Les Hepple: an appreciation

The premature death of Les Hepple from a heart attack at the age of 59 in February 2007 brought to an end his remarkable career, almost all of it spent in the University of Bristol’s geography department (which he joined in 1973). Les was the closest any of us have known to a polymath—he was intellectually at ease in a wide range of disparate subjects and excelled in them all.

Les’s first research interest was the analysis of spatiotemporal data, on which he wrote his undergraduate and PhD dissertations in the Cambridge geography department. This was remarkable because he had no background in the area—his A-levels alongside geography were in traditional arts subjects. But, encouraged by Dick Chorley, he taught himself the relevant mathematics and statistics and was soon not just applying quantitative techniques but developing them.

His first refereed journal publication appeared in 1974 (it had been submitted in 1972) and represents a very substantial and wide-ranging survey of “the impact that stochastic process theory, particularly in its statistical aspects, has had upon spatial analysis in human geography”. It has a number of characteristics that mark all of his quantitative work. Operationally, it was single authored, as were forty-nine of his fifty-five publications; Les willingly collaborated but enjoyed thinking and writing on his own.

Secondly, the paper shows a remarkable ability to convey complex mathematical and statistical ideas in a highly lucid way and to get at the core of the subject; an ability that was well attested to by later generations of students. It also reflects a long time well spent in good libraries unearthing and appreciating relevant material from the past and languages other than English: he identified links to important work by Lebart (in French, and previously unreferenced in the geographical literature) and Anderson (in German), and also ‘recovered’ 1940s papers by Cruickshank (from the wartime Papworth Research Bulletin!), Neprash and Stephan from the 1930s, Yule from the 1920s, and Student in 1907. It was always important to him to understand where ideas have come from and the context in which they developed, and he became an expert on Yule.

That early review may be synoptic but it also has forensic detail, noting that the 1952 edition of Wold’s Demand Analysis included a footnote on the analysis of spatial series. It also shows a strong attitude; he “cannot share the doubts of Gould and King about statistical inference in geography” (Hepple, 1974, page 93)—someone with a PhD still to be examined was willing to challenge current orthodoxy, in print. At the same time he was not an unsympathetic critic; again an attribute attested to by the dozens of PhD students he examined. In the review he is particularly generous in his praise of high-quality, theoretically informed work; Dacey’s contributions get special mention.

Substantively, the review addresses the lack of any general perception of a ‘spatial-series problem’ (as compared to a ‘time-series problem’) and the consequent ad hoc, piecemeal, and unconnected developments tackling the problem in a range of disciplines including physics, ecology, biometry, geology, epidemiology; he is nothing if not wide-ranging. He found this ‘spatial blindness’ most marked in the social sciences, identifying only a handful of papers that dealt with the issue and marveling that economists ignored spatial autocorrelation in their cross-sectional analyses.
Those modeling geographical data had made use of techniques that presumed spatial independence: “Two variables may each be auto-correlated across space but not be related to one another, and the standard Pearson or rank correlation coefficients will record high and significant correlations” (page 116) and “some of our correlations with spatial data may be meaningless. This problem infects the entire range of statistical analysis in geography” (page 110). He argued not only that it is important to analyse the effect of spatial dependence in standard models but also to incorporate the spatial structure more directly into the model; he thereby clearly distinguished between spatial lag and spatial error models.

In later work building on this foundation, he became critical of work that just tested for spatial autocorrelation and was concerned to capture spillover effects and spatial interaction between places. This was subsequently put to good effect in his procedure (developed with Hedley Rees) for operationalising the UK central–local government grant system which incorporated spatial spillovers (principally commuting) in the formulae for ‘all other services’: in 1991 some £50 million was distributed by this mechanism. For him nothing was more applied than good theory, and he emphasised that much could be learnt from relatively simple models, “rather than maximizing replication of the real world by building in an excessive number of variables”. He thought it was vital to interest mathematicians and statisticians in these issues and to foster collaborative development and did just that in a paper published in The Statistician (Hepple and Unwin, 1974).

