

## Article

# Bridging the Gap Between Research Planning in 'Sustainable Development' Projects: lessons from the Wild Coast

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The last decade has been a remarkable period for environmental research in South Africa. The state's commitment to the cause of sustainable development, in the form of an 'Integrated Environmental Management' (IEM) strategy, has been progressively embellished. Environmental Impact Assessment (EIA) studies used to be the practical content of IEM conceived as a means to 'balance' the demands of 'Conservation' and 'Development' (Council for Environment 1989). Today, EIAs are simply one tool within a framework that is promoting IEM as a strategy to identify potential synergies between local circumstances and project proposals. The emphasis has shifted from minimising the negative consequences of 'development' to creating, and improving the quality of, environments. The insinuation is that any project can be implemented in any setting as long as it fulfils designated standards that define the type of environment that is desired. Furthermore, environmental researchers can draw upon a broadening array of legislation and regulations that define the standards to be met by development projects. They can also draw upon a host of methodological guidelines and research methods that help to redefine the way development is conceived and implemented.

Nonetheless, this progress cannot be taken at face value. Environmental researchers are still engaged in what is really a grand experiment. Here we draw attention to one obvious – and unresolved – issue facing environmental researchers: how to bridge the gap between research and development planning. Applied environmental research begins with the task of making sense of ecological relationships, but ends up being pre-occupied with development planning. It cannot be otherwise. Rigorous, empirical research is the standard that employs the scientist, but this is only the beginning for successive

translations of data; first, into conclusions about ecological relationships and, thereafter, the conclusions into options for changing those relationships; the chosen options into recommendations on how to bring about desired changes; and, finally, summation of the recommendations in a development plan.

Our purpose is to show the analytical steps which researchers must take beyond orthodox procedures in order to bridge that gap. This essay is based on one applied research project. We trust, nonetheless, that it helps to bring into focus the complexity of the experiment in which environmental researchers are engaged and methodological issues pertinent to inter-disciplinary research. Our starting point is the question of how to link the study of ecological relationships with development planning. Here, we suggest an answer by focusing on three issues:

- integration of research and planning, recognising that they are different exercises involving different logical progressions;
- the significance of the qualitative features of an eco-system, recognising the difficulties of assessing their significance amidst a propensity of researchers and planners to concentrate on quantitative features; and
- the significance of context, notably the particular dynamics of ecological relationships in a given situation, recognising the difficulty in distinguishing the particular and the general.

### **Encountering the gap**

We were involved, as a regional planner and as an anthropologist respectively, in the socio-economic component of the Transkei Inshore Fisheries Programme. This project was designed to assist the Eastern Cape provincial government in planning development of the Wild Coast. A particular responsibility was to assess the conservation and exploitation of marine resources and tourism opportunities.

The Wild Coast, a well known tourist destination, is situated in the former Transkei 'homeland'. Socio-economic conditions are marked by material poverty, high levels of unemployment, and male absenteeism. These features are pronounced in the rural areas, where agriculture rarely meets basic subsistence needs. Households are generally large by urban standards, and women-headed households are often the most vulnerable to severe poverty, due to the absence of a husband or male relation, limited formal employment opportunities, and pervasive discrimination against women. Migrant work contracts and pensions are critical sources of income, but there are significant informal sources such as marijuana cultivation.

These general conditions reflect the failure of development planning under the 'homeland' system. Formation of the Transkei republic in 1976 marked the beginning of long-term erosion of the economy of the Wild Coast. Tourism declined, in part due to poor state management of the industry. For instance, tourist confidence declined rapidly in the face of centralisation of the issuing of permits to visit nature reserves and camping sites, exacerbated by poor communication between official agencies and prohibition of camping outside designated areas. In turn, local residents' micro-tourism enterprises collapsed. By the early 1990s, the tourism industry had all but collapsed as a result of political violence in the region and beyond. In addition, the deterioration of socio-economic conditions for residents was compounded by wide-scale retrenchment of migrant workers in the 1980s and 1990s, and some devastating floods followed by drought in the early 1990s.

State management of the marine resources has been haphazard, leading to reports of a general decrease in these resources (Hockey 1988, Van Der Elst 1989). For instance, permits for commercial exploitation were introduced in the 1980s, but lack of supervision led to extensive exploitation and, in turn, to the rescinding of most permits in the early 1990s. However, as economic conditions in the Transkei deteriorated, the coastline became a destination for the poor in search of resources for survival, and informal commercial exploitation of the resources, notably shellfish, continued illegally (Robertson and Fielding 1997). These pressures were answered by a government proclamation that excluded any settlement within a kilometre of the coastline. Apart from putting pressure on inland settlements, people lost access to critical resources such as grazing land and spring water, both of which are reportedly better at the coast than inland. In the 1980s, the Transkei boasted an innovative conservation policy and regulations, but their application was limited as a result of poor training of staff and the indifference of government departments.

