

BOOK REVIEW

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Review of: *Weight-of-Evidence for Forensic DNA Profiles*

REFERENCE: Balding DJ. *Weight-of-evidence for forensic DNA profiles*, John Wiley and Sons, Ltd. Chichester, England, 2005, 183 pp.

For a long time now, David Balding has been considered one of the most gifted mathematicians working in the field of forensic interpretation. His 1994 paper on population subdivision, relatedness and database searching must be one of the top papers of the 90's and led to significant changes in the way that DNA was interpreted in Europe and Australia. This book shows him to be a gifted writer as well.

The book describes the latest thinking in this field from a Bayesian philosophical basis. At the core of the book is the weight of evidence formula. This is an application of the general form of Bayes' theorem.

This formula allows the calculation of the posterior probability that the suspect is the donor of a particular stain, certainly a probability that the court may be interested in. We consider this approach to be the most flexible and powerful one. It does require the prior probabilities, and this and its complexity have put many forensic commentators off the matter. To our knowledge it has not been used extensively in court largely because of the difficulties in explana-

tion and the assumptions regarding priors. However the number of more complex issues that can be handled by this approach argues very strongly for its use at least as a research and instructional tool.

Notable amongst these, more complex issues that are explained well is the elegant combination that can be made of the effects of subpopulations and relatives. Balding uses this approach to great effect when he discusses the matter of whether or not a profile should be considered unique.

Chapter two is studded with "Lesson" boxes. Here is a sample: "*Lesson 5 In the case of a search of possible culprits to find a "match" with crime-scene evidence, the longer the search. . . the stronger the evidence against the one who is finally found to match.*" These were powerful messages to us when we read them.

Lesson 5 relates to the database search issue. This "problem" arose from the suggestion that the match probability should be down weighted by the number of persons amongst whom the search has been made. This issue has created a volume of material in the literature and hence there is a lot of scope for debate in court. This is regrettable and we fully support Balding's efforts to have these discussions in the scientific literature.

We wish to congratulate the author on his excellent contribution to our field.

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