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The Evolution of Primate Societies

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This is an amazing and voluminous compilation of 32 papers by 39 authors in 5 parts, representing a significant update on the previous such compilation a quarter of a century ago [Smuts et al., 1987]. What is so exciting is that it embraces a shift from classic field observations to multi-disciplinary experimentation – a blend of behavioural, genetic, neurobiological, physiological and cognitive. The aim is a full coverage of species with careful evaluations of explanatory frameworks for all major aspects of primate societies, including humans. Ideas are tested on evolutionary origins in relation to sociology and ecology; there is investigation as to how mental abilities might be explicable from pressures arising in nature. Another driving force is the need to accelerate scientific studies of behavioural and cognitive evolution, given that 48% of primates are endangered.

A theoretical rationale for many subsequent studies was provided by behavioural ecology in the 1960s and 1970s. The vitality and rigour of current field studies depend on assimilating recent developments in the biological sciences. Never has there been a better time to achieve the integrative potential and unify the sister disciplines in social and biological sciences, through the synthesis of primate behavioural research to highlight the significance of primatology to animal behaviour, anthropology, cognitive sciences, economics, genetics and psychology.

The 5 parts are:

- (1) Primate Behavioural Diversity, 6 chapters, with introduction and taxonomy – ‘Strepsirhines and tarsiers’ (P.M. Kappeler), ‘New World monkeys’ (E. Fernandez-Duque, A. Di Fiore, M. Huck), ‘Colobine monkeys’ (E.H.M. Sterck), ‘Cercopithecine monkeys’ (M. Cords), ‘The apes’ (D.P. Watts). There is a similar format throughout; it is an impressive synthesis, providing an excellent basis for the other parts. There are excellent comparative tables, especially for New World monkeys and colobine monkeys (leaf monkeys and surilis are all langurs!).
- (2) Surviving and Growing-Up in a Difficult and Dangerous World, 7 chapters – ‘Food as a selective force’ (C.A. Chapman, J.M. Rothman, J.E. Lambert), ‘Predation’ (C. Fichtel), ‘Ecological and social influences on sociality’ (O. Schulke, J. Ostner), ‘Life history evolution’ (C.P. van Schaik, K. Isler), ‘Socialisation and development of behaviour’ (E.V. Lonsdorf, S.R. Ross), ‘Genetic consequences of social organisation’ (A. Di Fiore), ‘Human survival and life history in evolutionary perspective’ (M. Gurven). The key adaptive problems are centred on feeding, predation, conspecifics (gregarious), precocity, and dispersal – an excellent blend of old and new research. Feeding is the strongest selective force – a very stimulating review – affecting every aspect of primate biology; there is a need for research on nutritional ecology. Predation is also a strong selective force, with a need for more research on nocturnal primates, on the selfish versus the nepotistic function of alarm calls, and the effect of predation on the evolution of primate social systems. The puzzles of social relationships are massive. In a synthesis of human behavioural ecology, the focus is on dual inheritance theory and evolutionary psychology, including functional design of the mind, trait changes over time, role of social and physical ecology in shaping history, and whether behavioural diversity is shaped by environment, cultural trajectory, genetic variation or a mixture of all.

- (3) Mating and Rearing Offspring, 7 chapters – ‘Maternal investments and lifetime maternal care’ (M.A. van Noordwijk), ‘Variations in female reproductive performance’ (A. Pusey), ‘Mate choice’ (P.M. Kappeler), ‘Mating parenting and male strategies’ (M.N. Muller, M.E. Thompson), ‘Variations in male reproductive performance’ (S.C. Alberts), ‘Infanticide’ (R.A. Palombit), ‘Sociology of human reproduction’ (F.W. Marlowe). There is an extraordinary diversity of mating systems among the primates; key features are mate choice and maternal investment. The increased spread of data, especially on strepsirrhines and platyrrhines, strengthens the comparative foundations and conclusions. There is no mention of oestrus in monkeys or apes, thankfully, but the contrast between the strepsirrhine oestrous cycle and the haplorhine menstrual cycle is disappointingly neglected. Female reproductive performance changes with age, but is not obviously related to dominance rank. There has been real progress in the study of mate choice. Hunter-gatherers live in large male-female groups, each gender targeting different foods; males providing more food leads to monogamy, rather than polygyny.
- (4) Getting Along, 6 chapters – ‘Cooperation among kin’ (K.E. Langergraber), ‘Cooperation among non-kin (reciprocity, markets and mutualism, regulation of social relationships)’ (I.C. Gilbey), ‘Adaptive value of sociality’ (J.B. Silk), ‘Social regard and the psychology of cooperation’ (K. Jensen), ‘Human sociality’ (M. Alvard). The key need is for long-term behavioural data, lifetime reproductive history, to understand the complexities of behaviour, including the complicated ways in which kin cooperation and competition interact. A wider range of social systems is also needed for a fuller comparative perspective. A social-network approach is needed to refine predictive frameworks, such as for reconciliation. Group-level cooperation plays a much larger role in human societies.
- (5) Cognitive Strategies for Coping with Life’s Challenges, 6 chapters – ‘Solving ecological problems’ (C. Menzel), ‘Knowledge of social relations’ (R.M. Seyfarth, D.L. Cheney), ‘Communication strategies’ (K. Zuberbühler), ‘Understanding other minds’ (J. Call, L.R. Santos), ‘Social learning traditions and culture’ (A. Whiten), ‘Human cultural cognition’ (E. Herrmann, M. Tomasello). There has been unprecedented growth in primate cognition in the last 25 years – it really has come into its own! An evolutionary framework has been embraced, with shifts from classifying to solving ecological and behavioural problems, the laboratory to the field, and from an emphasis from ecological to social problems. A key area is ecological problem solving, to see how well primates estimate and remember variables important for foraging and reproductive efficiency. Human culture shows a flexible suite of cognitive skills, from tundra to tropics; humans are born to construct further cognitive skills – tools, symbols and social practices – for coping with the exigencies of their local environment.

As long-time guardian of the English language and its marvels, I am very depressed that this landmark volume is riddled with a basic grammatical flaw. Of course, there will be evolution of language, but inanimate objects can never display cognitive abilities, especially in this primatological synthesis! Studies, project chapters, hypotheses, data, book, etc., cannot focus, identify, explore, highlight, provide, reveal, address, etc.!! Otherwise, editorial control has been outstanding.

The primary goal of the editors was to provide, in a single place, a set of synthetic and integrative reviews to furnish readers with a comprehensive understanding of primate behaviour, to allow readers to focus on theory and empirical research that bear on major questions in the study of primate (including human) behaviour, melding evolution, behaviour and ecology. Of necessity, there has been a need for definite selection of material (to avoid duplication, in particular), including the avoidance of detailed description and analysis of methods. The summary and conclusions are excellent throughout, and all the aims are more than achieved. The main outcome is to specify the many challenges that remain for the next 25 years!

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Reference

Smuts B, Cheney D, Seyfarth R, Wrangham R, Struhsaker T (1987). *Primate Societies*. Chicago, University of Chicago Press.