The Transkei Inshore Fisheries programme was a response to wide-spread concern about the state of marine resources along the Wild Coast. It was conducted by the Oceanographic Research Institute in Durban, and funded by the Development Bank of Southern Africa. Marine resource degradation was the rationale for a three-stage programme:

- a survey of marine life along the Wild Coast, to assess the condition of these resources;
- socio-economic research, to 'to determine the most effective ways of exploiting the marine resources, from the viewpoints of efficiency, equity and sustainability' (Robertson and Fielding 1996:2); and

- development planning; to 'identify the elements of a possible support programme and investigate the technical, financial and institutional aspects of the proposed investment project' (1996:2).

The second stage involved two studies commissioned after completion of the first stage. They were conducted at the same time, in December 1994/January 1995, but independently of each other. The marine biologists did a questionnaire survey (designed by ORI, with minor input from us), along the entire coast, in order to assess the extent of human use of marine organisms. In view of time constraints (13 days for field research; report within three months), we opted for a case study of a locality in order to illustrate the inter-relationships between local residents, marine organisms, tourists and tourism enterprises (Kiepiel and Quinlan 1996). This stage was expected to run into the third stage; the research reports being the basis for management planning of the Wild Coast's marine resources.

The design of this programme was not unusual. However, such practical arrangements constrict the methodological aspirations of this type of programme and, inevitably, the researchers must grapple with the consequences. In our case, the socio-economic research was supposed to provide information that would account for the context of marine resource use. Yet it also presumed that the bio-physical and social scientists would step into each other's disciplinary domains. The marine biologists would do socio-economic research to amplify the results of their initial survey. We would conduct bio-physical research in terms of exploring the ecological relationships between humans and marine life. Faced with compartmentalisation of the research on the one hand, and, on the other, an imperative to integrate the research, we had to construct an analytical framework as we worked. Sponsors of this type of research want practical answers, it must be remembered, not theoretical explorations.

We started with the ideal of integrated research, but defining 'integrated', and acting accordingly were achieved more in the breach than by design. We examined the political economy of the region, in order to gain insight into how national and international economic forces were manifested in the study area. We were aware of the dangers. Starting with a quantitative methodological approach could endorse the view of marine resource degradation as the problem, and as a direct function of poverty. This affirmation of the programme's rationale could dictate a solution in terms of maximisation of economic growth, through the commercialisation of the fisheries and mass tourism. This solution could be supported, moreover, in view of residents' statements about their struggles for survival, and need for jobs and basic infrastructure. Our

defence was to employ a standard caveat; namely, that a researcher's assessment of what is significant is a product of the filters built into the design of projects.

This caveat led us to qualify our observations. The residents' use of the sea, for example, was insignificant in terms of the numbers of people involved and the cash incomes generated when seen in comparison with migrant wage work and marijuana cultivation. Likewise, there was considerable variability in how people made use of the sea. Bearing in mind the decline of tourism during the 1980s amidst escalation of political conflict, perhaps the sea was used less than in the past and, therefore, perhaps there was not a linear relationship between resource degradation and poverty. Accordingly, we held in question any judgement that the marine resources were being over-exploited.

Furthermore, we recognised that commitment to 'sustainable development' emphasises doubts about orthodox models of development. In short, the notion of *development* is supposed to be assessed as thoroughly as the ecological conditions at a research site. However, we were aware that such assessment was likely to be constrained by the multi-disciplinary format of the programme (Quinlan 1993). There are two principal points of contention with regard to the multi-disciplinary format. Firstly, the practical ordering of a programme invokes a standard positivist approach. It suggests that the research agenda drives the development agenda in the sense that the results of scientific research will reveal development options. Yet it is patently obvious that the development agenda of a programme actually drives the research agenda in practice, and in the light of the fact that doubts about development stimulated global environmental concern. Secondly, and generally speaking, the multi-disciplinary format portrays development as human interventions that upset the natural order of an eco-system. Research is designed, therefore, to indicate interventions whose 'impact' will not be too great upon nature. The net effect is that development is seen as an external variable that takes the form of politically motivated and, hence, subjective development plans (see Quinlan 1997). Rather than attempt to analyse such a problematic variable, the assumption is that the authority and objectivity of science is an effective counterbalance to the subjective intentions of people. Scientists are directed accordingly to arbitrate development agencies' and subjects' interests. The irony is that development is actually placed beyond the realm of systematic scientific enquiry in a project, yet presumed to be controlled by science.

