Computational epidemiology: micro and macro modelling in the public eye

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Abstract.

Modelling epidemics has become a commonplace activity over the past 40 years, since the publication of Professors Anderson and May's first pathbreaking papers. Analytical techniques adapted from the hard sciences such as physics have given way to a field dominated by computational simulation models fitted to epidemic data using Bayesian statistics. This has led to an adoption of modelling by public health agencies, most recently illustrated by several model-based forecasts and analyses of the Ebola outbreak in Africa. However, the initial vision of Anderson and May has changed enormously over the years, with notable setbacks as well as successes. I will discuss the state of the field and offer suggestions for progress, with reference to the broader context of complexity science.