who were at the meeting, he said, "We have too many theologians in the Church and not enough economists. Waterman is an economist. I want him to take a doctorate in economics." He ordered me deacon, then priest, serving an unpaid curacy in Winnipeg—whilst lecturing in economics full time at the college and in the University of Manitoba (of which St. John's is

the oldest part). After two years Archbishop Clark released me, as agreed, to take a doctorate at “any respectable university.”

Emmett: Where did you go?

Waterman: I had intended to go to Chicago. But our Australian dean, who had recruited me, was once again crucial. He was a scholar of Commonwealth literature, and a friend of his, the professor of poetry at the Australian National University, was paying the college a visit. The dean introduced me at the cocktail party and mentioned that I was about to work on a doctorate in economics. When our visitor heard where I intended to go, he derided “Chicagaago” and asked why I wasn’t going to the “I-N-you” (ANU). He told me all about it in his hotel room next morning and urged me to write to his friend Noel Butlin, head of economic history (because Trevor Swan, head of economics, never answered letters).

As in Canada, education is a state (= provincial) responsibility in Australia. But unlike Canada, the national capital, Canberra, sits on its own capital territory. Therefore its government can run schools and universities as it pleases. In 1945 the government decided to establish the Australian National University (ANU)—a lavishly funded, all-research, all-graduate university—to reverse the brain-drain from Australia, then chiefly to Britain. An important part of this program was the system of research scholarships for doctoral students from abroad, who might be induced to remain in Australia after graduation.

When Butlin answered my letter (in which I did happen to mention Joan Robinson), he told me to send my Bachelor of Theology thesis by airmail immediately, to get my department manager at C-I-L to describe my research for the company, and to get a letter of support from Clarence Barber, the internationally known head of economics at the University of Manitoba. I complied; and shortly before Christmas got a letter saying I had been elected to a research scholarship for three years in the Institute for Advanced Studies, beginning August 1964.

That scholarship took me, my wife, and our (by now three) children to Canberra, and back again to Canada in 1967; provided us with a furnished, three-bedroom flat in a charming, landscaped university compound; paid all my fees and research expenses including travel in Australia; and paid me a stipend based on marital status and number of children, on which we were able to buy a car, take an annual holiday, and drink tolerable Australian wine every day. It even paid for the typing of my thesis. And because I could not remain in Australia for my oral examination, they appointed Arthur Smithies at Harvard as my chief examiner, and paid my travel expenses from Winnipeg to Cambridge, MA, and back.

Emmett: What did you study?

Waterman: Fluctuations in the Australian growth rate since 1945. When I arrived I was given a comfortable office, first-rate secretarial help, a computer programmer—and three years to spend in any way I chose. There was no “course work” of any kind. There were no undergraduates to teach. My only departmental obligations were two weekly seminars: one for work-in-process where we presented drafts of our articles and thesis chapters, the other for staff members to try out their stuff. And I had two supervisors: Trevor Swan and Noel Butlin. (I was actually in two departments, economics and economic history.) So what was I going to do?

In Manitoba I had become interested in Clarence Barber's work on macroeconomic policy in a small open economy. Swan was the leading authority in Australia on this and a highly valued advisor to the government—and also, with Robert Solow, a pioneer in economic growth theory. He and Butlin agreed that I should work on the Australian economy.

Emmett: You returned to Winnipeg, taught economics, and served as a priest? How did you balance your responsibilities?

Waterman: I did indeed return to Winnipeg, though not altogether willingly. The ANU wanted to keep me in Australia, and Swan offered me a “Professorial Fellowship”: i.e., professorial rank and salary, immediate tenure, and no duties for life. Every academic's dream job! I wrote to Archbishop Clark asking for Letters Dimissory, enabling me to transfer to the Diocese of Canberra and Goulburn, where I had worked hard during my three years at the ANU and where I was *persona grata*. But he replied saying that he wanted me back in Winnipeg. St. John's was glad to have me back, and Barber made me an associate professor with tenure in the economics department, of which I myself became professor and head a few years later.

