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J. A. C. Brown (1922-1984): An Appreciation

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1 Introduction

J. A. C. (Alan) Brown made important contributions to the development of applied econometric and modelling work in the UK during the 1950s and 1960s. His influence extended well beyond his journal publications in view of his willingness to help others in numerous ways, to give away valuable ideas and to encourage team work. It is likely that those who knew him remember his remarkable personal qualities at least as much as his specific contributions.

I was fortunate to be one of Alan's students, both as an undergraduate in Bristol and a graduate in Oxford. I therefore did not know him as a friend – I was certainly too much in awe of him and too timid to ask personal questions. So it must be admitted that I have only a partial picture of him.¹ Furthermore, although I had the privilege of seeing something of the way he worked, this was not his most productive period. But his influence – on virtually every aspect of my work – is impossible to exaggerate. This memoir simply presents one person's perspective, as a way of paying tribute to the person who made such a strong and lasting impression. It gives a

¹For more details, see the brief memoir by Stone (1985).

glimpse of Alan as a teacher of undergraduates and as a graduate supervisor.² Nevertheless, the following section first provides a very brief description of his main work.

2 Major Contributions

Alan Brown is probably best known these days as a result of the many citations to *The Lognormal Distribution*, which was jointly written with J. A. Aitchison and published in 1957. This book has perhaps reached the point of being a ‘classic’ in the econometrics literature. This was a pioneering volume in more than one sense. It was innovative in devoting a whole book to a single distribution, but it was very much broader in scope.³ Indeed it provided pioneering studies of the use of probit analysis, covering quantal and quantitative responses, in economics – in the context of Engel curves and new commodities. It was several decades before probit analysis became widespread – it is now of course ubiquitous in applied econometrics work – and *The Lognormal Distribution* also derived some interesting analytical results regarding aggregation.

This book was thus also a pioneering volume in nonlinear econometric methods, devoting considerable attention to iterative maximum likelihood methods based on Fisher’s famous ‘method of scoring’. The convergence properties of iterative methods were examined in detail, including the problem of how to choose initial values. This kind of work would not have been possible without access to mainframe computing facilities, and the book therefore also reflects pioneering work in computer programming in econometrics – making use of the unique computing facilities in Cambridge during

²Stone (1985, p. 194) says that at Oxford he ‘supervised innumerable theses’. But this seems doubtful to me. I have been unable to discuss my experiences with others he supervised in Oxford.

³A more recent edited volume of papers concentrating on the lognormal distribution and applications is Crow and Shimizu (1988). Surveys of applications in particular areas include Limpert *et al.* (2001) and Singh *et al.* (1997).

the 1950s – necessarily using machine code rather than high level languages.⁴ His interest in computers began with the use of Hollerith machines while working on Japanese codes during World War II, when he learnt Japanese ‘in a matter of months’ (Stone, 1985, p. 191).⁵

The Lognormal Distribution book was exemplary in showing respect for the historical development of the statistical methods involved and in paying attention to the stochastic processes capable of generating the form of the lognormal distribution, rather than simply adopting a convenient approximation. It is also the only econometrics book I know that has a perfectly apposite quote from Shakespeare at the head of each chapter.

Alan Brown was, however, a pioneer in numerous other respects. Given his turn of mind – his astonishing analytical and creative powers, his breadth of learning and curiosity – it seemed almost impossible for him to turn to any topic without taking a fresh approach. His early research in economics involved survey work with the National Food Survey, which led to his contribution to covariance analysis: despite the fact that this provided the basis of many later reports, it was never published. Stone (1985, pp. 191-2) has also described his early innovative work in minimum cost diets, involving the use of linear programming methods. The subject of demand analysis provided a strong thread through all his work. This included a number of contributions to the analysis of consumer durables and new commodities, and here his direct influence on the books by Cramer (1962), Bain (1964), Pyatt (1964) and Ironmonger (1972) is also clear.

The high period of his career was without doubt the years at the Department of Applied Economics in Cambridge from 1952 to 1965. Here, with Richard Stone at the head, he found the ideal environment which was

⁴This work involved using the famous EDSAC. See Brown, Prais and Houthakker (1953).

