

INTRODUCTION

The papers in this special issue of *Behaviour* were originally solicited for an invited symposium at the XVIIIth Congress of the International Primatological Society in Adelaide, Australia, 7-12 January 2001. The symposium, entitled *What are Friends For? The Adaptive Value of Social Bonds*, provided an opportunity for primatologists to present new data on the nature of social relationships among primates, and to explore the evolutionary forces that shape these relationships and generate adaptive consequences.

The functional significance of social relationships in primate groups has been a major focus of theoretical and empirical work in primatology over the last two decades. This work emerged from two different research traditions. First, evolutionary theory provided primatologists with a rich set of predictions about the patterning of social behavior within primate groups. Thus, primatologists have devoted considerable effort to documenting the extent of nepotism and the existence of reciprocity and interchange in primate groups. Recently, primatologists have begun to consider the limits of nepotism, considering what happens when conflicts of interest and individual opportunism conflict with the needs of relatives. Moreover, primatologists are beginning to examine the proximate factors that influence reciprocal exchanges, including cognitive limits on the ability to manage exchanges over time and across multiple currencies.

In addition, evolutionary biology has enriched theoretical efforts to account for the great diversity in primate social organization. Wrangham's (1980) seminal efforts to explain how ecological factors shape the evolution of primate social behavior and social organization generated an important body of theoretical and empirical work. Controversy continues over the primary selective forces that produce sociality (resource competition or predation pressure), but there is considerable consensus about the effects of resource distribution on the behavior of group-living primates.

Females have played a central role in these theoretical and empirical investigations. Males and females face quite different kinds of selective pressures because females' fitness is mainly influenced by their access to re-

sources, while males' fitness is primarily determined by their access to receptive females. Among females, natural selection has favored behavioral strategies that enhance success in competition for access to scarce and/or valuable food resources. Socioecological models focus on how the distribution of food resources influence female behavioral strategies. In some circumstances, food is clumped and food patches are large enough to feed several individuals. These kinds of situations favor collective defense of food patches, and this in turn is expected to be linked to female philopatry, and the formation of nepotistic alliances, close and well-differentiated relationships among females, and stable matrilineal dominance hierarchies. In other situations, where collective defense of food resources is not profitable, selection pressures favoring female philopatry and strong social bonds are relaxed.

The papers in this volume all address questions about the form and function of social bonds in primate groups. Several papers examine socioecological issues, examining the models (Isbell & Young), or testing predictions derived from the models (Boinski *et al.*, Korstjens *et al.*). Others papers examine the quality of social relationships within primate groups, focusing on the form that these relationships take among females (Cords and Barrett & Henzi). Two papers examine exceptional cases in which males form close and enduring social bonds, muriquis (Strier *et al.*) and chimpanzees (Watts). Widdig and her colleagues broaden evolutionary analyses of nepotism by examining the role that paternal kinship plays in shaping social behavior in primate groups. Their results demonstrate that monkeys can and do recognize paternal kin, and that nepotistic behavior extends to both maternal and paternal kin. Aureli & Schaffner examine the role that emotions play in regulating behavior at the proximate level. Finally, my own paper examines the usefulness of appropriating the the concept of 'friendship' for describing and understanding the function of social relationships in non-human primate groups.

These papers reflect the current state of our knowledge about primate social relationships, but also illustrate the gaps in what we know. Thus, taxonomic coverage is still spotty — we know much more about social relationships in Cercopithecine primates than we do about the behavior of colobines, great apes, New World primates, or prosimians. Functional analyses are incomplete — we speculate about the adaptive basis of behavior, but we cannot link variation in social bonds to long-term fitness outcomes. And, finally, methods for studying social relationships are poorly developed, giving

us only very crude tools for describing and comparing social relationships across time, groups, and taxa.

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