COMMUNITY CONSERVATION RESEARCH IN AFRICA
Principles and Comparative Practice

Working Papers

Paper No 7

SYNERGIZING CONSERVATION INCENTIVES: FROM LOCAL-GLOBAL CONFLICT TO COMPATABILITY[i]

by

Marshall W. Murphree
Centre for Applied Social Sciences
University of Zimbabwe

Research funded by the Global Environmental Change Programme, Phase IV (Grant No. L320 25 3211) of the Economic and Social Research Council, United Kingdom. This research is a collaborative project between IDPM, University of Manchester, African Wildlife Foundation, (Nairobi), Centre for Applied Social Sciences, University of Zimbabwe and the Department of Geography, University of Cambridge.

The views expressed in this paper are those of the author(s) and should not be attributed to any of the collaborating organisations. These are interim research results circulated to stimulate discussion and critical comments.

ISBN: 1 900728958
Published by: Institute for Development Policy and Management, University of Manchester,
Crawford House, Precinct Centre, Oxford Road, MANCHESTER M13 9GH
Tel: +44-161 275 2804/2800 Fax: +44-161 273 8829
Email: idpm@man.ac.uk Web: http://www.man.ac.uk/idpm/

1. Introduction

Incentives are central to the understanding of the sustainability, or lack of sustainability, of natural resource use. In particular, the interplay between local and global benefits in biodiversity needs to be carefully crafted if sustainable use is to be achieved. "Use" can be defined as "the derivation of benefit," [ii] but the incentives which determine preferences for the mode of use vary significantly from global to local levels. Unless these incentives are made compatible the necessary collaboration for their attainment will be lacking. Bromley comments that:

> *"Incentive compatibility is established when local inhabitants acquire an economic interest in the long-run viability of an ecosystem that is important to people situated elsewhere. … Such ecosystems represent benefit streams for both parties: those in the industrialized North who seek to preserve biodiversity and those who must make a living amid this genetic resource."* [iii]

Without incentive compatibility stasis occurs, since each party has an operational veto over the other. Through policy, legislation and fiscal controls governments and international agencies can deny local people the organizational conditions necessary for the attainment of their conservation incentives. Through their in-place location and de facto managerial status local people can render external initiatives futile. The central challenge is, therefore, to transform such initiatives into sets of congruent, although not necessarily identical, incentives.

Social organization seeks to accommodate diverse incentives in institutions which enhance their potential for synergy and modulate their potential for fission. In the arena of natural resource use, where the nature of these resources demands collective management, the health of these institutions determine whether use will be sustainable or not. We cannot therefore adequately consider sustainability solely in ecological terms. Sustainable use requires sustainable institutions to manage such use.

2. The Tale

At this point I want to digress from analytic assertions and tell a tale. It is not a "fishy tale" or one that is false, since it is a faithful, if condensed, narrative of a local discussion on wildlife management which I heard earlier this year. I introduce it here since in its brief span of two hours the discussion brought out a range of statements which serve as pointers for our understanding of conservation incentives.

My tale is drawn from a meeting between the Chapoto Ward Wildlife Committee and international visitors held in Zimbabwe in February 1997. Chapoto Ward is an administrative sub-unit of the Guruve District, 300 square kilometres in area and sandwiched in between national parks estate land on the south and west, the Mozambique border on the east and the Zambezi River which forms a boundary with Zambia on the north. [iv] Its wildlife committee arises from the ward's inclusion in Zimbabwe's CAMPFIRE Programme, a national programme which seeks to encourage rural development and sustainable natural resource use through the devolution of management responsibility and access rights to "producer communities." [v] To date the expansion of the Programme has rested largely on the

exploitation of high-value species through sport hunting, concessions being leased to commercial safari operators. Although formally introduced in 1989, the Programme did not achieve implementational momentum in Chapoto until 1992. By 1996 wildlife had become the largest collective economic enterprise of the ward with revenues equating at household levels to those of cash cropping.