One might object that the inclusion of social scientists in programmes, and innovative methods of participatory research (PR) to assess qualitative, subjective variables, ensure incorporation of the development agenda into the

research, and enable systematic enquiry of complex ecological relationships. We do not deny the intent, but we contend that form often belies practice. The purpose of these means, to encourage theoretical and methodological innovation in research, and creative planning, is often subtly contradicted by other elements in the design of research programmes. A case in point is the common justification of PR, principally as a way of gaining access to 'local knowledge' and, specifically, as a tool of the social scientists in a team. What is at issue here is restriction of the scope for a reflexive analysis. Reflexivity is the fundamental rationale of PR and it is supposed to ensure systematic scrutiny of development options that are suggested by data on ecological relationships. This is not to deny that PR conducted within the multi-disciplinary format can provide useful insights into how people conceive of, and make use of, their environment, and their likely responses to different development proposals, and, hence, can inform subsequent development planning. However, the necessity of adopting a reflexive stance throughout all components of a programme is often sidelined, particularly in programmes that rely on separate, disciplinary research reports which are then edited into a single planning report. The reflexive tenor of the social scientists' reports tends to stand awkwardly next to the positivist research of the bio-physical scientists. Faced with the need to find a basis for combining the research, the temptation is to view the 'local knowledge' and different research results as a host of 'facts' to be weighed against possible development options. The extent to which they inform development planning is inevitably a rather arbitrary process. Consequently, PR in a multi-disciplinary format draws attention, at best, to the tension between de facto exclusion of development from scientific enquiry, and the aspiration to critically review the notion and practice of development. At worst, it is a panacea to the 'subjects' of the research, rather than serving to change the premises and form of research programmes.

### **Bridging the Gap: methodological foundations**

We acknowledged our doubts about orthodox research methodologies by exploring the implications of our approach to the work in hand. First, commitment to an integrated perspective meant trying to understand the totality of ecological conditions. Recognising that the development agenda drove the research, meant that development would have to occupy a central place in our study. Acknowledging the difficulties of putting the study on a different footing, meant paying attention to our methodology.

Bearing in mind the ideal to understand the totality of the situation, we drew the following guidelines for our analysis:

- 'socio-economic' and the 'natural' systems interact;
- social and bio-physical structures are interrelated;
- in order to access interactions and interrelationships, we would be less concerned with how particular categories of people (eg tourists, ghillies, women) extract marine resources, and more with how they interact with each other in pursuit of benefit from marine organisms;
- if people do something regularly, it must have some value to them irrespective of any assessment of its economic utility in comparison to more standard means for survival (eg migrant jobs), or judgement of its negative consequences (eg degradation of resources); and
- development should be acknowledged as an historical phenomenon that had shaped, and would continue to change ecological relationships in the locality.

With regard to development, we acknowledged criticisms of social science analyses. From a regional planning perspective, for instance, these criticisms were particularly relevant, and can be summarised as follows:

- regional planning has tended to focus on improvement of material conditions (Dewar and Kiepiel 1997) and, therefore, has focused on quantifiable problems, despite recognition that development planning is also about improving the quality of people's lives (Bartelmus 1986, Dewar and Ellis 1979, Upreti 1994) In short, it has lost direction by endorsing reductionist thinking. It has become synonymous with economic development (Todes 1993), for example, in juxtaposition to other social concerns such as the preservation of the natural environment;
- although regional planning has acknowledged the importance of context in defining problems and strategies, in response to simplistic spatial descriptions (Dewar et al 1986), there is no consensus on how to elucidate that context and to ascertain its significance. Brandon and Wells (1992), for example, conclude that linking conservation and development objectives is extremely difficult, even at a conceptual level. Furthermore, although every shift in approach contains something useful for researchers (Dewar and Kiepiel 1997), 'new' directions rarely provide detailed explanations and guidelines for innovative practice (Bartelmus 1986).

A point taken was that orthodox development planning has led to the failure of many projects as a result of ignoring the significance of the particular and the peculiar in a given situation upon the design and implementation of a plan. The necessary focus on the performance of an eco-system, prior to planning,

dictates specification of context and, in turn, an interpretation of the qualitative experience of life. Accordingly, we concluded that the positivist foundation of much environmental research is appropriate for identifying material problems of human welfare, but not for understanding how an eco-system is performing, and will perform once subjected to a particular development plan.

This is a point at which bio-physical scientists often part company from social scientists on the grounds of the apparent incompatibility between deductions based on observed evidence and inferences based on interpretation of evidence. Although researchers have limited scope to engage with the tenets of science during an applied project, an engagement is inevitable. We do not see an unbridgeable chasm in this instance (see Davies 1995, Light and Katz 1996, Lovibund 1994, Dyson 1989). We do assert, however, that the bridging begins with incorporation of the development agenda in the research methodology, and reflection by researchers upon the adequacy of the proposed methodology.

In the case of the Transkei programme, we outlined a position by referring to an early twentieth century understanding of regional planning. This approach emphasised the indivisible character of natural conditions and people's activities and cultural dispositions. In brief, different regions have different characteristics, which suggests that the ways of living are appropriate for the circumstances. The appeal of this approach lay in its evocation of intellectual currents which had warned against the dangers of analytical reductionism in a world committed to modernity:

Originating in the spectacle of waste and defilement, the conservation movement has tended to have a negative influence: it has sought to isolate wilderness areas from encroachment and it has endeavoured to diminish waste and prevent damage. The present task of regional planning is a more positive one: it seeks to bring the earth as a whole up to the highest pitch of perfection and appropriate use – not merely to preserve the primeval... (Mumford 1946:331)

In other words, we were mindful of 'sustainable development' thinking before the term came into use, and of the danger of reifying social, cultural and bio-physical phenomena, which accompanies efforts to describe a totality.<sup>1</sup> In sum, this approach was a useful starting point for challenging the pervasive view that conservation and development are mutually antagonistic.