The Archbishop had moved to Toronto, but his Suffragan posted me as Honorary Assistant Priest to various Winnipeg parishes where I could be of use on Sundays. And as one of four or five other priests in the college, I took my share in the daily chapel duties. I was asked by the diocese to give lectures and courses in theology, and was elected to the General Synod of the Anglican Church of Canada. But by the late 1970s I came to see that I had mistaken my vocation; I resigned the exercise of my orders and have been canonically a layman since 1980.

Teaching economics was no problem; but my research—still on open-economy macroeconomics at that time—was more demanding. However, my wife looked after me and the children (by now four), and made sure that I had proper recreation and leisure.

Emmett: What led you to start work on the history of economics?

Waterman: That's a long story; and here, too, Archbishop Clark was crucial. He wanted me to become an economist because he saw that the Church should stop talking nonsense about public policy. He envisaged me as the in-house expert on the relation between theological principle and economic realities in Christian public policy.

For a decade I was so taken up with economics, administrative duties, and other concerns that I neglected this task—except only in some work I did for the General Synod in the 1970s on poverty in Canada. But I knew I should have to get to grips at a theoretical level with Christian social doctrine. The opportunity came in 1979, when I was elected to the Reckitt Fellowship in Christian Social Thought at the University of Sussex. The question was, how and where should I start my inquiry?

Whilst a Visiting Fellow at Oxford in 1971–72, I had read T. Robert Malthus's first *Essay* and discovered that the last two chapters contained a theodicy of the “natural evil” of the overpopulation, omitted from all subsequent recensions. Malthus was an Anglican cleric and an economist—the first-ever economist, I am now inclined to think. So this seemed to be a good place to start a study of the relation between Christian theology and economic theory.

When I arrived in Sussex, therefore, I began by analyzing the theology of the last two chapters of Malthus ([1798] 1966). The following spring I presented my findings at the

Congrès Malthus in Paris (Waterman 1983b, 1985a). And at Sussex I met and became friends with the late Donald Winch, whom I have always regarded as one of my two masters in the history of economic thought. The other is Samuel Hollander. Since the 1980s each has had a lot to say about Malthus, from which I have learned much.

But once I got started on Malthus, I had to find out a great deal about Mary Paley, and also about Adam Smith, David Ricardo, James and John Stuart Mill, and all the rest of the English School, including Karl Marx (Waterman 2007). Willy-nilly, I became a student of classical political economy.

Emmett: Please describe your decision to work on the history of Christian political economy in the early nineteenth century.

Waterman: It wasn't a decision. Like everything else I have done since 1980, including my technical studies of classical growth theory and even my work on Papal social teaching, it was an unintended consequence of the ever-increasing number of questions that I wanted to ask (and still want to ask) about Malthus and his *Essay*.

The theodicy of the first *Essay* was no good. Paley tried to help; Malthus himself abandoned it; John Bird Sumner showed that population pressures were not an evil but an incentive to moral and spiritual progress. Edward Copleston and Richard Whately, following Sumner's interpretation, raised the Malthusian argument to a new level of intellectual sophistication. Thomas Chalmers followed Sumner in his reformulation of Malthus's theodicy and used it to create a case for Church establishment. "Christian political economy" is simply the evolution of Malthusian theodicy from Malthus ([1798] 1966) to Chalmers (1832). After that it simply passes into the mainstream of Victorian political thought.

Emmett: The Christendom Trust funded a year of study for you. Would you describe their interest in your work, where you studied, and the year's impact on your work?

Waterman: Well yes! It was they who funded my Reckitt Fellowship at the University of Sussex, for which I am deeply grateful. But I am afraid I was a disappointment to them. The Christendom Trust was funded by Maurice Reckitt, who was part of a pre-war Anglo-Catholic, Christian Socialist group that included Thomas Stearns Eliot and Canon Vigo Auguste Demant. They established the Reckitt Fellowship at Sussex, expecting that the Fellow would be a Christian Socialist; and that his research would provide support for their ideas, which had been much influenced by Richard Henry Tawney. But what my research actually showed was that the most sophisticated political thinking in the Victorian Church—to which an Archbishop of Canterbury (Sumner) and an Archbishop of Dublin (Whately) made vital contributions—was strongly supportive of private property, free and competitive markets, and a high degree of social and economic inequality.