Les argued that a coherent organising framework for spatial analysis was needed and that “many apparently unrelated spatial techniques all focus on the same problem of spatial dependence: order–neighbour analysis, autocorrelation functions and spectral analysis, contiguity tests on irregular lattice and space-time-interaction tests” (Hepple, 1974, page 125). Modeling had to be this framework’s approach and spatial dependence its subject; he called it spatial econometrics (Hepple, 1974, page 127), pointing to Wold’s (1969) argument that econometrics was a pioneering role model for other social sciences in developing an approach to nonexperimental research. (Paelink had first used the term independently in 1970.) Les appreciated that classical statistics, particularly as developed by Fisher, had been able to randomise out spatial dependence through experimental design but this was not possible in nonexperimental social sciences. It took over thirty years but the Society of Spatial Econometrics has now been formed and a special issue of the Journal of Econometrics devoted to the area will be published in 2007.

His own early contribution to this development of models for spatial dependence included work on testing for spatial dependence among regression residuals. This built on contemporary work by Cliff and Ord (1972) but generalised their procedure, providing exact small sample tests as opposed to asymptotic results, showed their power through simulation studies, and extended the test to correlogram-like analyses involving different spatial lags, and to causal feedback systems with simultaneous equations. As such he was one of the first to develop and apply maximum likelihood estimators to modelling spatial dependence in socioeconomic geographical contexts (Hepple, 1976a; 1978).

Throughout his career, Les remained interested in exploring the potentials and limitations of time-series methodologies for modelling spatially dependent systems. Despite obvious similarities, what for Les distinguished spatial series from time series is that spatial dependence is simultaneous or two-way rather than recursive. Never one to be swayed by the current fashion for modelling spatial processes using conditional autoregressive (CAR) models, Les remained committed to simultaneous autoregressive
modelling (SAR) as the appropriate grounding for analysing the types of spatial interdependencies that make geography interesting.

Building on these early contributions Les produced a stream of highly innovative research papers, making pioneering contributions to spatial econometrics. Uniquely for his time, he combined a Bayesian perspective on statistical inference with the model-based approach of econometrics to analyse spatially interdependent systems. This field of research has until recently remained lightly trodden by econometricians but, with the development of computational intensive methodologies, is now receiving the attention it deserves—and Les was invited to contribute to a volume on Spatial and Spatiotemporal Econometrics in the Advances in Econometrics series (Hepple, 2004). Within a broadly defined Bayesian modelling methodology, his work encompassed innovations in model specification, model-selection strategies, and computational techniques, and in the last three years he was involved in developing open-source software to make these models and techniques available to a broader audience, including his students, to whom he taught various aspects of quantitative methods and their application (notably in a course on optimisation) throughout his Bristol career. A book-length treatment of spatial econometrics had long been envisaged and at the time of his death he had plans to construct and compare a range of estimators and models in a monograph that integrated theory and application, the latter implemented through open-source R-package software.

A commitment to openness and accessibility is indicative of Les’s catholic approach to scholarship more generally. Rather than adopt a strong and dogmatic philosophical attitude towards his modelling, Les emphasised the importance of building bridges and providing practical solutions regardless of methodological presuppositions. The openness to competing perspectives was not based upon methodological ignorance or naivete. On the contrary, it was grounded in a deep understanding of the philosophical writings in American Pragmatism, particularly the work of Hilary Putnam. That work on pragmatism was, like everything else Les did, slow to emerge from his typewriter and, later, word processor: he thought about things a lot, and convinced himself of the rightness and worth of what he was doing before committing himself publicly. Indeed, he had been working with the pragmatism literature for at least a decade, but his major essay on it will appear only posthumously (Hepple, 2007).

The interest in pragmatism reflected Les’s wish to understand the foundations of the fields in which he worked. For this reason he became interested in the history of statistics, particularly the pioneers in regression and related techniques—such as Yule and Pearson. His deep appreciation of their work, and the context in which it occurred, stimulated a number of papers on the history of quantification in geography and the social sciences and—as with his work on Bayesian econometrics—so impressed were others outwith geography with what he had to say that he was invited to contribute to major collections, as with his essays on Yule which included one invited for the Encyclopaedia of Social Measurement (Hepple, 2001a; 2005). He continued to collect material on the history of statistics and was working on ‘Galton’s problem’, among others, at the time of his death.

