## Contents

	List of contributors  Preface: shaping primate evolution  FRED ANAPOL, REBECCA Z. GERMAN, AND  NINA G. JABLONSKI	<i>page</i> xii xv
1	Charles Oxnard: an appreciation MATT CARTMILL	1
Part I	Craniofacial form and variation	
2	The ontogeny of sexual dimorphism: the implications of longitudinal vs. cross-sectional data for studying heterochrony in mammals  REBECCA Z. GERMAN	11
3	Advances in the analysis of form and pattern: facial growth in African colobines PAUL O' HIGGINS AND RULIANG L. PAN	24
4	Cranial variation among the Asian colobines RULIANG L. PAN AND COLIN P. GROVES	45
5	Craniometric variation in early <i>Homo</i> compared to modern gorillas: a population-thinking approach JOSEPH M. A. MILLER, GENE H. ALBRECHT, AND BRUCE R. GELVIN	66
Part II	Organ structure, function, and behavior	
6	Fiber architecture, muscle function, and behavior: gluteal and hamstring muscles of semiterrestrial and arboreal guenons FRED ANAPOL, NAZIMA SHAHNOOR, AND J. PATRICK GRAY	99
7	Comparative fiber-type composition and size in the antigravity muscles of primate limbs FRANÇOISE K. JOUFFROY AND MONIQUE F. MÉDINA	134

	On the nature of morphology: selected canonical variates analyses of the hominoid hindtarsus and their interpretation ROBERT S. KIDD	162
9	Plant mechanics and primate dental adaptations: an overview PETER W. LUCAS	193
10	Convergent evolution in brain "shape" and locomotion in primates WILLEM DE WINTER	206
Part III	In vivo organismal verification of functional models	
11	Jaw adductor force and symphyseal fusion WILLIAM L. HYLANDER, CHRISTOPHER J. VINYARD, MATTHEW J. RAVOSA, CALLUM F. ROSS, CHRISTINE E. WALL, AND KIRK R. JOHNSON	229
12	Hind limb drive, hind limb steering? Functional differences between fore and hind limbs in chimpanzee quadrupedalism YU LI, ROBIN HUW CROMPTON, WEIJIE WANG, RUSSELL SAVAGE, AND MICHAEL M. GÜNTHER	258
Part IV	Theoretical models in evolutionary morphology	
13	Becoming bipedal: how do theories of bipedalization stand up to anatomical scrutiny?  NINA G. JABLONSKI AND GEORGE CHAPLIN	281
14	Modeling human walking as an inverted pendulum of varying length  JACK T. STERN, JR., BRIGITTE DEMES, AND D. CASEY  KERRIGAN	297
15	Estimating the line of action of posteriorly inclined resultant jaw muscle forces in mammals using a model that minimizes functionally important distances in the skull WALTER STALKER GREAVES	334
Part V	Primate diversity and evolution	
16	The evolution of primate ecology: patterns of geography and phylogeny JOHN G. FLEAGLE AND KAYE E. REED	353

Contents xi

17	Charles Oxnard and the aye-aye: morphometrics, cladistics, and two very special primates COLIN P. GROVES	368
18	From "mathematical dissection of anatomies" to morphometrics: a twenty-first-century appreciation of Charles Oxnard FRED L. BOOKSTEIN AND F. JAMES ROHLF	378
19	Design, level, interface, and complexity: morphometric interpretation revisited CHARLES E. OXNARD	391
20	Postscript and acknowledgments CHARLES E. OXNARD	415
	Index	420