Emmett: During the time I was in Winnipeg working under your supervision, you took a sabbatical at Cambridge. What did that sabbatical enable you to do?

Waterman: It enabled me to write the first draft of my book on Christian political economy (Waterman 1991a). But Robinson College, to which I had been elected as a Bye Fellow, did far more for me than that. In addition to congenial society and luxurious dining, it provided a comfortable, furnished three-bedroom suite in the college for my wife and me; and because I became a Senior Member of the college,

it continued to make these amenities available to me on all my subsequent visits to Cambridge until 2010.

Despite John Maynard Keynes's great admiration for Malthus, the faculty of economics had no interest at that time in their famous forerunner. But they gave me an office that I shared with Cristina Marcuzzo. Though we got on well, I didn't use it much because I made one of our three bedrooms in Robinson into a study.

It was on this sabbatical that I established working relationships with Edward Norman, Jonathan Clark, and Graham Cole, revived my friendship with Donald Winch, and had fruitful contact with Stefan Collini and Quentin Skinner. I also renewed contact with my undergraduate college, Selwyn, and met its eminent Master: Owen Chadwick, Regius Professor of History at the university. Despite the fact that he was the world's leading authority on the Anglican Church, he told me that he knew "nothing whatsoever about Malthus"—and seemed to think that was okay.

Emmett: I found St. John's College a rich and enlivening place to conduct research, think, and write. What aspects of it have enriched your work?

Waterman: It would take too much space to tell you. It has been my academic home since 1959. When I went to Australia in 1964, College Council overrode their bylaws to grant me leave of absence for three years. I was warmly welcomed back in 1967 and given an office, which I continued to use for the next forty-six years. (I still have an office, but I don't use it much now.) I continued to do all my teaching in the college until I retired in 2006, worshipped in the beautiful college chapel, and played my part in the governance of our society. The college is the original part of the University of Manitoba (UM); and since 1970 those of its Fellows who teach in the UM faculties have been paid by the university. But we are an independent corporation with our own charter, property, and endowments, subject only to the Bishop of Rupert's Land, who is *ex officio* our chancellor.

Any theology I know I learned there, many of my closest friendships have been formed there, and I have always enjoyed and profited from the interdisciplinary character of our Fellowship. I have no objection to economists (quite literally, some of my best friends are economists!), but I thrive in a place where my colleagues are from other disciplines: theology, philosophy, mathematics, literature, history, music, and the other social sciences. At one time we had physical sciences, too, but couldn't keep up adequate laboratories.

Emmett: You worked as director of the Center for the Humanities for some time. How did your experiences there shape your historical work in economics, and vice versa?

Waterman: They didn't. By 1992 the program of my own research and teaching was well established, and as director I had no desire to influence the studies of others. I tried to welcome all contributions that could reasonably be regarded as "humanities" as that word is now understood in North American universities. [In more traditional universities *Litterae Humaniores* means the classical literature of Greece and Rome. It was the Renaissance option to the original field of university studies: *Litterae Divinae*.]

But in fact my chief work as director was trying to ensure adequate funding for a branch of learning that is increasingly despised and rejected in the modern world.

Emmett: I have heard you express your admiration for Paul Samuelson many times. What is it about Samuelson that has interested you the most? How does that relate to your use of his rational reconstructions of classical economics?

Waterman: Where to begin? Paul Samuelson was the “one exception”: even more intelligent than Joan Robinson. (But he had great admiration for her. There was a large photograph of Joan outside his office in MIT and he told me, “I read everything she wrote. She only read a subset of my stuff.”) Paul was far and away the most important intellectual influence and example of my entire life.

