PART 4

Working within a quantitative tradition
4.1

QUANTITATIVE METHODS’ EXPERTISE – A DIVERSE LANDSCAPE IN EUROPE AND AROUND THE WORLD

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It is unquestionable that quantitative research methods (QRM) have an important role in the development of society. The ability to count, to perform arithmetic equations, and to understand algebra and geometry is at the basis of progress in most fields of human activity. Modern knowledge of quantitative methods goes beyond the understanding of applied statistics and equations in themselves to include an understanding of spatial and behavioural factors that can alter results in data collection and/or contribute to its analysis and understanding (i.e., a good design of a questionnaire is as important to the quality of the results as a good understanding of the most appropriate statistics is to analysing/displaying the data distribution resulting from those questionnaires).

Given that Planning focuses on the study of place and space (concepts at the core of both the RTPI and AESOP; see also the overall introduction) it is undeniable that QRM and geographic/spatial information play an important role in the planning of space and space. Nevertheless, QRM of the past are very different from today’s methods. The deterministic models of the rational plan that obeyed blindly the metrics related to density, volume, and proximity are now seen as a thing of the past. QRM are now perceived as a part of a wider set of tools available to researchers and practitioners.

In the same way as the advent of geographic information and computation unveiled important opportunities, it is now believed that digital spatial data and computers models per se won’t solve the problems of the world. Lee’s seminal paper on the pitfalls of large-scale urban models (1973) provides one of our best reminders of this point. From a data-needy environment we have moved to a data-‘overwhelmed’ overflow where clear research questions and data mining techniques try to help ‘narrow down’ to levels suitable to contribute to the problems at hand (Silva, 2011; Silva and Wu, 2012). The comprehensive plans and large-scale models of the past that provided ‘one fits all’ solutions and that attempted to define one unique output are now replaced following the notion that we are in an uncertain environment, and solutions are as valid and suitable as the methods we use and the suite of tools selected. From this viewpoint, quantitative and qualitative methods go hand-in-hand, contributing equally to a reasonable answer. We
now live in a world of probabilities, given by the evaluation of stakeholders though participation methods that will vary accordingly to the situation such evaluations are closely followed by the new suit of dynamic behavioural simulation models that rely in the research design of qualitative and mixed methods in order to provide best fit calibrations.

Nevertheless, while it is clear that QRM and geographic information play an important role, different research traditions and local socio-economic constraints have significantly affected the evolution of teaching and practice during the last one hundred years. For instance, in the US, and as pointed out by Silverman’s chapter in this book, most planning and planning-related schools emphasize quantitative research methods and the need is to expand the teaching and research on qualitative research methods; in Asia we see an emphasis on growth development variables. In Europe, on the contrary, in the last thirty years planning schools have developed a strong focus on qualitative research methods.

Studies by the Nuffield Foundation, the Higher Education Academy, ESRC, and HEFCE point out the fact that the UK has a shortage of social scientists trained in quantitative methods and consequently is unable to meet the demand from employers across all sectors – academia, government, charities, and business – for staff who can apply such methods to evaluating evidence and analysing data. They point out that this deficit is caused primarily by market failure to attract students and teachers into quantitative social science training.

If one considered that teaching and research of quantitative methods are reducing at both secondary and university levels, the scenario is worse if one considers the areas of GI and ICT. There are three factors: the lack of inclination for undergrads to take those courses when they arrive at the university with little to no knowledge of maths and stats; (2) the cost involved in building the labs necessary to teach those subjects (hardware and software costs); and (3) the recent shortage of staff capable of teaching and researching in these subjects.

Nevertheless, it seems that practice is at odds with academia, because there are jobs and investment available in these areas: the UK Trade and Investment Department states that software and IT services have a market value of £58 billion per annum (www.ukti.gov.uk/investintheuk/sectoropportunities/ict.html). If one looks at the GIS market, estimates as to the size of the geographic information business in the UK vary from around £650 million to over £900 million, according to the Association for Geographic Information (AGI).

With such high technical requirements and need for specific hardware, software, and expertise in such diverse areas of implementation, are we producing the right type of expertise? Are we producing the innovative research to feed the development of new computer applications and new analysis? Are we producing the number and right qualifications to feed this increasing need of the labour force? How do we overcome these barriers?

The first step is to produce teaching manuals that are integrated and recognize the need for both quantitative and qualitative methods (it is amazing that it took thirty years to produce such a book). The second step needs to be teaching- and research-related; all planners need to be aware of a compressive portfolio of methods available, and just after that knowledge is acquired they should be allowed to specialize. The third step has to do with the fact that planning questions need to be answered with both qualitative and quantitative tools and methods.

