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Author

Borgerhoff Mulder, Monique

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Interdisciplinary Collaboration:

Painting a Brighter Picture and Identifying the Real Problem

Monique Borgerhoff Mulder

Department of Anthropology

UC Davis

CA 95616, USA

Chan et al (2007) summarize well the issues entailed in combining conservation and development, whether this is finessed through packaging biodiversity as an ecosystem service or promoting community-driven initiatives. They touch sensitively on all the salient pitfalls, and highlight opportunities for optimism. So it is with a certain anticipation that the reader turns to their recommendations: collaboration of conservation biologists with social scientists (McNeely 1995), recognition of the distinct scales (both spatial and temporal) at which the costs and benefits of conservation strategies impact people and nature (Wells 1992), and appreciation of the fact that different conservation dilemmas will require unique solutions (Robinson and Redford 2004).

The authors are right to re-emphasize old (and good) ideas. Surely, however, we can go beyond exhorting conservation biologists to “make earnest efforts to understand the concerns of people and institutions relevant to areas of conservation significance”, and to “work with social scientists”? Chan et al. appreciate that such collaboration is already advanced with economists, but suggest that with social historians, human geographers, cultural anthropologists and others it has been limited, reflecting (they suspect) “divergent philosophies and research styles”.

The picture is in fact far brighter (Borgerhoff Mulder and Coppolillo 2005). Social scientists conduct analyses at individual, community and (inter)national levels, and many employ concepts and terminology familiar to population biologists and evolutionary ecologists. Indeed across the disciplines you can find studies that answer

just the kinds of questions with which Chan et al. end their paper: “Can those losers [of conservation projects] be identified and their responses anticipated? Can that conflict [between conservation and development] be preemptively defused? Can conflict and harmony be mapped, as can slope and vegetation, as data layers in geographical information systems, to design better mitigation strategies?”

At the level of the individual, human behavioral ecology applies foraging theory to resource offtake decisions (e.g., Alvard 1998) and expands on these models to predict how exogenous changes (i.e. new markets and technology) can shift the costs and benefits of different resource extraction strategies (Smith and Wishnie 2000). Where differences in access to labor and cash (or even variation in religious prescriptions) leave some individuals better situated than others to reap the benefits from such changes, the impact of conservation interventions can be modeled and hypotheses generated for empirical test (e.g., Godoy 2001). Optimal foraging analyses can also be scaled up into predator-prey population models. Winterhalder and Lu (1997), for example, find (somewhat counter-intuitively) that introduced domestic species can increase pressure on an over-hunted preferred species by supporting higher human population densities. With such tools social scientists can predict the kinds of social inequities that so frequently result from conservation projects (e.g., McAfee 1999), and make recommendations for wiser and more forward-looking interventions.

Furthermore, to the extent that payoffs to conservation behavior (or stinting) depend on the time frames within which individuals operate, an examination of the full suite of economic alternatives to (destructive) harvesting becomes critical. Here again evolutionary anthropologists have taken the lead (Rogers 1991), exploring how differences in time discounting within populations (Reyes-Garcia et al. 2007) can render certain individuals or production strategies particularly vulnerable to new management regimes. These studies are written in language comprehensible to any ecologist trained in evolutionary thinking, and provide fundamental building blocks for determining how a project to conserve natural resources may ameliorate and/or enhance inequities in resource access, income or other goods across the human population.

Other specializations in the social sciences take us beyond individual motivation and behavior. As Hardin (1968) recognized, getting to grips with the dynamics of coordination and cooperation is key. Here institutional and political economists' work on collective action has been pivotal (Ostrom 1990), and increasingly converges with strictly evolutionary analyses of cooperation (e.g., Richerson, Boyd, and Paciotti 2002). Phrasing conservation dilemmas as collective action problems delineates clear models that can be applied not only to the behavior of individuals harvesting natural resources (Ruttan and Borgerhoff Mulder 1999) but also to the design of institutions governing cooperation. We now know a great deal about what kinds of institutions result in successful resource management and why (Agrawal 2002), and we can use this knowledge to generate (Agrawal and Redford 2006) and test (Brooks et al. 2006) hypotheses for which conservation solutions might work. Here again social science has the tools to map out quantitative predictions about the sorts of policy initiatives that might be effective, given local conditions. For example Ruttan (2006) follows Baland and Platteau (1999) to determine how some forms of community heterogeneity might facilitate collective action over conservation whereas other forms might impede conservation, and tests her predictions against natural resource management program outcomes. Finally political ecologists tackle the issue of within and between country inequities with regard to resource utilization, through recognition of subnational and national elites as herders on an international commons.

In short, Chan and his collaborators are right to worry about the losers and winners in conservation initiatives, but fail to recognize that social scientists have tools to predict who these might be, and why. So what is the real problem? Are conservation NGOs employing too few social scientists? Or do they feel that biologists can do as good a job? Are social scientists not publishing their conservation-related work in the right place? I suspect that the difficulties in implementing just conservation interventions have little to do with a lack of knowledge, foresight or prediction. Rather they result from (often uncontrollable) higher-level national and international trends – migration, pricing, land use policy, global trade, etc. Conservation biologists' principle challenge is not

interdisciplinary collaboration but advocacy and politics, and to work with policy makers and administrators to both shelter conservation programs and enhance their effectiveness.

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