He taught me economics. When I went down from Cambridge, I really understood nothing. So when I learned that I should have to teach the subject in 1959, I thought I had better find out something about it. Samuelson’s textbook had been prescribed for first-year courses at the UM. I bought the book and devoured it from cover to cover with growing excitement—like a gripping novel. It was a blinding revelation! *All of a sudden I saw what economics was all about*; and everything I had superficially read about it at Cambridge suddenly came into focus. Above all, I realized that economics is an essentially mathematical discipline—as William Stanley Jevons had seen long ago—and that I had been a victim of Alfred Marshall’s pernicious bias against mathematics, which continued to stultify teaching at Cambridge. For though there is no explicit mathematics in Samuelson’s textbook, it was obvious that his ingenious diagrams and arithmetical tables are thinly disguised algebra, calculus, and difference equations.

I met Paul for the first time in 1975 at a small invited conference on “Keynes, Cambridge and the 1930s” convened by Don Patinkin at the University of Western Ontario. Paul sat in the front row, covering sheets of paper with set-theoretic notation; but now and then he would look up and make some incisive remark. But we didn’t really get acquainted until 1991. I had written an article on Thomas Chalmers’s first and best book, reconstructing his argument mathematically to show its relation to Samuelson’s (1978) famous “Canonical Classical Model” (Waterman 1991c). I sent him an offprint merely as a courtesy. To my astonishment back came a letter by return post beginning “Dear AMC” with detailed comments. Thus began an exhilarating correspondence, rather like a strenuous tennis match, which now fills two boxes in the Samuelson archive at Duke University. (Paul actually played tennis every day until he was in his 80s.)

We continued to correspond for the next decade and met once or twice; then in 2002 when I was at Boston College he invited me over to MIT. He wanted to interrogate this unusual specimen: a man whose intelligence he respected—yet who was an unashamed and highly orthodox Christian. (He told me, “My wife used to say, ‘Whenever you hear the word Religion you reach for your gun.’”) And he couldn’t get his head around the fact that Adam Smith had subscribed to the formularies of the Church of Scotland. On that occasion, however, he said something that seems to me to capture the essence of the academic life: “I never bother to talk to people who agree with me: I learn nothing from them.”

Why, though, would the world-famous Paul Samuelson bother to disagree with an unknown nonentity like me from a place no one had ever heard of? I think it was a sign of his true greatness that he was completely without prejudice with respect to his fellow human beings: always willing and eager to learn from any.

We use that word “great” far too often. But in Paul’s case it is appropriate. He was the only truly Great Man I have ever met. (Save that on one occasion I did shake hands with Lord Mountbatten: it was like shaking hands with a dynamo!) It was by friendship with Paul that I learned the nature of human greatness: enormous vitality securely harnessed to a coherent set of objectives. When someone asked that old curmudgeon John Sebastian Bach how he could write such glorious music, he growled, “I work harder

than other men.” Paul Samuelson certainly did, too. When he got the Nobel Prize he said “it was nice to be recognized for hard work.” For more than seventy years he produced scientific papers, many of seminal importance, at an average rate of one a month. And even in our subdiscipline of the history of economic thought (HET), he was a towering figure: more than seventy articles, essays, and memoirs, some of lasting importance. Many full-time specialists in HET have achieved far less (Medema and Waterman 2014).

But what interests me most about Paul and his work is his Harvard doctoral thesis of 1940, published as his first book: *Foundations of Economic Analysis* (1947). Since Adam Smith, economists had always believed that they were doing “science.” Theory is prior, but it must be tested by observable facts. The question was always: “How?” Samuelson showed how “meaningful theorems”—which could be refuted by empirical data—could be deduced from maximization principles and stability conditions. One hundred and seventy years of loose talk about science was finally justified (Waterman 2019a). This astonishing achievement by a twenty-five-year-old graduate student was more than a mere tour de force. Over the next half-century it profoundly changed the way we all do economics. Samuelson was a “great man” by any reckoning. He was also a creative genius. More important than any of all this, Paul was a good, kind, and truly lovable man.

Emmett: Your more technical explorations of the work of classical economists may be described as “rational reconstructions.” How do rational and historical reconstructions improve each other? Do they? Are they separate exercises?