The complementary anthropological caveats were that the material component of economic activities cannot be understood separately from their social component, and that the economic logic of development interventions



also requires scrutiny in view of the mistakes that have occurred (Sahlins 1974, Croll and Parkin 1992). This is a line, rather than separate fields, along which anthropologists tread. The distinction has been described in terms of emic analyses, those that evaluate the subjects' own conception and categorisations of their relationship with their environment, and etic analyses, those that evaluate the relationships on the basis of external, scientific criteria (Steward 1988, Sahlins 1974, Harris 1988, Bird-David 1992, Croll and Parkin 1992).

A long standing dictum in anthropology highlights these points. If a researcher is to make any sense of ecological relationships, the environment must be considered as a physical entity, and as imagined (socially constructed) by people who live within it. The entry point is through the domain of 'values'; specifically, how people explain use of the physical environment. By following this route a researcher begins to uncover the material and symbolic significance of bio-physical phenomena, and to show how the latter are defined as resources, and what environmental boundaries are constructed by particular use of different features. If pursued rigorously, this uncovering entails:

- historical research – to discover by contrast, changes in values as well as to suggest needs through what values have not changed; and
- comparative research on individuals' and collectives' uses of bio-physical phenomena, to indicate frequency and density in patterns of relationships, and the social and spatial boundaries of environments.

It was on this basis that we felt capable of drawing together the conservation and development concerns of the project. We looked at how marine organisms used to be, and are now constructed as resources by local residents, tourists and entrepreneurs; and, retrospectively, how poverty is relative and manifests itself differentially in the (changing) local economic context. The specific question which guided the research was: if there is value in what people do, be it a woman villager who collects mussels or a tourist who goes gamefishing, wherein lies that value? While this question enabled assessment of how and why particular marine activities were important to people, it also presumed the presence of development as an historical phenomenon in the locality, and its influence on the performance of the eco-system.

With the benefit of hindsight, we were really trying to dig deep foundations that could bear the many demands which would be made upon the study. Not only were we supposed to describe an eco-system, but also to construct an approach to 'sustainable development' which could disperse, perhaps even incorporate, pressures for conventional approaches. Following Lyle (1985), we were acutely aware that this effort could be subverted unwittingly, during

the analysis of data. The coherence of an analysis is a critical issue, in view of the inevitable reduction of data to generalised pattern and form. Not only is there the danger of misrepresentation of complex interactions, but also of simplistic translation of the results in development plans. In short, the technical and ethical aims of development plans are easily lost, giving rise to the common lament of 'lack of vision' in development plans. Accordingly, we were looking for key concepts that would hold together the research and the planning.

### **Key Concepts: need and value**

The underlying issues in question were, methodological integration (how does one accommodate the development agenda in the research?) and the performance of the eco-system (how does one measure and combine quantitative and qualitative data?). The concept of 'value' was immediately obvious as a means to address these issues. However, we realised later that 'need' was an equally vital concept to employ, but it was obscured in our analysis.

Development of any kind, be it government intervention or local innovation, occurs in the light of perceived need. The relationship between an organism and its environment is also commonly understood as a function of need. However, 'need' is often a source of methodological confusion in environmental research; indeed, there is a tendency to avoid its significance as a concept. The avoidance begins when qualitative data (eg cultural and historical information) is counterpoised with quantitative data. Social scientists examine people's overt and tacit evaluation of resources and environments. Once the notion of 'value' is introduced, the question facing the research team is how to accommodate it in an analysis that supports the development recommendations. At the risk of caricature, a standard response is to diminish its possible significance by counterposing a 'universal need'; namely, the importance of preserving the bio-sphere. If this generalisation is questioned, debate within a research team may be forestalled by arguments to the effect that development is about satisfying 'need'. The irony is that the economic and philosophical values contained within the development agenda are barely assessed, yet promoted under the guise of 'need'. In other words, research in the name of sustainable development can end up promoting externally dictated values rather than assessing need. In sum, 'need' and 'value' are terms that pervade environmental research, but often in passing rather than systematically.

We argue that need refers to fundamental requirements for life, while values are environment and life-form specific; in short, 'need' defines that which is

necessary while 'value' refers to choice. We recognise the difficulties in use of these concepts. The 'basic needs' concept in planning is meaningless, for instance, when it confuses need and the manifestation of need. Need is abstract and timeless (eg need for shelter), but the manifestation of need refers to concrete acts or artefacts (eg housing). Furthermore, they are not equivalent (eg universal need for shelter does not translate directly into a universal need for housing, because housing does not satisfy only the need for shelter). Likewise, the manifestation of need displays choice and, hence, expresses value in terms of the worth of a thing or act. However, it does not specify how or why a choice was made, nor the conditions considered in the act of choosing, all of which are criteria for understanding the value of things and activities in particular settings.

