Contents

Preface 9

Introduction The Nature and Aims of Archaeology 12

Part I The Framework of Archaeology 19

1 The Searchers

The History of Archaeology 20 The Speculative Phase 22 The Beginnings of Modern Archaeology 26 Classification and Consolidation 34 A Turning Point in Archaeology 37 World Archaeology 38 Summary 47 Further Reading 47

Box Features

Digging Pompeii: Past and Present 24 Evolution: Darwin's Great Idea 27 The Development of Field Techniques 30 Processual Archaeology 38 A History of Japanese Archaeology 40 Interpretive or Postprocessual Archaeologies 41 Çatalhöyük: Interpretive Archaeologies in Action 44

2 What Is Left?

The Variety of the Evidence 48 Types of Archaeological Evidence 48 Formation Processes 50 Cultural Formation Processes—How People Have Affected What Survives in the Archaeological Record 51 Natural Formation Processes—How Nature Affects What Survives in the Archaeological Record 54 The Archaeological Record and Context 72 Summary 73 Further Reading 73

Box Features

Experimental Archaeology 53 Wet Preservation 1: The Ozette Site 60 Wet Preservation 2: Must Farm 62 Dry Preservation: The Tomb of Tutankhamun 64 Cold Preservation 1: Mountain "Mummies" 67 Cold Preservation 2: Snow-Patch Archaeology 68 Cold Preservation 3: The Iceman 70

5 Contents

3 Where?

Survey and Excavation of Sites and Features 74 Discovering Archaeological Sites and Features 74 Assessing the Layout of Sites and Features 97 Excavation 108 Summary 129

Further Reading 129

Box Features

The Sydney Cyprus Survey Project 78 Sampling Strategies 80 Identifying Archaeological Features from Above 84 Lasers in the Jungle 88 GIS and the Giza Plateau 94 Tell Halula: Multi-Period Surface Investigations 98 Geophysical Survey at Roman Wroxeter 104 Measuring Magnetism 106 Excavating the Red Bay Wreck 112 Jamestown Rediscovery: The Excavation Process 115 Excavating the Amesbury Archer 118 Excavating an Urban Site 124 Forensic Archaeology 126

4 When?

Dating Methods and Chronology 130 Relative Dating 131

Stratigraphy 131 Typology 131 Linguistic Dating 135 Climate Change and Chronology 135

Absolute Dating 137

Calendars and Historical Chronologies 137 Dendrochronology and Annual Cycles 140 Radioactive Clocks 144 Other Absolute Dating Methods 155 Genetic Dating 162 Chronological Correlations 162 World Chronology 164 Summary 172 Further Reading 172

Box Features

The Maya Calendar 138 The Principles of Radioactive Decay 145 How to Calibrate Radiocarbon Dates 148 Bayesian Analysis: Improving the Precision of Radiocarbon Chronologies 150 Dating the Earliest West Europeans 156 Dating the Thera Eruption 160

Part II Discovering the Variety of Human Experience 173

5 How Were Societies Organized?

Social Archaeology 174 Scale of the Society 174 Investigating Hierarchies 175 Collective Works and Communal Action 184 Heterarchies 191 Economic Specialization 197 Centralized Societies 198 Settlements and Territories 202 Further Sources of Information for Social Organization 212 The Archaeology of the Individual and of Identity 219 Summary 223 Further Reading 223

Box Features

Service's Classification Model and Its Problems 176 Conspicuous Ranking at Mississippian Spiro 180 The Formation of Complex Society in China: Liangzhu 182 Monuments, Polities, and Territories in Early Wessex 186 Interpreting Stonehenge 188 Early Intermediate Period Peru: Gender Relations 194 Network Analysis 204 Investigating Maya Territories 208 Conflict Archaeology 210

6 What Was the Environment?

Environmental Archaeology 224 Investigating Environments on a Global Scale 224 Studying the Landscape: Geoarchaeology 231 Reconstructing the Plant Environment 240 Reconstructing the Animal Environment 248 Reconstructing the Human Environment 255 Summary 265 Further Reading 265

Box Features

Sea and Ice Cores and Global Warming 225 El Niño and Global Warming 227 Cave Sediments 234 Doggerland 236 Pollen Analysis 242 Elands Bay Cave 254 Mapping the Ancient Environment: Cahokia and GIS 258 The Amazon and Anthropogenic Change 260 Ancient Gardens at Kuk Swamp 261

7 What Did They Eat?

Subsistence and Diet 266 Information from Plant Remains 267 Information from Animal Remains 277 Evidence of Animal-Resource Exploitation 299 Assessing Diet from Human Remains 304 Summary 311 Further Reading 311

Box Features

Paleoethnobotany: A Case Study 270 Butser Experimental Iron Age Farm 272 Investigating the Rise of Farming in Western Asia 278 Farming Origins: A Case Study 280 Seasonality at Star Carr 286 Quantifying Animal Bones 288 Bison Drive Sites 290 The Study of Animal Teeth 292 Shell Midden Analysis 296 Feeding Stonehenge 298 Paleoproteomics 300

