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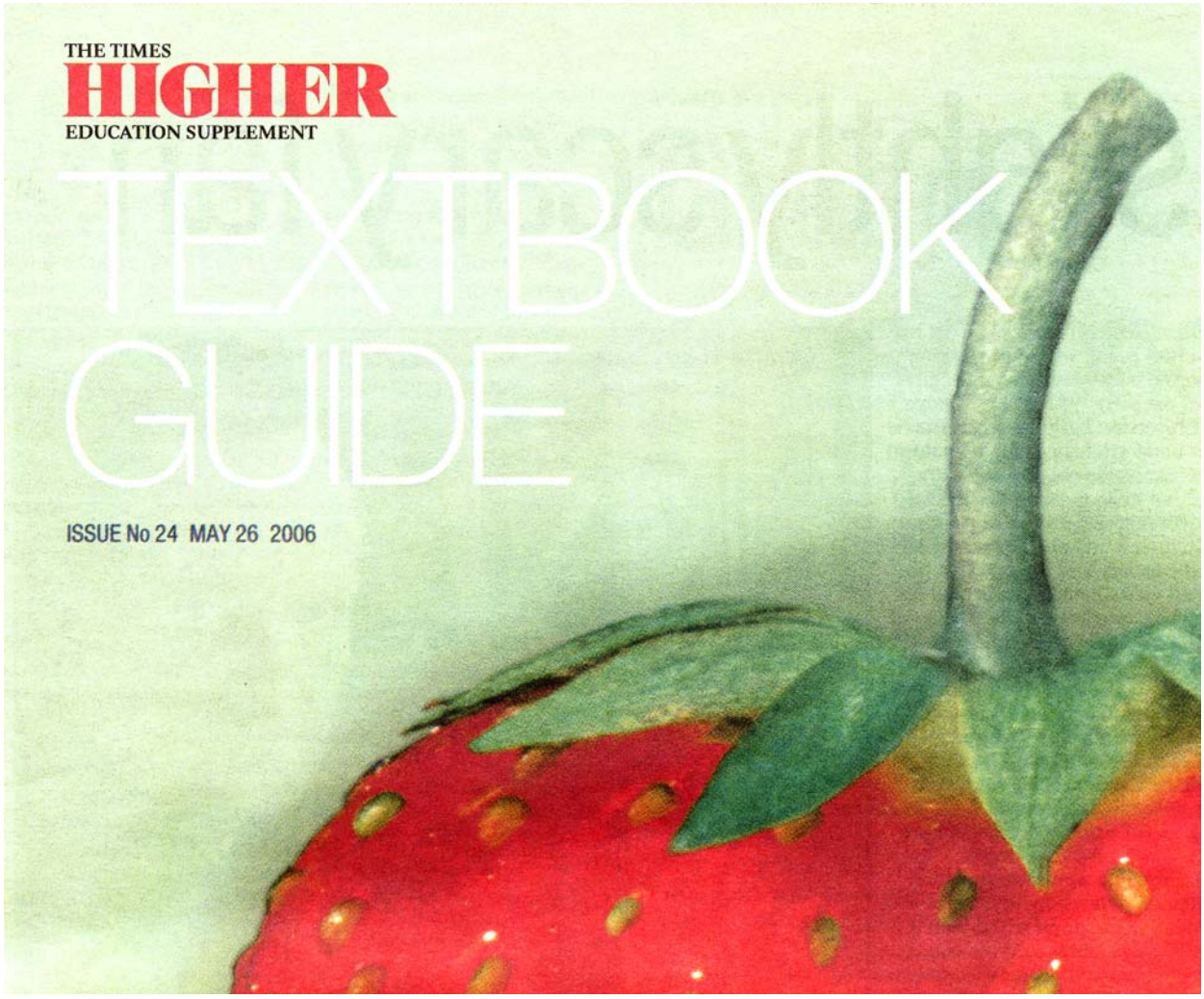

Christopher Ruf

A few insights into penetrating vision

Introduction to Microwave Remote Sensing
FIRST EDITION
By Iain H. Woodhouse
CRC Press, 370pp, £29.99
ISBN 0 415 27123 1

Books on remote sensing generally fall into one of three categories. Some consist of lists, often exhaustive and well researched, of remote-sensing instruments with their engineering designs and performance capabilities. They can be convenient reference sources but are not well suited to introduce the topic. Some rely on mathematical descriptions of electromagnetic interactions with media to describe both the underlying geophysical processes that a remote-sensing instrument senses as well as the measurement process by the instrument. Such books usually expect readers with preparation in the physical sciences at the baccalaureate level. Most current science and engineering research specialists in remote sensing were probably introduced to the field by some such book or by journal articles of a similar ilk. The third type of remote-sensing book focuses on the geophysical properties that can be measured by each of the major types of remote-sensing instruments. The emphasis tends to be on what can be measured, and how well, at the expense of a detailed and quantitative explanation of how it is done. End users of remote-sensing data might find this type of book a useful introduction to the field.

Iain Woodhouse's textbook falls primarily into the third category, although a few sections of *Introduction to Microwave Remote Sensing* — principally those concerned with his own research speciality — are much more rigorous and quantitative. The book opens with a non-technical but well-researched "Brief history of microwaves" that should be quite readable for the novice and specialist. Next follow two chapters that introduce fundamentals of electromagnetic theory at a fairly elementary level. Such chapters would be obligatory (perhaps with slightly more substance) at the beginning of a textbook in the second category of remote-sensing books. However, the subsequent application-specific chapters lead the reader through each of the major classes of microwave remote sensors with clear but, for the most part, qualitative discussions of the underlying physical processes. Little of the electromagnetic fundamentals developed previously are needed or used in these discussions. More in-depth discussions, of the instrumentation and of the data analysis needed to extract geophysical information from the measurements, tend to be reserved for a subset of the active (radar) sensors.

Woodhouse freely admits this imbalance. The latter chapters of the book seem best suited to an audience of remote-sensing end users who are interested in gaining better insight into the physical processes and the instrumentation that delivered them their data files. The first few chapters may be out of place for such an audience. They could, however, serve as a general introduction to electromagnetics for students who are interested in remote sensing but are not planning to specialise in the subject. *Introduction to Microwave Remote Sensing* could be used by both audiences.

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