These considerations actually emerged after our analysis. At the time, our attention was on the concept of value. Firstly, this concept was our basis for challenging conventional economic arguments; namely, that planning can only proceed once financial and/or market values have been attributed to resources, even if local people do not define resources in these terms. Secondly, we were mindful of a common criticism of social science analyses; namely, analyses of value in terms of cultural attributes are often too vague for inclusion in plans. We felt obliged to recognise the truth in this criticism, but also to prevent specious use of it. Showing the significance of local cultural attributes is possible only if the concept of value is elaborated systematically; otherwise, development agencies can easily ignore them on the grounds of inconclusive representation.

We were drawn to the concept of value by questions posed by our data. By way of example, but by no means exhaustive, the questions included:

- 58 per cent of households in our survey collected marine organisms, but why did nearly as many households not do so?
- why was there no indigenous 'marine culture', in the sense of overtly stated, cultural norms that guide how the sea is perceived, used and respected?
- why was fishing an insignificant household activity, excluding the presence of 20-30 ghillies who worked for tourists in the locality where the research was conducted?
- why were mussels regarded primarily as a food source, crayfish as commodities, but oysters were not considered as a resource until recently?
- why was exploitation of marine organisms a seemingly insignificant economic activity for the local population as a whole, in relation to other activities such as migrant labour work and marijuana cultivation?

Subsequently, we explained our data in terms of absolute and relative value. Absolute value was the fundamental worth of marine organisms to the population. Relative value was the variable worth of marine organisms expressed in market transactions, and took into account the influence of tourists, tourism entrepreneurs, and, to a limited extent (in view of time constraints), commercial fishing enterprises. This admittedly crude analytical formulation was an attempt to:

- account for different processes (eg the general insignificance of marine organisms versus the evident importance of some marine organisms to some people; the presence of a marine culture, even if there were few overtly expressed, 'indigenous' cultural norms);<sup>2</sup>
- look beyond use of marine organisms, towards understanding what was fundamental in the interaction between residents, tourists, and tourism entrepreneurs;
- identify variation and hierarchy in social use and categorisation, respectively, of marine organisms;
- identify critical ecological processes which might be ignored by development interventions governed by market imperatives and current political demands.

The discussion on absolute value drew upon data on the extraction and exchange of marine organisms beyond market exchanges. Relevant patterns in the relationship between socio-economic status and use of marine organisms included:

- the population collects and consumes mussels more frequently than other marine organisms;
- the poorer the household, the greater the reliance of its members on mussels as a source of food;
- the poorer the household, the greater its disposition to categorise marine organisms as commodities and to collect them for sale, notably oysters, crayfish and seaweed, which used not to be regarded as resources;
- in qualification of the point made immediately above, the greater the distance of households from markets, the greater the disposition of poor households to re-categorise crayfish and oysters as food for household consumption.

Here we were identifying local evaluations of marine organisms, in response to the apparent absence of an 'indigenous' code for conservation of marine resources, and to the evolution of particular practices much influenced by tourism. These practices included:

- the existence of ghillies, emanating from training given in the Scottish tradition, 40 years ago, to some local men by a hotel owner;
- the sharing of mussels collected by women, for domestic consumption;
- ghillies' claims that villagers who buy their fish sometimes pay more than the market price, in recognition of their poverty (only 'rich' local residents buy fish);
- ghillies' collective assertion that their wages should not be determined by individual levels of skill, and that a common rate should apply (in conjunction with the more experienced ghillies helping to improve the skills of the less experienced). At the time of our research, they were negotiating with the manager of the hotel through which they obtain work, and which had recently re-opened, the question of what would be an equitable relationship.

Poverty was clearly a determining factor in use of marine organisms, but qualification was necessary in view of the variation in use, between households and within households, over time. Furthermore, there were parallels between socio-economic and bio-physical relationships. The poorest people used the most vulnerable/accessible organisms, thereby indicating a hierarchy in resource use; in short, the more complex the organism, the less disadvantaged the people who use it. Ghillies fishing in their own time and inexperienced tourists, for example, are the people who predominantly capture small reef fish, but game fish are the preserve of sportsfishermen and experienced ghillies working for them. Likewise, in terms of consumption, fish are generally the preserve of the wealthiest local residents and tourists (through ability to purchase them). Juvenile fish in river estuaries appear to be exploited as a source of food more extensively than adult fish in the sea. Not only are the rivers fished frequently by children, but also increasingly, it seems, by men lacking reliable cash incomes as a result of decline in migrant jobs.

