

Part III

Case Study: Simulation in Demography

Having established now a theoretical basis behind the use of agent-based modelling methodologies within the social sciences, the question remains: how might we apply this theoretical framework in practice within our chosen disciplines? In Part III we will examine this question in detail, through the lens of demography.

Demography is a powerful and relatively ancient discipline, tracing its origins back to the seventeenth century. Demographic studies are frequently influential policy tools, driving large-scale changes in social and governmental policy at local, national and even international levels. Population data is, by nature, rich in detail and highly useful for policy-makers across the political spectrum.

Demographers have in recent years turned toward simulation, seeking a new approach which marries the statistical power of traditional demographic methods with the ability to understand and manage complexity. In particular, the drive to understand the elusive *micro-macro link* – the ways in which individual-level behaviours lead to population-level changes – has motivated demographers to seek out agent-based modelling methods, which can incorporate both individual-level behaviours and population-level influences and policies.

In the chapters ahead we will discuss the history and progress of demography as a discipline, the potential of ABMs to contribute to these vital research goals, and the ways in which simulation can be applied in this context. We will outline a new research programme for demography which incorporates simulation modelling as a core component, a programme which will help steer demography toward a more expansive future – and which could serve as a model for other disciplines seeking to incorporate simulation into their methodological toolbox.