A party of two trustees and regional representatives of an international donor foundation constituted the visitors. Their main objective was to visit a similar "community-based" wildlife management project 20 km. to the east in Mozambique which the foundation was supporting but since they had to pass through Chapoto on their way they requested a meeting with the Wildlife Committee to gain information on the CAMPFIRE Programme. This was arranged, and at the appointed day and hour the visitors arrived at the local school where the Wildlife Committee and about 40 other community members awaited them.

The chairman of the Wildlife Committee opened the meeting by outlining the background and history of the Programme in Chapoto. Being an astute politician he put the Programme forward in its best light. For decades of colonialism the people of Chapoto had suffered government neglect, without the roads, schools and clinics which communities closer to the capital had received. Living in an agriculturally marginal environment they had had to eke out an existence by the cultivation of riverine alluvium, supplementing their diet with foraging and hunting. Even hunting was however difficult, since government claimed the wildlife which raided their fields and gardens as its own. Local hunters were subject to harassment and arrest by National Parks staff. Wildlife had become an unmitigated liability for all, except for the few poachers who were adept enough to evade detection.

With the coming of the Programme things had changed. Wildlife had become a collective asset, to be communally managed. Poaching had dropped and wildlife populations had increased, since individual off-takes were a theft of communal property and the community had the knowledge and peer pressure mechanisms to suppress deviance. Revenues from the sale of their wildlife had escalated annually and they had built a school, clinic and a grinding mill from the proceeds.

One of the foundation's trustees opened the question time. "We are pleased," she said, "to learn that you are getting large sums from your wildlife which has contributed dramatically to your development. But what is the impact of this exploitation on the biodiversity of your area? How do you count your animals to ensure that you are not driving certain species to extinction?"

After some complex phrases were used by the interpreter to translate the word "biodiversity" into the local language, the chairman rose to reply. With a smile he commented, "We know that you people from overseas want to count animals by aeroplane, and have many papers with figures before animals can be used. But I must be honest and tell you that we do not count each of our animals. Even if we had an aeroplane, we could not count animals in the thick bush here. But we know that wildlife populations have increased because we see more of them and they are raiding our fields more intensively than before."

"But," he continued, "you should know that a general increase in wildlife is not our main concern. Yes, we like to see more kudu and bushbuck around, but they are not

central for our management objectives. What we are really concerned with are two species: elephant and buffalo. They are our focus, because it is these two species that produce high safari revenues. Since they are so important we monitor them closely." "The way we monitor them," he said, "is by watching trends. And to examine trends we look at trophy quality. Each trophy taken is carefully measured; for elephant it is tusk weight, for buffalo the horns are sized by Rowland Ward measurements. These measurements are taken in each instance by the safari operator, the National Parks staff and our own game scouts. Since 1992 we have kept these records and over time can determine trends in trophy quality. If you want to see paper with lots of figures," he added with a twinkle in his eye, "we can show it to you."

By this time the chairman was full stride. "Now," he said, "if we see that trophy quality is improving we increase the quota slightly for the following year. But if we see that it is dropping we decrease the quota since quality is a greater determinant of our safari revenues than quantity. We want to continue to receive high wildlife revenues indefinitely, and limiting quotas is our investment in the future. In our last assessment," he went on, "we saw that buffalo trophies were continuing to improve and so we increased the quota. However, we saw that tusk size for elephant trophies were declining and so we have cut the quota."

"What about generating income from your wildlife through photographic tourism?" was the next question from the visitors. "By all means," replied another committee member, "but it is difficult to show tourists elephant and buffalo in our thick bush. However, we can show them rare birds, and visitors are interested in the beauty and fishing that they find on the Zambezi. We have already leased land on the river to two tourist operators and we are maintaining the riverine habitat and restricting settlement patterns."

A number of other questions were posed on issues like problem animal control, strategies in times of drought, compensation for crop depredation, control of fishing and wood-cutting, the ivory trade and locally managed tourism. To each the community had a reply which showed insight and previous discussion. When asked about their Mozambican neighbours the Committee commented: "They have copied our programme and now their animals are increasing. Since these animals know nothing about borders they move back and forth between us and we must now co-ordinate our management with them, and also with the Zambians. This would not be difficult, since we meet them and drink with them every weekend. The problem is that our governments don't like us freely crossing these borders."

