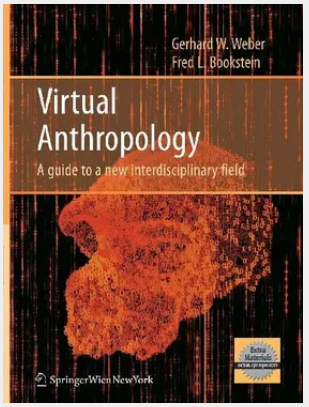
Weber / Bookstein

Virtual Anthropology

A guide to a new interdisciplinary field



This volume details Virtual Anthropology, a new branch of science that combines elements from such different fields as anthropology, radiology, forensics, mathematics, and computer science. It offers an ideal introduction into the discipline. Coverage details medical imaging and digitizing techniques as well as the analysis and reconstruction of morphology based on spatial geometry of biological objects. Many examples of real applications and future perspectives are featured throughout the volume. In addition, an accompanying DVD contains instructive exercises, answers, links to free software, and 2D and 3D data, allowing readers to take their first steps into the subject. The volume carefully walks readers, step-by-step into the methods of operation to particularly understand their relevance for research and society. It is ideal for all kinds of students from biological to medical and technical fields as well as by teachers, journalists, and interested laymen.

This is the first textbook of Virtual Anthropology, the new science that combines elements from fields as diverse as anthropology, medicine, statistics, computing, scientific visualization, and industrial design. The book is intended for students in any of these or nearby fields within biology, medicine, or engineering and for teachers, journalists, and all others who will enjoy the many examples from our real biological world. After a general introduction to the field and an overview, the book is organized around six themes conveyed in more than 300 pages of text accompanied by hundreds of carefully annotated images: medical imaging and 3D digitising techniques, electronic preparation of individual specimens, analysis of complex forms in space one or many at a time, reconstruction of forms that are partly missing or damaged, production of real objects from virtual models, and, finally, thoughts about data accessibility and sharing and the implications of all this for the future of anthropology. The authors' emphasis is not on technical details but rather on step-by-step explanations of the wealth of examples included here, from brain evolution to surgical planning, always in light of the relevance of these approaches to science and to society. All readers are encouraged to try out the techniques on their own using the tools and data included in the Online Extra Materials resource.

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