⁵He had been a classics scholar until 1942 at Emanuel College, Cambridge. After the war he returned to complete an economics degree.

shared with other outstanding colleagues.⁶ Of course, this was a time when universities were more collegial and there was not the same emphasis on publications.⁷ He simply gave away many ideas for others to work on, as clearly demonstrated by the many acknowledgments made to him in the research output of the DAE.⁸

Alan was the originator and driving force behind the Cambridge Growth Project. As Stone (1985, p.194) has commented, ‘the successful launching of our venture and the productiveness of the group in those early years were in large measure due to his drive, enthusiasm and devotion to work, qualities made even more effective by his sweetness of temper and his sense of humour’.

3 Undergraduate Teaching in Bristol

In 1965 Alan was appointed to a newly created Chair in Econometrics in Bristol. Stone (1985, p. 194) suggested that after moving to Bristol, Alan ‘revealed himself as a teacher of almost apostolic fervour’. Whatever the case, it seems that in a short time, he had a great influence on the department, its standards and the structure of the degree.

He gave a first-year course on National Income Accounting, and appeared at the first lecture wearing a gown (this was unusual outside the law faculty, even though gowns were worn for dinner in the halls of residence). He was of dark complexion, medium height and heavy build. His hair then was dark, very short and brushed forward, though later he wore it long and it became more or less white, but at times partially yellowed by his constant smoking.

⁶See, for example, Peseran (1991) and Peseran and Harcourt (2001), who nevertheless concentrate on Stone’s role, and Smith (1998), who concentrates on theoretical econometric work.

⁷He once said, ‘Anyone can write papers, but what is really hard is producing papers that others can’t afford *not* to read’.

⁸In addition to the books by Cramer (1962), Bain (1964), Pyatt (1964) and Ironmonger (1972) mentioned above, for a very small sample of papers and books acknowledging his help, see Prais (1953), Prais and Houthakker (195), Hart and Prais (1956), Stone and Rowe (1957), and Bacharach (1970).

Alan was a messy smoker, regularly brushing ash from his clothes or desk onto the floor. ⁹

His courses were very carefully planned, he was always well organised and he spoke very clearly. In lectures he was, I think, rather formal. However, in private he was certainly not formal and had a lively sense of humour. While I do not remember him ever laughing loudly, he frequently chuckled quietly, at interesting as well as amusing things. He always greeted warmly the many people who telephoned or knocked on his door. I do not think I was really aware of his accent at that time. I suppose it would have seemed rather neutral to me, but I came to recognise the traces of his Bury (Lancashire) accent.

I still have the superb typed notes that he produced to accompany the course. As might be expected from the major architect of the Cambridge Growth Model, his course on National Income Accounting was much more than a treatment of the formalities of the Blue Book and the Red Book, both of which we had to purchase. Later in the year, his lectures were taken over by a colleague, because Alan was often away at the discussions set up to agree on the new System of National Accounts, in which Richard Stone obviously played an important part. As students, we felt rather proud of this connection.

In the second year Alan gave the first term's lectures on distribution theory to those taking the degree in economics with statistics. These lectures were hard going. During each hour Alan repeatedly covered the blackboard with equations and then wiped it clean. However, it was a superb and well-structured course, and provided an invaluable foundation for a great deal of later work. Again he also provided a carefully prepared hand-out. A number of second and third year courses were taken by MSc students at that time. After one lecture, an MSc student taking the course approached Alan and

⁹When he first went to Bristol he stayed with Ron Tress until finding a house; Tress had just given up smoking and enforced a no-smoking rule in the house.

suggested that some of the students were finding it very difficult. He said quickly, ‘then they shouldn’t be here’. I’m sure this comment reflected his irritation with the particularly annoying student, rather than any general lack of sympathy.

In the third year Alan gave a superb course of lectures on demand analysis. I was impressed by the sympathetic attitude taken towards earlier contributions – he always encouraged work in the history of economic analysis, particularly early mathematical and statistical work. Again we were given a substantial hand-out, and he later repeated this course to graduate students in Oxford. The hand-out was in fact an early draft of his much-cited survey paper on demand analysis, with Angus Deaton as co-author, that appeared in the *Economic Journal* in 1973. Before it was published Alan told me, with much amusement, that Reddaway (then editing the EJ) did not want to publish the paper because of its substantial use of matrix algebra. To overcome this problem, Richard Stone recommended that a recent Cambridge PhD student, Deaton, should be brought in as co-author. The final result was of course no less mathematical, but Reddaway was then in no position to refuse to publish.