"What are your other problems?" was the final question. "There are three main ones," was the reply. "Firstly, this business of managing wildlife takes time and transport. We have to constantly meet with the safari operator, National Parks and the District Council. Secondly, it is difficult to manage our money. We are not trained in book-keeping and there is no bank here."

But, for the community, the biggest problem was uncertainty about the future. "We don't really know how long government will allow us to keep these animals and the revenues they generate. We don't know how long government will allow us to lease sites on the Zambezi and keep the proceeds. Government knows, as we have learned, that these things are extremely valuable and government may take them back. If that were to happen we would abandon our quotas and self-imposed restrictions and take

what we can without being caught." This was the sting to my tale, and with it the meeting closed.

My tale is too brief to cover all aspects of Chapoto's sustainable use programme. The Wildlife Committee's presentation did not reveal the internal divisions which exist within the community or the ongoing disputes it has with the district council, since these are not matters to be discussed with visitors. However, the dialogue I have narrated does illustrate loci of incentive dissonance which are of general relevance. I identify five important loci of incentive dissonance below.

3. Loci of Incentive Dissonance

3.1 Values and Goals

Underlying our narrative two sets of values can be discerned. The visitors were concerned with species preservation and biodiversity. The people of Chapoto were concerned with sustainable productivity. This is not surprising, given the cultural and economic location of each party. For those located in urban and industrialized society wild life and habitat has little direct economic significance and emphasis is placed on the intrinsic or recreational values derived from these resources. Our definitions of conservation are couched in abstract terms such as "biodiversity" and "ecosystem maintenance" and our objectives become those of the maintenance of species and habitats for aesthetic, recreational or scientific purposes. Frequently our strategy is that of creating state-run protected areas for "core conservation," with the adjunct of fostering sustainable use outside such areas in recognition that rural peoples effectively determine the health of most of the world's biodiversity and demand "equity" in access to its benefits.

For rural farmers and pastoralists where the presence of wild land and wildlife has important economic implications, conservation incentives take a different, more instrumental form. Conservation is for them an investment (in direct or opportunity costs) for present and future value, the goal being the maintenance or enhancement of their livelihoods. Sustainable use <u>is</u> conservation, whether it involves regulated off-take of biological productivity or the designation of areas for tourism enterprises.

There is nothing inherently incompatible in the two incentive profiles I have just described. The differences between them can be seen as differences in means-end sequencing, the one stance being livelihood enhancement as a means to conservation and the other being conservation as a means to continued well-being. Dissonance arises when the two are brought together in one arena of action and where one stance is accorded what Hirschman has called "privileged problem" status.[vi] At present the tendency is for international intrinsic and existence valuations to be accorded higher order level status and for project strategies to regard local and instrumental conservation incentives as lower level factors to be co-opted in the pursuit of these values. This does not work. Aside from their inherent merits, local incentives have a powerful veto dimension. Unless they are accommodated, international values and goals will be subverted by local responses ranging from defiance to covert non-compliance.

If the Global Environmental Facility (GEF) and the Convention on Biodiversity (CBD) take this point seriously, they will need to re-think their conceptual and programmatic compartmentalizations. The CBD, for instance, by virtue of the

language of the Convention considers the concepts of conservation, sustainable use and equity as three distinct and separate issues. As a result, activities associated with each are developed separately. Local perspectives roll these three into one interactive bundle and programmatic interventions are unlikely to work if they are not responsive to this synthesis.

3.2 Proprietorship and Tenure

Our tale underlines the importance that the people of Chapoto ascribe to local proprietorship. The conferment by the state to them of a direct authority over the use and benefit of these land and wildlife resources had been the catalyst to mobilize their conservation incentives, stimulated a sense of responsibility and launched them into a new mode of management requiring skills in handling the exchange values of their natural resources. The conferment of proprietorship had, however, been one of programme, not legal entitlement. It was therefore incomplete, lacking tenure or long-term security of access. This insecurity led them into gloomy prognostications of the future. Without proprietorship their incentives for conservation would falter and fail.