Les also put his quantitative skills to important practical use in a number of consultancy reports. Some were joint with Phil Doggett, a marketing consultant, and involved surveys of corporate banking in the UK. Most of the others, undertaken with an economist colleague Hedley Rees for the KPMG Group, were concerned with local government finance and associated central government allocations. Although clearly practical in their rationale, the latter were nevertheless set in a clear theoretical framework—public choice theory. Indeed, Les surprised students in his policy analysis
course in the late 1980s with his defence of the infamous ‘poll tax’, on which he published an important essay (Hepple, 1989).

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But Les was much more than a ‘quantifier’ who understood the mathematical and historical foundations of what he researched and their practical applications—so much so that he had original things to say about them. He read widely—when someone asked if Les had a study at home with lots of books, the reply was that the whole house was his library—and he was frequently exploring new topics. One consistent area of interest was his home county of Northumberland. Indeed, in 1976—two years after his PhD was awarded—he published A History of Northumberland and Newcastle upon Tyne (Hepple, 1976b) in the Darwen County History Series (Les had taken papers in historical geography in the Cambridge Tripos), which a reviewer congratulated for being not only a “visually most attractive book” but also admirably succeeding as a short, accessible introduction to the area’s history (Hellen, 1978). It almost led to Les taking up a lectureship in historical geography in the county.

Les visited Northumberland very often—at least once during every university vacation, it seemed—and after his mother’s death he retained her house there: apart from walking in its countryside he undertook original historical research, producing a series of articles in Archaeologia Aeliana (the journal of the Society of Antiquaries of Newcastle upon Tyne) on topics related to the Roman Wall and 18th-century agricultural change, amongst others. His interests broadened from that base, as they were bound to do, with apparently esoteric pieces on displaying classical antiquities in Elizabethan and Jacobean gardens and on the history of collections. A few months before his death, he was delighted to be elected a Fellow of the Society of Antiquaries.

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And then there was a third major stream to Les’s work. In the early 1980s the Bristol department decided to ‘broaden’ its undergraduate curriculum by introducing a number of short modules on particular parts of the world—though not courses in ‘regional geography’ as traditionally conceived. Les offered a course on regional development in Central America (an understudied part of the world which he thought should receive more attention, particularly given the poverty and violence which characterised the region then), and this remained part of the curriculum for some years. By then he was already developing a research interest in geopolitics, with a particular initial focus on Brazil and then more widely on Latin America, which meant him learning to read Portuguese and Spanish. The first output appeared in 1986 (Hepple, 1986a; 1986b). The University of Bristol’s annual Colston Symposium in 1985 was cohosted by the Geography and Politics Departments, and Les gave two papers, one on Brazilian geopolitics and the post-1964 military—authoritarian state and the other on the several strands of thinking which marked the post-1970s ‘revival of geopolitics’.

By then, Les was teaching geopolitics too, a subject which he recalled first encountering as a school student when he read East and Moodie’s 1956 volume on The Changing World: Studies in Political Geography and Pounds’s 1963 book on Political Geography, but which he was unable to follow up at Cambridge because it wasn’t taught as part of the Tripos in the mid-1960s (Hepple, 2001b). When Mike Morgan retired from the Bristol department in the mid-1980s Les took over his political geography course, replacing it with one on ‘political geography and policy analysis’ which later became almost entirely focused on geopolitics. As with everything Les did, he went back to the originals—Mackinder, Spykman, etc—and insisted that
these be studied in their contemporary settings. This stimulated a number of undergraduate students—notably David Atkinson, who did a PhD on Italian geopolitics at Loughborough [Les, having 'discovered' the Italian journal *Geopolitica*, obtained a photocopied set from the University of Rome: Hepple, 2001b)] and Klaus Dodds, who stayed at Bristol to do a PhD with Les on the geopolitics of Latin America’s Southern Cone. Les continued to work on Latin America, publishing an incisive critical overview essay on “Metaphor, geopolitical discourse and the military in South America” (Hepple, 1992) where the focus was on the “enemy within” rather than the “organic state” that characterised geopolitical discourse elsewhere. But his interests soon spread. Papers appeared on French geopolitics (yet another language Les mastered as a reader—his term was that he could ‘get by’) and Mackinder, and he was collecting material on both Romania and Russia, while other pieces lay unfinished or unrevised in his drawers. And a chance (obscure, but Les was for ever finding such) bibliographic reference led him to ‘discover’ that Dudley Stamp published a paper in 1927 in *Zeitschrift für Geopolitik*—the journal cofounded by Karl Haushofer which later became associated with the Nazi *lebensraum* policy. This was news to those who had worked with Stamp—notably Michael Wise, who had no knowledge of it and found that it wasn’t included in Stamp’s cv. Les beavered away to uncover the context of this short piece—and a manuscript slowly appeared. It was unfinished at the time of his death, but in a suitable form so that a little additional work will enable us to ensure that it appears in a special issue of *Geopolitics* that is to be dedicated to Les and his work.

