From the field to the laboratory and back again: Culture and 'social mind' in primates[1]

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Preparing to leave school for university, I recall expressing an interest in studying the mind; psychology perhaps, or even philosophy. This was an idea that clearly troubled my teachers. I think it was my biology teacher who announced that all psychologists were themselves pretty loony, so I would do much better to get a solid scientific foundation in a biological subject like zoology, then decide what to do next. And that is what I did, with the perhaps inevitable final intellectual destination of the sciences of the mind. Although I think my biology teacher was wrong about psychologists (well, mostly!), following his advice had the wonderful benefit that by the time I came to study the mind I was fully steeped in the principles of evolutionary biology.

Of the many likely consequences of this I should highlight two here. One is the working hypothesis guiding my research, that the mind will only be understood as a biological adaptation, shaped by evolutionary processes to deal with a certain set of ecological challenges and opportunities. Second, intimately linked to this hypothesis, is the methodological principle that a research programme will only yield important insights if it is grounded in the animal's behavior in its natural habitat.

This perspective was importantly shaped by Lorenz, Tinbergen and von Frisch, whose groundbreaking work led them to the 1973 Nobel Prize. Always building on a foundation of good natural history, they used a great variety of complementary methods, including systematic and quantitative observation, and experimentation in both field and laboratory. This combination was enormously productive and, given the way it was grounded in nature, achieved insights that no other approach could.

In contrast, turning to my own discipline, it seems all too easy to classify many contemporary primatologists as *either* field researchers *or* laboratory workers; as *either* observers *or* experimenters. Amongst the notable exceptions, who could be seen as emulating the catholic yet integrated methodological programmes of Tinbergen and Co., are such figures as Kummer, Matsuzawa, Cheney and Seyfarth.

In this essay I will illustrate our own efforts to this end in relation to research on social learning and culture. However, this is but one component of a larger topic we study, that is beyond the scope of this brief essay and therefore sketched only in outline here. Its scope is essentially 'social mind'. The 'Machiavellian Intelligence Hypothesis' is that the intelligence of monkeys and apes is an adaptation not so much to the challenges of the physical world (like finding food), as to the problems encountered in negotiating a particularly complex, natural, social world (see Byrne and Whiten 1988 [including the foundational articles of Humphrey 1976, and others]; Whiten 1999, 2000a; Whiten and Byrne 1997). This hypothesis has come to be supported by a series of studies that find measures of encephalization to be more closely related to indices of social complexity than to those concerning alternatives like food-finding (Barton and Dunbar 1997). Examples of our efforts to elucidate components of this social complexity include work on tactical deception (Whiten and Byrne 1988), management of conflict and reconciliation (Castles and Whiten 1998) and 'mindreading' (or 'theory of mind': Whiten 1998a, 2000b). This research reveals primate minds to be populated with a variety of sophisticated cognitive mechanisms that deal with a diversity of specifically social and complex problems in their daily lives. Learning from others (social learning) is a further aspect of this elaborate 'social mind'. It is a phenomenon appropriately included in the scope of 'Machiavellian intelligence' insofar as it is yet another way in which an animal can exploit important information unique to its social environment, to its benefit.

Social Learning and Culture

Baboons survive in habitats not conducive to most other primates by exploiting a great diversity of food types that can be difficult to find and/or process (Whiten et al. 1991). For example, adult