These patterns suggested that marine organisms, from the residents' view, had been, and still were abundant, used intermittently and, in some cases, were not defined as resources. Therefore, there was no reason for residents to proclaim indigenous conservation codes. Access to the sea for all, was a local social welfare mechanism of constant 'value' to all the people all the time, for not being used by everyone, yet available when critically needed by some people. In sum, the sea could be described as a giving and supportive environment, however limited the actual material benefit derived from it by households (Bird-David 1990).

We substantiated this conclusion on the grounds that most households followed a similar developmental cycle (Murray 1981, Spiegel 1979, 1982).

Once a couple establish their own household, their socio-economic status rises through their employment, inheritance of property, and deployment of children as labour invested in household activities. The zenith is reached when the children, now adults, are working and still investing in the parent household. The decline begins when the children depart to set up their own households, and, for example, at a point when one or other parent has died or has retired from wage employment. The pertinent ecological corollary was that all households require access to the sea at various points in their developmental cycle: fishing in estuaries by children to augment food supplies; fishing by a husband when convalescing from illness or injury that keeps him away from wage employment; collection of marine organisms by a wife and children if the husband dies or does not send adequate remittances at any one time; fishing in the estuaries by an aged man when his own ability to work is diminishing.

We could not ignore, of course, the obvious counterpoint: the capacity of this environment to give was more often a potentiality rather than reality for most residents. In order to understand this variation, we used the concept of relative value. This concept, in addition to being a corollary of absolute value, also corresponded with a premise of the bio-physical scientists: ecological relationships form hierarchical patterns. Hierarchies presume differentiation; in human contexts, this is variable access, exchange and categorisation of resources. Variation was indicated, for example, in local categorisation of crayfish as a commodity and as food. Observation of patterns begged why and how particular forms had come about. The concept of relative value, therefore, was our means to investigate temporal and spatial variation in the values attributed to different marine organisms.

The entry point was the market economy in marine organisms, considered from two angles. Firstly, the existence of different markets and prices required assessment of the physical factors (eg time, labour) governing extraction and exchange of marine organisms. The heavy weight of mussels and seaweed poses transport problems, for example, and thus partly determines the market and the prices. Secondly, the variety of markets required assessment of the different rationales invoked by residents, tourists and tourism entrepreneurs in their exchanges.

Constraint, in a word, dictated the market values attributed to marine organisms. For example:

- there were many physical constraints upon the extraction and exchange of marine organisms. (eg weight; limited access – two days per month, at springtides – in the case of mussels);

- these constraints were exacerbated by households' variable availability of labour. In order to maximise returns when collecting mussels, for example, households need to form teams. These teams often consist of women and children. However, collection from wave-crested rocks can be improved if there is an able-bodied person who works on the rocks, and deposits mussels in a large bag which is attached by a rope to the shore, and which can be pulled in by other members;
- the opportunity cost of extracting and marketing marine organisms was often restricted. The favoured means for collecting crayfish, for example, was by use of baited lines at night. Apart from restricting access to those who lived close to the sea, this method restricted access for individual women, who were the resident majority in villages as a result of the migrant labour system, from collecting a readily marketable commodity. In contrast, the opportunity cost of sea angling, which is time consuming with no guarantee of success, is prohibitive for men whose labour is better employed in other activities (eg farming, wage jobs);
- markets were few and far between. Local residents were dependent on tourism which was seasonal. The best season for game fishing, for example, is between June and August, and thus the opportunity for ghillies to earn good incomes is restricted. Likewise, sale of seaweed was restricted to a commercial buyer whose visits were occasional and, to residents, seemingly haphazard;
- limited access to organisms meant that individuals sold their goods intermittently, and so they earned very little. We calculated that the average income for a woman, from sale of mussels for example, was less than R100 per year. Likewise, the average earnings of a ghillie, from sale of fish, was less than R250 per year;
- tourists set benchmark prices, and, being sensitive to economic forces (as de facto agents of the market economy), they endorsed local evaluation of marine organisms as abundant, by offering low prices throughout the year (eg R6.50 per kg for fish; R2.50 per crayfish);
- low prices were also endorsed by differences between tourists' and residents' cultural valuation of some organisms. 'Fatty' fish (Butterfish, Zebra fish), for example, were generally regarded as good food by residents, and kept for home consumption. Game fish such as garrick, barracuda, and bronze bream were spurned in folklore (for ailments caused if eaten), yet were generally desired by tourists;
- while this market economy was insignificant for the population as a whole,

it was valued by women in particular as a source of personal, as opposed to household, income. The significance lay in the opportunity, however limited, for women to transcend husbands' control of household finances.

This analysis justified the programme's concern about resource degradation, but it also challenged preconceptions about why the marine economy was moribund, and how that economy should be developed. It would be simply wrong to judge local residents as *the* agents of degradation. The state, commercial enterprises and tourists, had contributed to a situation whereby residents could not derive substantial benefit from the market in marine organisms, nor was there any substantial incentive for them to preserve these organisms. Uncovering these reasons for the lack of a local conservation ethic led us, inevitably, to review the practices of state agencies responsible for conservation along the Wild Coast. We concluded that conservation had not been a serious item on their agendas, in view of the lack of co-ordination between government departments, under-staffing and haphazard implementation of policies (Kiepiel and Quinlan 1997:116-7, 154-5). Our argument was later affirmed by the Wildlife Society's perception that it would have to sue the Department of Environmental Affairs and Tourism, in order to get action taken against threats of degradation of the coastline.