Waterman: I wrote about all this in my Malthus bicentenary article (Waterman 1998), contrasting Winch’s “intellectual history” (IH) with Hollander’s “history of economic analysis” (HEA) and arguing that these are complementary inquiries. Together these comprise a subdiscipline we call the “history of economic thought.” For as *historians* we need to know how and why the literature of political economy came into existence (IH), and as *economists* we need to explore and understand its analytical content (HEA). Samuelson’s work in our subdiscipline is the most brilliant and revealing HEA so far attempted.

But I never use the vague and disputed terms “rational” and “historical” reconstructions unless compelled by others I have to defer to—such as the late Warren Samuels, founding father of our subdiscipline. Warren got me to write the most boring piece of my entire output (which is saying a lot), based on a hideous Venn diagram with no fewer than fourteen intersecting classes (Waterman 2003b). Like Samuelson, I do attempt *mathematical* reconstructions of the analytical content of important work by dead economists.

Why? Because mathematical reconstructions of the work of our great predecessors can throw light on what they thought they were doing, and in some cases can help the historian understand what they were disagreeing about and who—if any—got it right. For example, I have lately attempted to show exactly how and why Malthus disagreed with Adam Smith about high wages, which was possible to do only by elaborate mathematical reconstruction (Waterman 2012).

Emmett: When did you first attend a History of Economics Society (HES) meeting?

Waterman: I had to look at my records for this, but the answer was the June 1989 meeting, held at the University of Richmond. I believe it was Karen Vaughn who suggested I attend an HES conference. She and I had met a few years before at a Liberty Fund conference on religion and economics, where we discovered we had similar tastes and interests and became friends. I had already published on Malthus in the *Canadian Journal of Economics* and *History of Political Economy* (Waterman 1987b, 1988a), and she urged me to come and present, even though few members were interested in my Samuelsonian analyses of “classical” political economy. I presented my mathematical reconstruction of Chalmers, later published in *HOPE* (Waterman 1991c). The paper on Chalmers also led to my friendship with Paul Samuelson.

My chief recollections of the HES meetings were those of seeing Samuel Hollander and Walter Eltis for the first time, and walking around the park-like grounds of the University of Richmond in near-freezing temperatures, engaged in earnest conversation. Though neither knew me, or of me, then, our meeting led to close friendships with these two great scholars, from whom I learned much. And I also met the great and good Warren Samuels for the first time. A couple of years later, we met again when Warren came to Winnipeg to serve as external examiner on Ross Emmett’s dissertation on Frank Knight.

Emmett: You have worked at several points with your graduate school friend Geoff Brennan. What projects have you done together, and how did the two of you work together? What, if anything, has Geoff taught you about religion and economics?

Waterman: Geoffrey Brennan was an undergraduate—in honours economics—when I was at the ANU. We both sang in the university chamber choir (all undergraduate except for me) and we attended the same church in Canberra, where he had to listen to my sermons. How did an undergraduate get into an all-graduate university? Because Canberra University College, established in 1929, was integrated into the ANU in 1960 as the School of General Studies.

But Geoff was no ordinary undergraduate. We would walk around the campus at lunch hour and he would explain to me that Australian macroeconomic policy—which engaged the attention of every leading economist in Australia and to which my own research was committed—was without theoretical justification. He was right.

His subsequent career in public finance led to public choice theory, his move to the USA, his influential collaborations with James Buchanan and Gordon Tullock, and his increasing attention to political theory and philosophy—in each of which he has earned an international reputation. When he “retired” two or three years ago, he was simultaneously professor of economic theory at the ANU, professor of philosophy at UNC Chapel Hill, and professor of political science at Duke. Only Harry Johnson has had such a peripatetic career.