Local incentives thus indicate devolution in proprietorship. Unfortunately, establishment incentives tend to reset it. These pressures include the bureaucratic mind, disposed to the centralization of authority and the technocratic mind, which is disposed to see devolution as the surrender of professional management to the vagaries of cost/benefit decisions by unsophisticated peasants. They also include the appropriative incentives of central political elite and their private sector allies. Whatever the specific configuration of incentive is, the result is commonly that "community-based" resource management initiatives turn out to be efforts to co-opt or bribe local peoples while authority still remains firmly held in state hands. This is institutionally fatal, since when authority and responsibility are separated institutions rarely perform effectively.

These two incentive sets can be harmonized, however. The answer lies neither in community autarky or state autocracy. It lies instead in as a redefinition and acceptance of complementary and mutually supportive roles, local organization being given the authority and responsibility necessary to carry through local incentives and the state accepting a supra-local coordinative role with its arbitrative, regulatory and extension functions.

This is largely a political issue to be negotiated in national arenas. International agencies do, however, have a responsibility to facilitate his redefinition. Firstly, projects and programmes which address this issue with clear direction should be given priority. Secondly, international agencies can facilitate policy debate on the issue, using the networks of professional and academic skills existing in national and regional networks.

3.3 Science

My third locus of incentive dissonance is science - the views of what it is and how it should be used. The Wildlife Chairman's wry reference to counting animals by aeroplane and "having many papers with figures before animals can be used" is a colourful outsider's view on international conservationism's reliance on high-tech quantitative modelling to monitor and predict ecological status. The incentives for this alliance between ecological science and international environmentalism are

strong. Scientists gain a powerful clientele,[vii] while governments and agencies "seek a scientific algorithym to reduce subjective decision-taking on whether or not to sanction certain uses," with the aim of reducing uncertainty in policy and practice. [viii]

Rural farmers such as those in Chapoto have a similar goal. Dealing with uncertainty is a continuing factor in their lives and risk-aversion a pervasive feature of their farming strategies. When given the opportunity, they use a methodology of the highest scientific credentials - experimentation. Chapoto's monitoring of trophy trend is elegant in its simplicity, robust in its empiricism, efficient in its low administrative costs and striking in its tight application to management decisions. It is also pregnant with potential for the development of locally-based environmental science which moves beyond issues of species off-take. Such science, flexible in its foci and dynamic in its analysis, is far more important than the static domain of "indigenous technical knowledge," the box to which we condescendingly assign local insight and experience.

People like those at Chapoto have problems with the scientific environmental technicism of governments and international agencies. They do not have the resources to conduct it themselves and its conduct by others involves a significant loss of control. They see it as a device which can be applied to stop use which their own science indicates is viable. And they have a healthy scepticism of its ability to produce the predictive certainties which are expected of it. In this they have allies amongst environmental scientists concerned with evolutionary biology and system approaches to ecology which extend the scope of investigation beyond physical and biotic data to include the structures and dynamics of human activity. Scientists in this school recognize the inherently contingent nature of scientific knowledge and emphasize its role as an actor, with policy and management, in social experiment.[ix] They recognize that sustainability is a social goal, not a "fixed end-point to be reached but a direction that guides constructive change." [x] As Fuentes puts it, "… sustainable development is a trajectory within certain bounds, rather than a particular state."[xi]

This perspective on professional science's epistemology and role is cognate to the local science my tale has illustrated. In its applied form it has "emerged regionally in new forms of resource and environmental management where uncertainty and surprises became an integral part of an anticipated set of adaptive responses." [xii] Dissonance remains, however, where bureaucracies retain the expectation that science can provide a priori certainties. As Constanza remarks, "… most environmental regulations … *demand certainty* and when scientists are pressured to supply this non-existent commodity there is not only frustration and poor communication, but mixed messages in the media as well."[xiii] One can also add that this pressure is a perverse incentive for the integrity of science itself, since it carries with it the temptation to assert as definitive that which is tentative.