The thrust of our analysis as a whole was to explain why marine organisms were 'insignificant' resources in the local economy, and yet, why the population was 'dependent' upon them in a particular way, for particular reasons. Our analysis led us to recommend a local development strategy, in terms of improving the local population's control over access and use of marine organisms. We emphasised the need to rebuild micro-tourism enterprises in association with the re-emerging formal enterprises, such as re-opening of some hotels along the coast. For instance, our recommendations included opening of forest trails in the environs of hotels and of 'tea huts' - refreshment centres - at various points, all of which were to be run by local residents. Similarly, we advocated re-design of the Wild Coast hiking trail so that it would pass through, rather than avoid villages. Furthermore, we advocated re-building of the trail so that it could also be a local communication route usable by animal drawn transport. In short, we elaborated the model of 'wilderness' style tourism.

Later, casting a critical eye over our work, we had to acknowledge that we could not really substantiate our recommendations because we had not shown clearly how the research and the planning could be (and must be) articulated. In short, we had not elaborated our analytical concepts to the point where they



emphatically affirmed our recommendations. First, we had to acknowledge that our recommendations were largely a function of the political ethics and principles of contemporary environmental research. The principle of equity and the endorsement of participatory research, for instance, suggest that development planning should be inclusive rather than exclusive. In our case, the rationale of our recommendations could be intuitively grasped and politically justified in the context of the South African government's stated commitment to the ethos of sustainable development and to redressing past economic and political ill-doing. However, this appeal does not amount to rigorous substantiation of development plans because political considerations are only one facet of the methodology of participatory research. As we noted earlier, the fundamental purpose of participatory research is to ensure that the recommendations themselves are subjected to systematic analysis. This is not possible if there is not a common basis for analysis of these options, and of the ecological conditions that suggested them.

In our case, we had not defined that basis rigorously enough. We realise now that the root of our problem was the notion of need, and that elaboration of that concept is the key to bridging the gap between research and planning. Our analysis of value had gone part of the way. It provided a platform for comparison of the different interests of local residents, conservation agencies, tourism enterprises and tourists in the marine organisms, which was a prerequisite for exploring potential synergies between them. However, it intimated, rather than defined the fact that all these interests express a need of some kind and, perhaps, that those interests shared common foundations. In other words, a specific analysis of need was necessary in order to see what those interests had in common. Such analysis, rather than one that inevitably emphasises difference, would have provided a stronger platform for exploring potential synergies between the various interests in the marine organisms.

### **Planning 'sustainability': defining need**

As a point of departure, definition of need as the health and autonomy required for individuals to be able to choose how they survive (Soper 1993), would have helped us to explain more thoroughly the apparently conflicting dynamics of 'insignificance' and 'dependency'. The apparent lack of a local conservation ethic, for instance, indicated a cultural mechanism in circumstances of poverty, by which people sought to preserve *autonomy* for access to marine organisms. Accordingly, the much publicised invasion of a Wild Coast nature reserve during December 1994, and stripping of mussel stocks, should not be judged as local rejection of conservation.<sup>3</sup>

Likewise, use of the concept of need would have enabled us to assess whether particular development proposals actually encapsulate what is common in the different interests in a resource. The common agenda in our analysis of various ecological relationships, in the varied interests of different people and organisations, and in our own recommendations, was promotion of the Wild Coast as a material and aesthetic resource for local residents and tourists. Specifically, conservation and development agencies, local residents, and tourists, manifested a need for meaning, in the sense of affective ties to an environment through which a locality or a place is attributed with a distinct character and intangible value (Norberg-Schulz 1980). This led us to propose 'wilderness' style tourism on the grounds that it encapsulates this 'need'. This common translation of 'need' in development plans can be unfounded, however, if the proponents do not ask whether 'wilderness' style tourism really addresses 'need', and how does it articulate 'value'?

The point here is that the eco-tourism industry, supported by the government, continually emphasises need, usually in terms of preservation of flora and fauna, but in ways that emphasise tourists as the critical agency, by creation and stocking of reserves with the 'Big Five' animals, amongst others. Rationalisation of this 'need' has been taken largely in the direction of creating environments for tourists that re-create an image of the colonial safari (eg luxurious 'tented' accommodation), though this is now being superseded by an imagery of exclusive harmony with 'Nature'. The inherent exclusion of local residents is obviously a problem in this instance. Accordingly, researchers must consider whether and how 'wilderness' tourism can be formulated in a way that incorporates the interests of local residents, and acknowledges that they too are a critical agency for the implementation of this form of development.