Following advice from Richard Lecomber, I went to see Alan about possibilities for graduate study.¹⁰ Alan suggested that the best course of action was to apply to do the BPhil at Oxford. At the time virtually all ‘masters’ courses were for one year only, and PhDs in the UK did not include any coursework. The BPhil provided a combination of coursework over two years with a substantial thesis and provided a very good basis for an academic career.

¹⁰Richard arrived in Bristol at the start of my third year. He was very stimulating, encouraging, sympathetic and enormously helpful. Richard died, relatively young, of a brain tumour. Alan’s first wife also died relatively young of a brain tumour, as did several Cambridge colleagues.

4 Graduate Supervision in Oxford

Shortly after receiving my offer from Balliol, I heard that Alan was going to Oxford to take up a Chair at Merton College. This was indeed a major stroke of luck for me. Alan later told me that he wanted to leave Bristol as a result of the problems associated with the student protests and occupation of the administrative buildings during 1969. It seems that he knew one of the student leaders (he may perhaps have been an economics student) and approached the Vice Chancellor with the aim of holding a meeting to try to settle things. The VC simply refused to talk and from that moment Alan decided to move.

In other respects Bristol suited Alan well and his family were settled there. In retrospect the move to Oxford was for him probably a bad decision. The Oxford Institute of Economics and Statistics did not provide the kind of environment in which he would be most comfortable. It was simply a place where some people had offices and where there was a superb library. A properly operating Institute, with plenty of interaction among the members, would have been a more suitable environment for Alan. On the question of the directorship of the Institute, Alan later suggested that an ideal person would be someone aged in his mid-40s with too many ideas to explore himself and keen to pass them over to others often working in small teams. Of course, he was really describing himself during his time at Cambridge.

Alan clearly enjoyed the company of the Italian students at Oxford, of which there were many.¹¹ He told me that he knew Rome better than any city in England, and I had the clear impression that he also preferred being there. He spoke Italian fluently and told me that he learned it by reading the local newspapers while working in Rome. When he was doing some work

¹¹Alan's international sympathies were obvious. In the early 1970s he organised, with Harry Johnson and others, the collection and distribution of books for Bangladesh. When one of his overseas students became short of money, Alan helped to set him up, in his garage, running a bicycle repair business.

for the Bank of Iran in the mid-1970s, I asked if he planned to learn the language. He replied that he wasn't yet sure which one was appropriate, but that he might spend August to learn. This was purely a 'matter of fact' statement and I really do not think he felt there was anything special about it.¹²

Soon after arriving in Oxford in late 1970, Alan suggested that it might be a good idea for him to supervise me. I came to realise that supervision is the most important aspect of a graduate's work and that I was very lucky. Other students used to talk about their supervisors, mentioning their meetings once or at most twice each term, which largely seemed to be a waste of time. I was able to knock on Alan's door at any time and he was always prepared to listen. His first question would usually reveal how far ahead he was. It was often a case of listening very closely, and storing hints to follow up later.¹³

The role of the supervisor was particularly important in view of the complete absence of any systematic teaching, despite the fact there were courses to select and examinations at the end of the second year. No syllabus, or even reading list, was ever available and even though some lectures were given they were seldom worth attending.¹⁴

The research seminars in Nuffield provided a valuable education, where it was possible to listen to many famous visiting speakers. BPhil students, especially in their first year, were not encouraged to go, but as I never said anything and often went in with Alan, there was no problem. Alan seldom spoke in these seminars, but on the occasions when he gave me a lift back to

¹²His training at Cambridge had been in Classics and, as mentioned earlier, he learned Japanese very quickly during the war.

¹³Not surprisingly, one conversation with Alan turned to the subject of Richard Stone. I suggested that Stone must have been very quick, but Alan contradicted this and described Stone's work habits (these have also been described by Deaton, quoted by Smith, 1998). Alan mentioned returning home at breakfast time after working all night with Stone on drafts of the growth project reports - mostly disputing commas. Alan said that he had actually written two of Stone's papers. This was neither a complaint nor a boast, as he clearly admired Stone greatly, but I foolishly did not ask which papers they were.

¹⁴The outstanding exception was Max Corden, about whom I've written elsewhere.

the Institute, it was fascinating to hear his clear and succinct statements of the main issues and difficulties.