As we have argued in the overall introduction, while the book’s organization follows a ‘traditional’ approach of segmenting methods into qualitative and quantitative types, we don’t believe that successful planners can live with such a division in real life. They need to be aware of and prepared to speak about and practice making use of both types. In today’s multidisciplinary teams, planning practitioners and researchers do not need to know in detail every research method, but they do need to be prepared to explore the potential of the full range of methods.
and techniques available. What is needed is an attitude of keen curiosity about what different methods can offer, in relation to a particular research inquiry. In this way, as a body of researchers and practitioners, the planning community should develop a more reliable, inclusive, and robust knowledge basis for our own work.

With this acknowledgement in mind, we encourage all readers of this book to explore the eleven chapters of this part, as a stimulating introduction to the range of methods which have developed through the quantitative tradition as relevant to our field. Obviously with time, they will ‘cherry-pick’; they will come back again to the readings and advice produced by certain authors. Nevertheless a successful research methods course should provide a suitable portfolio of readings with chapters from all of the four parts – the number and detail would vary with the level of knowledge of the student and with the approaches taken during teaching (i.e., basic module, followed by advanced module, undergrad vs. grad course, broad Ph.D. programme followed Ph.D. specialization, etc.).

Here you will find out from Robert Haining (University of Cambridge, UK) that planning will require you to think spatially and statistically, and from Cecilia Wong (University of Manchester, UK) that in order to do that you need to understand what you are going to measure, what kind of indicators and for what purposes, and in which kind of context. You will learn from myself and Jose Reis that there is already a portfolio of metrics enabling you to start measuring. Particularly if you are new to the area of planning we will keep you grounded in what you must know, and Helen Bao (University of Cambridge, UK) will take you through the steps of regression analysis (certainly one of the most used methods in QRM), telling you that there is more to it (I can reveal that she is also an expert in understating how we can include the immaterial values in valuation through hedonic models). For those that think that unfortunately statistics is not about maps, Pedro Matos (University of North Carolina, US) shows you that even in economics we have spatial-econometrics (this chapter together with Bao’s and Haining’s chapter are the foundations for those who want to specialize in analyses which will make extensive use of statistics, metrics, and spatial statistics).

But, in the digital age, it is fair to assume that planning work will follow the main trends of the new digital world, and there is a suite of methods and technologies in support of planning decisions. Planning support systems’ (PSS) contribution to both qualitative and quantitative methodologies is now beyond what we can imagine (to a point that even the hard-core qualitative researchers end up using PSS without even understanding they are doing so; it is almost at the same level of using a mobile phone). Stan Geertman (Utrecht University, Netherlands) describes in a clear way the importance and potential of PSS as research instruments. And that will obviously lead us to find out a bit more about geoprocessing and what is commonly known as geographic information (systems), through the chapter by Jorge Silva and Tiago Marino (Universidade Federal do Rio de Janeiro, Brazil). And that, in turn, will lead us to find out a bit more about one of the most important advantages of using new technologies: visualization, the capability of producing and transmitting information to experts and lay people (explained in the chapter by Claudia Czerkauer-Yamu and Andreas Voigt – Vienna University of Technology, Austria, and Pierre Frankhauser – Université de Franche-Comté/France).

But, at the core is still the data, in a data-rich world, now with the technology capable of collecting and processing vast amounts of information. Regardless of whether we are aware of it, we live in the digital world. Massimo Craglia (of Joint Research Centre [JRC] European Commission [EC], Ispra, Italy) describes the importance of spatial data infrastructures for spatial planning. This part ends with a good example to justify how integration of different methodologies plays such an important role, in this case, answering one of the most important questions
tormenting us since the dawn of time: ‘How do we define a region?’ I can tell you that in the chapter of Chaolin Gu (Tsinghua University, China) we will find most of the methodologies described in the previous chapters, and more, demonstrating that even old problems require innovative solutions, and these will depend on the type of question we want to answer, and on the type of data we have.

My final remark returns to the challenge we face as a planning community in our research, teaching, and practice. We don’t give enough attention to research methods, and there are serious imbalances in the range of methods taught and used across the different continents. We need much more attention to the clear gap in the knowledge of existent research methods applied in the planning field and in the proposal of new research methods suitable for the planning arena. I hope this book will be a clear contribution to that, by providing this diverse group of chapters, a truly united nations of research methods in planning, as we can see by the themes and geographic origins of its authors, a good way to spread the word about what is available and how diverse and resourceful research methods in the planning field need to be.

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