Preface

In recent years, scientists from the Statistical Physics Group of the Applied Mathematics Research Centre[1], supported by national and international funding agencies, have been developing a new, quantitative approach to the analysis of ancient texts. Our first foray into this traditional humanities domain focused on comparative mythology, and our first journal publication on the topic generated worldwide interest and impact, including radio interviews and newspaper articles. That publication was in Europhysics Letters, the flagship journal of the European Physical Society. It is, of course, unusual to publish a paper about mythology in a journal devoted to physics, but statistical physicists have long been interested in outward applications, and the development of complex-network science over the past 20 years, in particular, has facilitated an explosion of interdisciplinary activity. Within a year, the paper became the most downloaded in the history of the journal, demonstrating an extraordinary resonance with a broad readership.

As our research developed, we became aware of excellent and highly original quantitative studies of myths, folktales and age-old chronicles being carried out by various individuals and small groups around the world. These include computational investigations of the narrative contents of ancient annals and revolutionary studies of folktales using methods as diverse as phylogenetics and principal component analysis, as well as other fascinating approaches. As our journey from our "native discipline" of theoretical physics into the humanities progressed, we also became aware that significant amounts of data have been gathered by humanities scholars and we think that these are amenable to new mathematical, statistical and computational approaches.

Supported by the European Science Foundation and other sources, we hosted workshops designed to bring like-minded people together from various academic disciplines. We wished to facilitate expert researchers and internationally renowned

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[1]The Applied Mathematics Research Centre is a member of the so-called L^4 Collaboration involving statistical physics groups in Leipzig University, Germany; Lorraine University, France; the Institute of Condensed Matter Physics in Lviv, Ukraine; and Coventry University, England.

scholars from different disciplines learning from and collaborating with each other. Besides scientists with the right tools and interests, we invited people with knowledge of the humanities who also understand, or at least appreciate, the new quantitative approaches. Our aims thus expanded to the exploration of quantitative modelling for the understanding of textual narratives concerning past cultures in a broad sense.

We chose the alliterative title *Maths Meets Myths* to reflect the ostensible polarity of the contents of the workshops, although they extended beyond these two disciplines. The international *Maths Meets Myths* team now includes physicists, applied mathematicians, complexity theorists, computer scientists, anthropologists, psychologists, authors, filmmakers, artists, historians, medievalists and other scientists and humanities scholars. The workshops had about a 50:50 science–humanities balance. The remit was for the scientists to display their wares (quantitative tools) and the humanities people to present issues which may be susceptible to quantitative approaches. Participants were asked to try to keep their contributions as non-technical as possible as about half the audience was from the "other side". The idea was that this may aid the promotion of cooperation and collaboration.

This volume grew partly out of our workshops, but it is not a traditional set of proceedings. Instead, we selected contributions which, from a scientific point of view, were most firmly established or, from a humanities point of view, were most "ripe" for data harvesting. We also approached eminent academics who were not involved in the *Maths Meets Myths* workshops. Authors were asked to present contributions which included one or more of the following categories: (a) results of an application of state-of-the-art quantitative approaches to sources from the past (folktales, fables, myths, legends, sagas, epics and histories), (b) a description of a new quantitative method which has been applied elsewhere and could be applied to the sources we're interested in here and (c) a description of sources which would be amenable to future quantitative treatment and why they are important. Following the successful experience of our meetings, contributors were asked to be as non-technical as possible and to deliver chapters which are comprehensible to non-experts. All contributions were peer reviewed.

To scientists involved in this project, myths, folktales, chronicles and histories contain treasure troves of fascinating and often complex systems—vast amounts of data just waiting to be analysed quantitatively. To humanities experts, the scientists offer new and exciting ways to interrogate familiar sources, to explore old questions in a new light and to open new avenues of research. Our hope is that the outcome—in the form of this book—will well represent what science can offer to the humanities and vice versa. We also hope that this volume will help demonstrate the value of collaboration between the natural sciences and humanities and to help forge a community embracing the two.

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Maths Meets Myths: Quantitative Approaches to
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