8 How Did They Make and Use Tools?

Technology and Material Culture 312 Unaltered Materials: Stone 314 Other Unaltered Materials 329 Synthetic Materials 337 Archaeometallurgy 343 Summary 353 Further Reading 353

Box Features

Artifacts or "Geofacts" at Pedra Furada? 315 Refitting and Microwear Studies at Rekem 320 How Were Large Stones Raised? 328 Woodworking in the Somerset Levels 332 Ceramic Styles and Learning in the American Southwest 342 Metallographic Examination 345 Copper Production in Ancient Peru 348 Early Steelmaking: An Ethnoarchaeological Experiment 352

9 What Contact Did They Have?

Trade and Exchange 354 The Study of Interaction 354 Finding the Sources of Traded Goods: Characterization 362 The Study of Distribution 369 The Study of Production 376 The Study of Consumption 378 Exchange and Interaction: The Complete System 379 Summary 385 Further Reading 385

Box Features

1.

Modes of Exchange 357 Materials of Prestige Value 360 Roman and Neo-Persian Glassware in Japan 365 Amber from the Baltic in the Levant 367 Fall-Off Analysis 372 Distribution: The Uluburun Wreck 374 Production: Greenstone Artifacts in Australia 377 Interaction Spheres: Hopewell 383

10 What Did They Think?

Cognition, Art, and Religion 386 The Evolution of Human Symbolizing Faculties 388 How Symbols Were Used 396 Writing 397 Establishing Place: The Location of Memory 400 Measuring the World 404 Planning: Maps for the Future 405 Symbols of Organization and Power 408 Symbols for the "Other World": The Archaeology of Religion 411 Depiction: Art and Representation 418 Music and Cognition 426 Mind and Material Engagement 426 Summary 429 Further Reading 429 Box Features Clues to Early Thought 390 Paleolithic Art 392

Neanderthal Art 394 The Ness of Brodgar: At the Heart of Ceremonial Orkney 402 Maya Symbols of Power 410 The World's Oldest Sanctuary 414 Recognizing Cult Activity at Chavín 416 Identifying Individual Artists in Ancient Greece 420 Sacrifice and Symbol in Mesoamerica 422 Early Musical Behavior 424 Cognition and Neuroscience 427

11 Who Were They? What Were They Like?

The Bioarchaeology of People 430 Identifying Physical Attributes 432 Assessing Human Abilities 441 Disease, Deformity, and Death 450 Assessing Nutrition 465 Population Studies 466 Diversity and Evolution 468 Identity and Personhood 474 Summary 474 Further Reading 475

Box Features

Spitalfields: Determining Biological Age at Death 435 Facial Reconstructions 439 Finding a Neolithic Family 442 Ancient Cannibals? 448 Examining Bodies 452 Grauballe Man: The Body in the Bog 454 Microbial Archaeology 456 Life and Death among the Inuit 458 Richard III 460 Genetics and Language Histories 469 Studying the Origins of Populations in the Americas and Australia 473

12 Why Did Things Change?

Explanation in Archaeology 476 The Form of Explanation: General or Particular 476 Migrationist and Diffusionist Explanations 477 The Processual Approach 481 Applications of Processual Archaeology 483 Attempts at Explanation: One Cause or Several? 488 Postprocessual or Interpretive Explanation 496 Cognitive Archaeology 499 The Individual, Agency, and Material Engagement 502 Summary 504 Further Reading 504

Box Features

Molecular Genetics and Population Movements 480 Diffusionist Explanation Rejected: Great Zimbabwe 482 Language Families and Language Change 484 Origins of the State: Peru 490 The Classic Maya Collapse 494 Explaining the European Megaliths 498 The Individual as an Agent of Change 500

Part III The World of Archaeology 505

13 Archaeology in Action

Five Case Studies 506 Oaxaca: The Origins and Rise of the Zapotec State 507 The Calusa of Florida: A Complex Hunter-Gatherer Society 516

Research among Hunter-Gatherers: Upper Mangrove Creek, Australia 521

Khok Phanom Di: Rice Farming in Southeast Asia 527 York and the Public Presentation of Archaeology 534 Further Reading 544

14 Whose Past?

Archaeology and the Public 546 The Méaning of the Past: The Archaeology of Identity 546 Archaeological Ethics 548 Community Archaeology 549 Popular Archaeology Versus Pseudoarchaeology 549 Who Owns the Past? 554 The Responsibility of Collectors and Museums 558 Summary 563 Further Reading 563 Box Features

The Politics of Destruction 550 Destruction and Response: Mimbres 559

15 The Future of the Past

How to Manage the Heritage? 564 The Destruction of the Past 564 The Response: Survey, Conservation, and Mitigation 567 Heritage Management, Display, and Tourism 579 Who Interprets and Presents the Past? 580 The Past for All People and All Peoples 581 What Use Is the Past? 582 Summary 583 Further Reading 583

Box Features

Conservation In Mexico City: The Great Temple of the Aztecs 570 CRM in Practice: The Metro Rail Project 572 Portable Antiquities and the UK 575

Glossary 584 Notes 591 Bibliography 600 Useful Websites 633 Acknowledgments 634 Index 637