Les's first geopolitics papers appeared just as it was experiencing a substantial revival in Anglo-American scholarship—notably with the creation of ‘critical geopolitics’. Les—never a bandwagon jumper—didn’t join the latter community, but continued with his own interests, and stimulated others, notably through his 1986 ‘revival’ paper which was selected as one of *Progress in Human Geography*’s “Classics in human geography”. In this Simon Dalby and David Atkinson both pointed to Les’s prescient comment regarding the potential of links between geopolitics and ‘social theory’, for example, and his argument that political geographers/geopoliticians had to come to terms with their ‘disciplinary history’, both of which have been fulfilled in the following two decades.

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The mathematics of spatiotemporal processes, Bayesian spatial estimators, the history of statistics, pragmatism, historical geography, geopolitics—surely that exhausts Les’s intellectual endeavours. But there was another major strand—landscape study in the Chilterns. With Alison Doggett—a final-year undergraduate in Les’s first year at Bristol—he did an immense amount of fieldwork (something his colleagues later found quite astounding) walking the Chiltern Hills at weekends spent with her family, learning to love and appreciate the landscape. (A gate in the Chilterns is being dedicated to his memory by the Chilterns Society.) And slowly—perhaps too slowly for Alison at some times—a book emerged (Hepple and Doggett, 1992), a substantial piece of scholarship considered good enough to be entered in the 1996 RAE. It was very well received: Oliver Rackham, for example, wrote that it was “a wonderful book, quite the best of its kind since W. G. Hoskins. I am not sure I ought to make that qualification, for even Hoskins hardly attained the authors’ breadth of vision and capacity for finding and marshalling the detail”,(1) and he referenced their work extensively in his 2006 book on *Woodlands* in the New Naturalist series. On the strength of that book,

(1)http://www.wendoverbookshop.co.uk/local/chilterns.hepple.htm.
Alison and Les were invited to contribute a chapter to a book edited by another doyenne of English landscape studies—Joan Thirsk—and Les wrote another on ancient landscapes (Hepple and Doggett, 2002; Hepple, 2003).

Les was a true scholar—with a breadth of interests that contemporary academic culture no longer fosters. He was a superb teacher, as many former students have attested to us—not only in the case with which he presented material to aid comprehension of things that many others among us find incredibly challenging but also in the care he gave to all his students. He was an excellent administrator too—not only a safe pair of hands in any task allocated to him (which he always willingly undertook) but also in his concern for justice and consistency. But above all he was a wonderful colleague and friend; although in many ways a lone scholar, somebody who followed his own paths that few others have ventured down and wouldn't be rushed by deadlines where scholarship was involved; nevertheless he was extremely generous with his time and always happy to interact. As we talked among ourselves and to others to produce this memoir we realised how many aspects there were to Les of which we knew little, all of which had the common themes we have identified here. It is his personal characteristics that we miss most: his scholarship will live on—his personality remains with those who knew, liked immensely and admired him.

Richard Harris, Tony Hoare, Ron Johnston, Kelvyn Jones, Paul Plummer, Edward Thomas

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