The cognate nature of new directions in conservation biology and local science, both acknowledging indeterminacy and emphasizing experimentation and adaptation, holds vast potential for improving conservation science and enhancing its impact on policy and practice. It is as yet under-exploited, with old oppositional constructs still common. Science is still regarded as specialized domain outside the realm and mandate of local people. Our language often betrays this, as when for instance we read the following criterion for sustainable use: "Governments involve local people in decisions affecting the use while continuing to have management decisions on science."[xiv] The GBF and the CBD should take pains to avoid the dichotomizations

and condescension of this stance and strive to build synergy between professional and citizen science.

Specifically, the GBF and the CBD should invest significantly in the facilitation of a new profile for the nature and role of science and its insertion into the policy and practice of sustainable use. One of the best mechanisms to achieve this is through the sponsorship of debate involving rural managers, policy makers and in scholars at regional and national levels, since these are the arenas where professional and local science interface. IUCN's Sustainable Use Initiative has taken this decentralized approach over the past four years with highly positive results.[xv]

3.4 Socio-Ecological Topography

Potential "lack-of-fit" between social and ecological topography can constitute another source of incentive dissonance. The institutional requirements of a local natural resource management regime such as Chapoto include social cohesion, locally sanctioned authority and co-operation and compliance reliant primarily on peer pressure.[xvi] This implies a tightly knit interactive social unit spatially located to permit this. However, while social topography suggests "small-scale" regimes, ecological considerations tend to mandate "large-scale" regimes. This may arise from ecosystem considerations or when key resources are widely dispersed or mobile, as in the case of Chapoto's elephant and buffalo. Economic considerations may also dictate "large-scale" regimes where market factors require that several proprietorial units manage and tender their resources collectively.[xvii] There is no inherent reason why social and ecological topographies cannot be harmonized, although this requires context-specific institutional engineering through negotiation. Often this will involve nested systems of collective enterprise between proprietorial units. Built upward in this fashion such larger ecosystem units of management have a built-in incentive to spread, as in the case of Chapoto's aspirations for collaboration with their Mozambican and Zambian neighbours.

Dissonance arises when larger ecosystem regimes are imposed rather than endogenous. Such impositions in the form of ecologically-determined project domains often force together social units which have not negotiated between each other or worse still cut through existing social units. In so doing they concentrate on ecological sustainability at the cost of ignoring the institutional sustainability on which it depends.

The GBF and CBD should keep in mind that project approaches which start with a defined land area may not have as much potential as those which start with a focus on social units of organization. Such units may effectively manage large land areas, and may be in a position to sponsor internal incrementation through example and mutual interest.

3.5 Project and Programme Implementation

Projects and programmes are the principal, though not exclusive, contexts bringing together international and local incentives for sustainable use. These contexts juxtapose two cultures of planning and implementation. The one is reductionist, bureaucratic, directive and contractual, operating through the rigid time and budget frames of a "project cycle." The other is incrementalist, personalized, suasive and consensual, operating through experiment and adaptation set in indeterminate time-frames.

These differences have led to the "blueprint or process" debate amongst implementational specialists.[xviii] I cannot here deal with all the relevant issues and touch on only one, that of time-frames. For various reasons governments and donor agencies typically operate in project cycles far more condensed in time than that required for the institutional learning which must take place before local regimes can harmonize their modes of implementation with those of external partners. Such institutional learning goes far beyond the impartation of knowledge and skills by external agents. More fundamentally it is about experiential adaptation of roles and norms in new circumstances within local social units themselves.[xix] Knowledge and skills required by individuals do not suffice on their own; institutional learning is a collective process of adaptive interaction responsive to external and internal change. It takes time. At whatever point in the learning curve we place Chapoto we should bear in mind that their perspectives were the product of a 9 year evolution in status and experience.