We continued friendly correspondence when I left Australia but did not meet again until the year after I returned from Sussex. He then put me in touch with Paul Heyne, with whom I organized two invited conferences in Vancouver on “Religion, Economics and Social Thought.” Geoff was there, of course (as were Milton Friedman and Peter Bauer). Over the next two decades he, Paul, and I become a closely knit troika: three Anglican economists, deeply interested in the relation between economic theory and Christian theology in public policy discourse. We had closely similar views on Anglican religion, the nature of economics, and the strengths and weaknesses of capitalism and the market

economy. We felt that together we were more than the sum of the parts; and when Paul died suddenly in 2000 both Geoff and I felt diminished (Brennan and Waterman 2008f).

Geoffrey and I had collaborated on an edited book of essays, *Economics and Religion* (Brennan and Waterman 1994), and we collected, edited, and published the best of Paul Heyne's papers in this field (Brennan and Waterman 2008a). We edited and wrote a joint article for a collection, *Christian Theology and Market Economics* (Brennan and Waterman 2008b). But our recent and current collaborations arise out of Geoff's close association with UNC and Duke. During the six months he spent in Durham, NC, every year he would convene small, Liberty Fund-style conferences on "PPE and Literature" (Geoff's assignment at UNC and Duke was to establish a joint Oxford-style program in PPE: Politics, Philosophy, and Economics). He invited me every year after 2011. A book or books would be assigned for us to read in advance. About sixteen or seventeen of us sat around the table for two days and discussed the readings—with plenty to eat and drink at the right times. After Geoff "retired" he remained *persona grata* at Duke and UNC and continued to run the conferences. In 2018 we read *Robinson Crusoe* and, in 2019, *War and Peace*. Geoff and I collaborated on articles on each: "Faith and Economics in Robinson Crusoe," and "Economics Meets *War and Peace*" (Brennan and Waterman 2020).

What did he teach me about religion and economics? At the merely academic level he is better informed about economics than I, and I am better informed about religion than he. So in our collaborations we have a fruitful division of labor. But I have learned so much from him about everything over the past fifty-five years that it would take a long time to answer this question properly.

Emmett: What are you working on now?

Waterman: "A General Model of Ecological Equilibrium." Back to Malthus once more, and back to my first love, science. I have constructed a model of what John Stuart Mill called "the spontaneous order of Nature." Each species coexists with all other species, some of which serve as food. Equilibrium exists when all populations are stationary because production/income is at the Malthusian "subsistence" level. Specific production functions contain the populations of all species as arguments with positive first derivatives. If there are diminishing returns, the specific second derivative will be negative. I have investigated the existence, uniqueness, and stability of general equilibrium at the species level; and so far as I can see, diminishing returns (implied by Malthus's famous "arithmetic ratio") are sufficient for local stability of the linearized system. The model generalizes a lot of traditional formulations, such as the Volterra-Lotka equations, as special cases.

Most of this work was completed by 2007. I had to set it aside because of a series of cancer operations; and then other, seemingly more urgent, academic projects kept it on the back burner. But now at long last I can get back to it.

SUPPLEMENTARY MATERIAL

To view a bibliography of Anthony Waterman's publications, please visit <https://doi.org/10.1017/S105383722100050X>

REFERENCES (TO WORKS OF OTHERS)

- Chalmers, Thomas. 1832. *On Political Economy in Connexion with the Moral State and Moral Prospects of Society*. Glasgow: Collins.
- Chown, John. 1994. *A History of Money: From AD 800*. Cambridge: Woodhead Faulkner.
- . 2003. *A History of Monetary Unions*. London: Routledge.
- Malthus, T. Robert. [1798] 1966. *An Essay on the Principle of Population as it affects The Future Improvement of Society, with Remarks on the Speculations of Mr Godwin, M. Condorcet, and Other Writers*. London: Johnson. Facsimile reprint. London: Macmillan, for the Royal Economic Society.
- Medema, Steven G., and Anthony M.C. Waterman, eds. 2014. *Paul Samuelson on the History of Economic Analysis: Selected Essays*. New York: Cambridge University Press.
- Samuelson, Paul A. 1947. *Foundations of Economic Analysis*. Cambridge, MA: Harvard University Press.
- . 1978. "The Canonical Classical Model of Political Economy." *Journal of Economic Literature* 16 (4): 1415–1434.