

# Preface

In March 2011, we held a workshop called “Agents in Archaeology” at the Natural History Museum Vienna, in which we brought together both experts and novices in archaeological simulation: On the one hand, we had a range of presentations on the practical use of agent-based modelling *as a research tool*; on the other hand, we held a 2-day tutorial on NetLogo for archaeologists not familiar with simulation software (or even programming). As supplement, we also uploaded the tutorial lecture to YouTube, which has so far attracted 6,206 viewers devoting 35,629 minutes of their lifetime to that subject. Hence, when Suzana Dragicevic invited us on behalf of the Springer GIScience series to compile a book on that matter, we knew that we would like to keep this very delicate balance between practical “hands-on”-type contributions (given by “digital archaeologists”, if you will) and methodical chapters (given by modelling experts, mathematicians, computer scientists and social scientists). Accordingly, we decomposed the subject into four parts: *Introduction* (which gives an overview), *Methods* (which elaborates the foundations of the subject), *Applications* (which reports on real models, in a “hands-on” fashion) and *Summary and Outlook* (which gives some future trends).

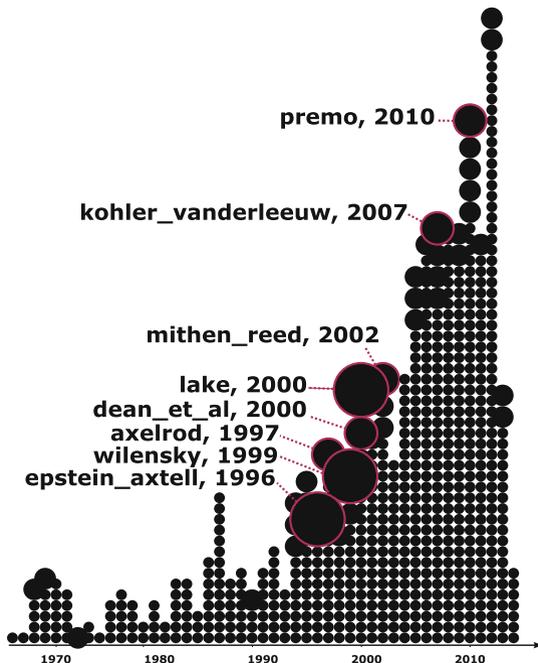
Now that the volume is finished, it is time to take a step back and look at the results. Our authors have given an excellent view *behind the curtain*, not only technically/methodically but also concerning the *development process of a model* (e.g. the Artificial Anasazi in Chap. 2 or the Sugarscape model in Chap. 11). They did so using 733 citations which we have plotted in Fig. 1: Each dot corresponds to one citation; dots of larger size are those citations that are referenced by multiple chapters and are thus deemed as being *highly influential work* for this book. In more detail, we can see a cluster of work around the year 2000 (e.g. Sugarscape and NetLogo, both having five citations) and also one at 2007 (e.g. a postpositivist view on agent-based modelling). For us, the clusters at the turn of the millennium concerns pioneering work that is still highly influential, whereas the second cluster is a body of work that goes into the direction of a differentiation and specialisation of modelling. Interestingly, the number of cited publications is rising each year, but

the amount of highly influential publications does not rise with it (it rather seems to be constant). Surely, there is also a time factor in this (more recent publications are not cited as often), but could it possibly mean that the field is returning to models it has gotten used to, only on a broader basis? Or, put differently: Are some types of models evolving into a quasi-standard? What is the modelling philosophy that we buy ourselves into, if that is true? Partial answers to these questions appear in the subsequent chapters (especially Chaps. 1 and 11); however, these entail new questions leading to new lines of thought.

In this sense, we hope that we can contribute one next step to the field of digital archaeology with our book. We would like to warmly thank Suzana Dragicevic and Ron Doering for making this work possible and our colleagues and families for supporting us. Last but not least, we thank all contributing authors for their excellent work.

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**Fig. 1** Analysis of all 733 citations in the book, shown yearly from 1970 onwards: one *dot* per citation; *dot size* reflects the number of chapters referencing the citation



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