4. A Concluding Comment

Most of what has been said in this paper is not novel for current debates on conservation. However, the points I have made do not seem to have reached the threshold of operational prominence they deserve. The loci of incentive dissonance mentioned tenaciously remain in a plethora of policy and programme examples, largely because of the status asymmetry, which characterizes the interplay between local and global benefits in biodiversity. A change in this situation cannot be effected by any simple policy mandate. As Adams and Hulme have commented, "In an unpredictable world - complex, diverse and contingent, with goals that are constantly refined and redefined, the idea that the 'right policy' can be identified and then indefinitely pursued is an historic artifact." [xx] A change from the current intractibilities of incentive dissonance must itself be a process of adaptive management involving experiments in new combinations of science, policy and practice. The scientific and technical bodies of the GEF and the CBD are well placed to facilitate this process, and if they have the vision and resolve to do this they can contribute immeasurably to a coalition of international and local conservation benefits which moves away from oppositional towards incentive synergy stasis.

Notes and References

[i] An earlier version of this paper was presented at the STAP Expert Workshop on the Sustainable Use of Biodiversity in Kuala Lumpur, 24th to 26th November, 1997

[ii] Southern Africa Sustainable Use Specialist Group (1996) Sustainable Use Issues and Principles. Harare: IUCN, p. 4.

[iii] D.W. Bromley (1994) "Economic Dimensions of Community-based Conservation," in D. Western and M. Wright, eds. Natural Connections. Perspectives in Community-based Conservation. Washington, Island Press, pp. 428-447.

[iv] Further detail on Chapoto can be found in R. Hasler (1994), Agriculture, Foraging and Wildlife Resource Use in Africa. London: Kegan Paul, 1996.

[v] A large body of literature exists on the CAMPFIRE Programme. A good summary is to be found in S. Metcalfe (1994) "The Zimbabwe Communal Areas Management Programme for Indigenous Resources," in D. Western and M. Wright, eds. Natural Connections. Perspectives in Community-based Conservation. Washington, Island Press, pp. 161-192.

[vi] A. O. Hirschman (1963) Journeys Towards Progress. New York, Twentieth Century Fund.

[vii] Many earlier initiatives in the creation of protected areas were based on the argument that conservation was necessary for science. See W.M. Adams (1996) Future Nature. London: Earthscan, pp. 90-97.

[viii] R.B. Martin (1997) "Criteria for Sustainable Use: Who Wants Them?" Paper presented to the 7th Session of the Global Biodiversity Forum, Harare, June 1997.

[ix] C. S. Holling (1993) "Investing in Research for Sustainability." Ecological Applications 3(4) pp. 552-555.

[x] Lee, K.N. (1993) "Greed, Scale Mismatch, and Learning." Ecological Applications 3(4) pp. 560-564

[xi] E. R. Fuentes (1993) " Scientific Research and Sustainable Development" Ecological Applications 3(4) pp. 576-577.

[xii] C. S. Holling, op. cit.

[xiii] Constanza, R. (1993) "Developing Ecological Research that is Relevant for Achieving Sustainability." Ecological Applications 3(4) pp. 579-581. *Emphasis is original.*

[xiv] SSN (1996) Criteria for Assessing the Sustainability of Trade in Wild Fauna and Flora. Wildlife Use Working Group of the Species Survival Network. Humane Society of the United States, Washington DC, 4 pp.

[xv] For further detail see SUI (1996) Factors Influencing Sustainability. Washington, DC. Sustainable Use Initiative, IUCN. 14 pp.

[xvi] For elaboration see E. Ostrom (1990) Governing the Commons. The Evolution of Institutions for Collective Action. Cambridge, Cambridge University Press, pp. 88-102.

[xvii] M.W. Murphree (1996) "Approaches to Community Conservation," in Final Report of the African Wildlife Policy Consultation. Sunningdale: ODA, pp. 153-188.

[xviii] For an excellent recent discussion, see R. Bond (1997) Operationalizing Process: the Experience of the First Decade of the Monerugala IRDP in Sri Lanka. IDPM paper No. 50, Institute for Development Policy and Management, University of Manchester. 108pp.

[xix] S. Jentoft (1997) "Beyond Rational Choice: Implications of a Broadened Institutional Analysis for Fisheries Management." Common Property Resource Digest, No. 42, pp. 8-9.

[xx] W.M. Adams and D. Hulme (1997) Draft manuscript personally available to the author.