

Supplement A from Aureli et al., ‘Fission-Fusion Dynamics’ (Current Anthropology, vol. 49, no. 4, p. 627)

Fission-Fusion Modal Types

Fission-fusion dynamics pose a challenge to scientists in identifying the existence of a social structure in certain populations, and several methods have been developed to test whether individuals associate in a nonrandom fashion (Cross, Lloyd-Smith, and Getz 2005; Lusseau and Newman 2004; Whitehead and Dufault 1999; Whitehead, Bejder, and Ottensmeyer 2005). Among primates, different modal types of social systems characterized by fission-fusion dynamics have been recognized. For example, the social systems of geladas, hamadryas baboons, and snub-nosed monkeys, characterized by different grouping levels from large night aggregations to a small foraging one-male unit with a rather fixed composition, are often called “multilevel societies” (Grüter and Zinner 2004; Kummer 1968; Stambach 1987). “Fission-fusion society” has become the term of choice used to describe the social system of chimpanzees, bonobos, and spider monkeys, in which individuals belonging to the same community are rarely all together but rather spend most of their time in temporary subgroups or parties that frequently merge and split again with different composition (Nishida and Hiraiwa-Hasegawa 1987; Symington 1990). Rodseth et al. (1991) called these social systems “atomistic” communities, in contrast to the “molecular” communities of geladas and hamadryas baboons. In atomistic communities the smallest unit is the individual that moves from one subgroup to another, whereas in molecular communities the smallest unit is a stable one-male unit that may include several females.

Another possible distinction among fission-fusion types was proposed by van Schaik (1999) on the basis of the extent to which group members are found all together. In “group-based fission-fusion” species, individuals live in permanent groups, and when they split into small parties in response to ecological circumstances, they tend to readily rejoin the rest of the group (e.g., long-tailed macaques [van Schaik and van Noordwijk 1988], howler monkeys [Chapman 1990]). In “individual-based fission-fusion” species, individuals are often solitary or in small parties, and the whole community can be recognized only through analysis of association patterns (e.g., spider monkeys, chimpanzees, and possibly orangutans; Delgado and van Schaik 2000; van Schaik 1999).