Alan organised a series of seminars in the Oxford Institute. Richard Lecomber came from Bristol to give a paper, but had not arrived by the scheduled time. After a few minutes Alan decided to start, without notes of any kind, to talk about the topic. After a further ten minutes or so, Richard, who had been delayed with a puncture and had not even had time to clean his dirty hands, rushed into the room and took over without any hesitation. During question time, Alan asked if anyone had considered trying a particular approach. Richard hesitated for a moment and then said, ‘well yes, *you* have’ and reminded us of the results.

His way of getting me to begin taking a proper research approach was to mention particular problems in his own work. I took the hint, and would go away, only to return when I thought I had something I dared put in front of him. I think that if I had not responded to such suggestions, he simply would not have bothered with me. At an early stage he said, without any great emphasis, that I should learn Fortran programming, which of course I did immediately. Again, it was simply something that was expected, not worthy of any special discussion.

Early in the first year of the BPhil, Alan met with those people doing applied econometrics, divided us into groups and distributed a number of topics.¹⁵ I was paired with an Italian student and we were given some notes on the model of age-income profiles that made a brief appearance in *The Log-normal Distribution*. Further progress clearly required finding some suitable data – not easy at that time – and writing a computer program to carry out the maximum likelihood estimation. I was not surprised when Alan told me a week later that the other student had shifted to another topic. We decided that I should continue on my own and that it might well form the starting

¹⁵I think there were further meetings to consider progress or problems, but it was the only one that I can remember attending.

point of work for the BPhil thesis. He passed me a folder with some further notes, including some useful early references, and advised me that, although most students started the thesis in the second year, it would be a good idea to work on it in the first year and complete a first draft over the summer vacation.

When I mentioned to Alan that I was planning to start writing up my work, he asked to see a detailed table of contents. I was rather surprised and replied that it would be difficult as I had not started. He simply said something like, ‘yes, it might take a few days’ and indicated that it would nevertheless most likely undergo changes as the writing proceeded. This clear signal that it was not a trivial task and should be given high priority proved to be invaluable advice. I showed Alan the completed draft before having it typed. He did not comment in detail or write corrections on the draft – and I knew better than to expect more. But he was quietly encouraging. His approach to graduate supervision did not follow the kind of instructions given in glossy brochures produced these days by the education departments of universities, describing what a model of supervision looks like. He did not correct work, or set out clear lists of expectations or discuss written plans in scheduled meetings. Instead, he provided a most valuable and rare kind of leadership by example, with subtle hints and quiet encouragement. A brief meeting, reinforced by reading and re-reading his own papers, provided all the stimulus one could hope for.

5 Later Years

Alan’s later years were marked by ill health and naturally his output declined while in Oxford, though he continued to be productive. He spent significant amounts of time overseas, including trips to Iran, Saudi Arabia and Egypt, where he advised on the construction of planning models. He was also associated with the ILO study of Sri Lanka. He was writing a book on social

accounting models, some of which I read in hand-written draft, but it was not completed. Stone reported that in the 1980s, Alan had been making a translation of work by the Italian mathematicians Fibonacci and Pacioli. He also became very keen on the new microcomputers and was developing some econometric software. I was given a display of this in the early 1980s, and he was clearly enthusiastic about it.

We also met at the Royal Economic Society conferences on demand analysis (following the survey paper's publication) and income distribution, in 1974. This conference reflected the growth in interest in the subject in the early 1970s. Alan presented his paper on statistical models of income distribution which, as the discussant pointed out, was distinguished by the fact that it did not include a single equation, but it did include his own lengthy translations from Greek, Latin and Italian.

During the conference we spent an afternoon in Keswick in the Lake District. During a break for tea, he talked at length about code breaking during World War II. He mentioned that his staff, working long hours under stress, used to insert numerous obscenities into their own coded messages. However, he refused to tell them to stop the practice, despite orders to do so.¹⁶ On another occasion, he mentioned a dinner in Merton when he was seated next to a visiting Japanese mathematician. Though he knew it was a silly question, he asked the visitor what he did in the war: the answer was that he worked out optimal flight paths for suicide pilots.

In the mid-1980s I began preparing my book on *Dynamics of Income Distribution*, which contained much of the thesis work in much revised form. I knew there would be no point in sending any provisional material to Alan, as it was most unlikely that he would read it. Instead, I planned to deliver the finished book to him. He died while it was in press.

¹⁶Actually, as reported by veterans of Bletchley Park, their inclusion in messages makes it easier for others to break the code.

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