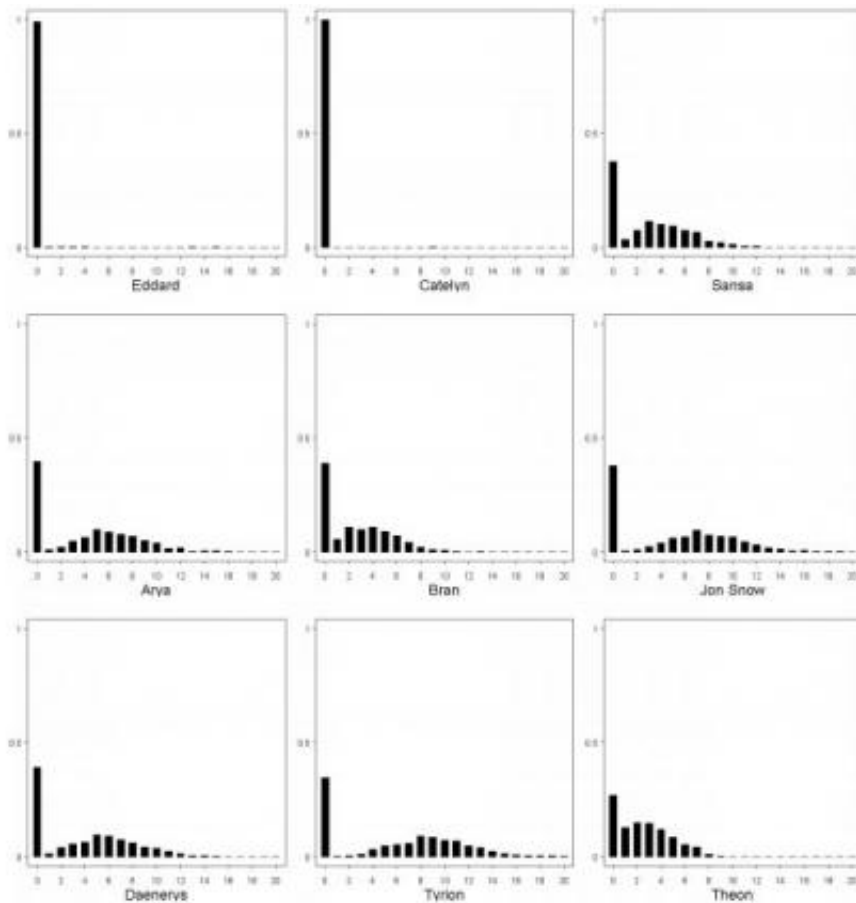


# Mathematical model tackles 'Game of Thrones' predictions

September 30 2014, by Nancy Owano



Posterior predictive distributions for the number of POV chapters for nine characters in The Winds of Winter. Credit: arXiv:1409.5830 [stat.AP]

Take events from the past, build a statistical model, and tell the future. Why not apply the formula to novels? Can contents in future books be

predicted based only on data from existing ones? Richard Vale at the University of Canterbury in New Zealand, said The Physics arXiv Blog, has taken on the challenge in predicting content of as yet unpublished novels in the "A Song of Ice and Fire" series by George R R Martin. The novels are the basis of the television series, "Game of Thrones." The series has five books and two more are awaited. Before proceeding, it should be emphasized that the paper comes with a *spoiler alert*, so avoid linking to Vale's study if you have not read the first five books.

As The Physics arXiv Blog explained, "Each chapter in the existing books is told from the point of view of one of the characters. So far, 24 characters have starred in this way. The approach that Vale has taken is to use the distribution of characters in chapters in the first five books to predict the distribution in the forthcoming novels."

After creating a model, Vale runs a computer program to find the parameters in the model that best fit the data. He uses the model to find the probability distributions of the number of chapters that each character will star in, in book 6 and book 7. What kinds of predictions result? They include predictions about certain characters unlikely to star in any chapters and if one particular character is likely to be dead. Vale's paper submitted to arXiv is "Bayesian Prediction for *The Winds of Winter*." As Vale described it, "Predictions are made for the number of chapters told from the point of view of each character in the next two novels in George R. R. Martin's *A Song of Ice and Fire* series by fitting a random effects model to a matrix of point-of-view chapters in the earlier novels using Bayesian methods." There is also a "Spoiler Warning" that readers who have not read all five existing novels in the series should not read further "as major plot points will be spoiled."

The blog commented on how this is a "fascinating exercise in [statistical](#) modeling that will do more to introduce the process to a wider range of people than any number of textbooks or Wikipedia entries."

Vale is a Lecturer in the Statistics Department at the University of Canterbury. He has a PhD in mathematics from the University of Glasgow and was an HC Wang Assistant Professor at Cornell University. Vale acknowledged several shortcomings in his model— such as not dealing with the possibility of new characters being introduced and a model resting on a relatively small amount of data. Robin Kawakami of The Wall Street Journal, writing in the Speakeasy blog, quoted Vale saying "Game of Thrones" cannot be predicted using statistics alone. He said his project can be viewed as "fun data analysis." He said in an e-mail to Speakeasy, just as many people make fan art by drawing favorite [characters](#) from books, "As a mathematician/statistician, this mathematical [model](#) is my version of [fan](#) art."

**More information:** Bayesian Prediction for The Winds of Winter, arXiv:1409.5830 [stat.AP] [arxiv.org/abs/1409.5830](https://arxiv.org/abs/1409.5830) ([PDF](#))

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