

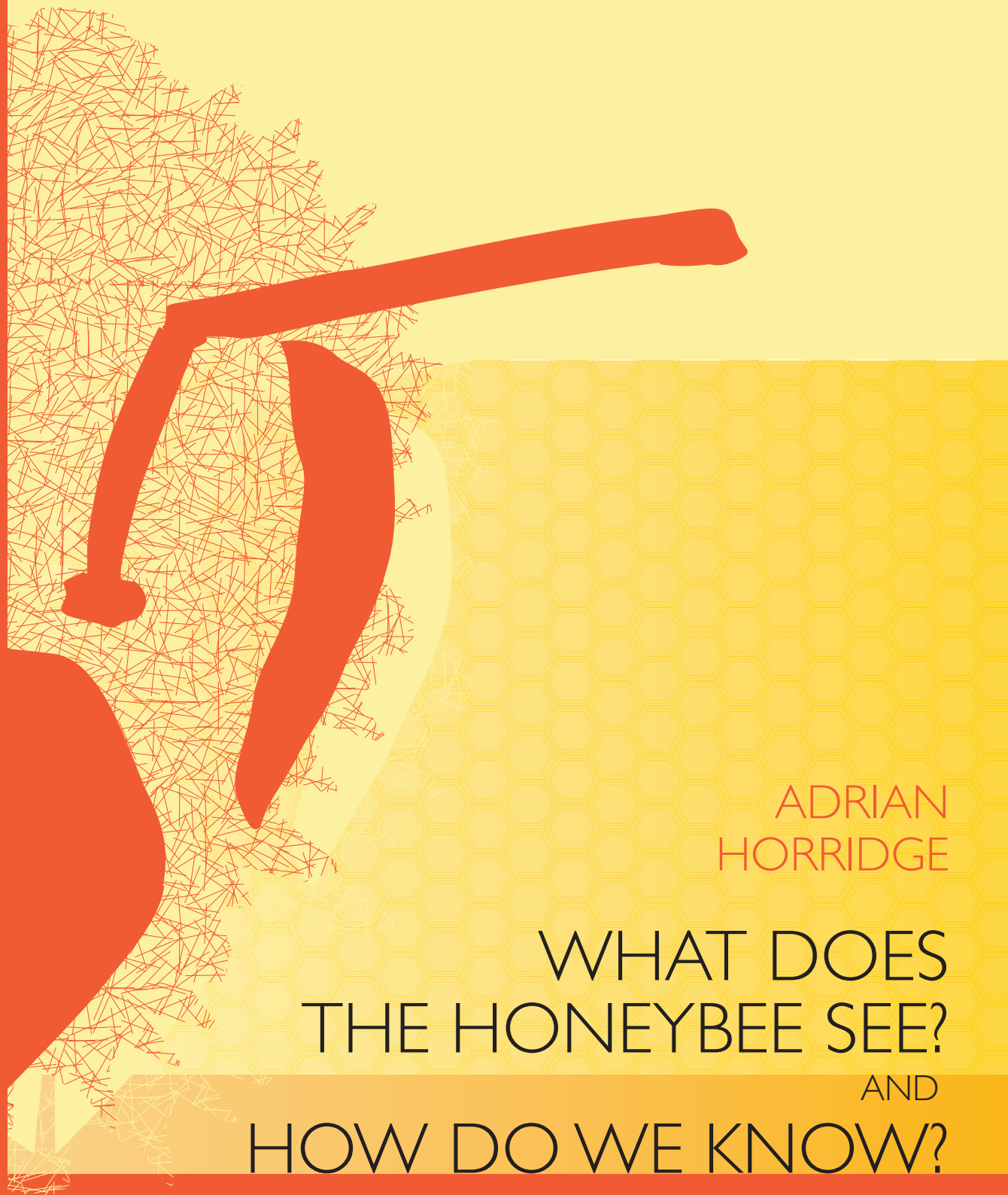
This book is the only account of what the bee, as an example of an insect, actually detects with its eyes. Bees detect some visual features such as edges and colours, but there is no sign that they reconstruct patterns or put together features to form objects. Bees detect motion but have no perception of what it is that moves, and certainly they do not recognize “things” by their shapes. Yet they clearly see well enough to fly and find food with a minute brain. Bee vision is therefore relevant to the construction of simple artificial visual systems, for example for mobile robots. The surprising conclusion is that bee vision is adapted to the recognition of places, not things.

In this volume, Adrian Horridge also sets out the curious and contentious history of how bee vision came to be understood, with an account of a century of neglect of old experimental results, errors of interpretation, sharp disagreements, and failures of the scientific method. The design of the experiments and the methods of making inferences from observations are also critically examined, with the conclusion that scientists are often hesitant, imperfect and misleading, ignore the work of others, and fail to consider alternative explanations. The erratic path to understanding makes interesting reading for anyone with an analytical mind who thinks about the methods of science or the engineering of seeing machines.

Adrian Horridge was appointed in 1960 as Director of the Gatty Marine Laboratory, St Andrews, Scotland, while completing the two volume work with Prof. T. H. Bullock of the University of California on ‘The Structure and Function of the Nervous Systems of Invertebrates (1965). In 1969 he was appointed as one of four Founder Professors of the Research School of Biological Sciences at The Australian National University and brought with him a research group that worked on the eyes of insects. Since that time, he and his numerous students and post-doctoral collaborators have discovered much about the vision of insects. More recently, they turned to the vision of the bee, which is a special case because bees can be trained to come to a familiar pattern for food. The results have been used in the design of insect-type vision for unmanned lightweight flying vehicles. In 1969 he was elected a Fellow of the Royal Society of London and in 1972 of the Australian Academy of Sciences. Adrian Horridge continues to work as an Alumnus at The Australian National University.

WHAT DOES THE HONEYBEE SEE?

ADRIAN HORRIDGE



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WHAT DOES THE HONEYBEE SEE? AND HOW DO WE KNOW?

A CRITIQUE OF SCIENTIFIC REASON



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