A first step in that direction would be to find a common basis for discussion of the notion of 'wilderness'. In our case, local use of estuaries would have been an appropriate starting point. The estuaries were places where children played and learned to fish, and where convalescent or unemployed men would fish on occasion. In other words, the limited yet varied use of the estuaries, often for no substantial material return, indicated their qualitative significance to local residents. Conservation and development agencies shared a similar aesthetic with regard to estuaries. There were differences in outlook, of course, but common perspectives could be discerned. To conservationists, estuaries are breeding grounds for many organisms and, therefore, local uses represent a potential threat to marine life. However, conservation agencies' interest in minimal use of estuaries coincided, in our case, with the marginal status of the

estuaries in the daily lives of residents. To development agencies, estuaries are prime sites for tourist facilities (eg holiday chalets/tents; boating facilities). This emphasis of their 'recreational' value overlapped with local perceptions and uses of estuaries. One may also note that interests of development and conservation agencies can overlap. The efforts of conservation agencies to control use of estuaries can be supported by development agencies' structuring of tourist facilities and tourists' activities in particular ways (eg design, construction and layout of accommodation).

In other words, the concept of need is fundamental to any attempt to transform the way development is conceived and implemented. Overt use of the concept is necessary, in order to do justice to the methodology of participatory research. On the one hand, systematic analysis, and identification of need in its various guises, prevents prescription of the researchers' scientific and political roles. Their mediation of different interests in resources is possible only if they have identified common foundations to the different interests. On the other hand, such analysis establishes the basis for all who are affected by a project, including researchers, to consider what type of environment they actually want to create.

## Conclusion

The general point that emerges from this discussion is that development plans do not flow directly from research results, nor indeed from any ethos that guides a project, be it the notion of integrated environmental management or political democracy. All projects are governed by a broader objective: to change the way development is conceived and implemented. Accordingly, applied environmental research is not only about finding practical solutions to observable problems; it is also about creating a coherent conceptual framework that can link the political and the scientific aspects of research. In sum, the prevailing principles for research indicate the direction that researchers should take, but it is up to them to give substance to those principles.

We have suggested an answer for project-based research. Environmental researchers are required, on the one hand, to carry out a systematic analysis that distils complex ecological processes, drawing out the bio-physical, the affective, and the economic and political aspects, and, on the other, to conduct a creative exercise of synthesising the results into a practical plan of action. In order to articulate the content of both agendas, the researchers need a sound pivot. We have argued that this pivot is actually presented to researchers, albeit metaphorically, in the perceived need to improve the quality of an environment for its inhabitants. Accordingly, the first task of researchers is to ground that

aspiration in a methodology that defines need and value. As we have shown, it is the concept of need that deserves close attention.

Firstly, need refers primarily to fundamental requirements for life, and, therefore, it is an abstraction. Accordingly, however categorised (eg physical, economic, affective), need cannot be studied directly nor can different categories of need be assessed in terms of their relative importance. Secondly, it is necessary to distinguish need and the manifestation of need, recognising that the latter is the operational expression of the former. The manifestation of need is invariably a composite of different needs (eg a house manifests more than the physical need for shelter) and, thus, is an expression of choice. In practice, researchers encounter the manifestation of need through the concept of value; that is, people's evaluations of how to express need. Here we are referring to the cultural and social acts and artefacts that are studied in social scientific analyses, and to the standard behaviour of organisms that are studied in biophysical scientific analyses. This exercise identifies value in terms of the worth of something to the subject.

This use of 'value' is a preliminary step. It describes choices made, thereby directing the researcher to consider the historical and prevailing conditions that enable or dictate particular choices to be made; in short, the context for particular behaviour. The methodological significance of using the concept of value in this way is that it enables the researcher to acknowledge humans as integral components of complex eco-systems, and, thereby, to assess the performance of a system. However, the analysis of value by itself does not reveal the practical measures which should be taken to improve the quality of life or, stated differently, to expand the ability of subjects to choose how to satisfy their needs. Having drawn out how people (residents and development agencies) value their environments, researchers are obliged to identify common foundations to the different evaluations.

This is the point when the concept of need becomes necessary in order to substantiate assessments of the quality of life in an environment, and the planning ideal of sustainability.<sup>4</sup> This is also the point at which the researchers must discard a positivist approach to development planning. As much as the manifestation of need is a subjective construct of the subjects and sponsors of the research, so too the researchers' assessment of need is an interpretation. What makes the interpretation substantive, is the researchers' capacity to put different interests in an environment on the same footing.

## Notes

1. A parallel to this early concept of regionalism is to be found in anthropology in

the work of Redfield (1965a, 1965b). The danger of reification was a central theme in anthropological debates on peasants (Shanin 1971).

2. The existence of a tourism industry in the locality, based on fishing for more than 50 years, is part of a marine culture which embodies codes emanating from tourists and tourism entrepreneurs.
3. The stripping of shellfish stocks was, reportedly, also a protest against lack of access to grave sites and to trees (*Weekly Mail and Guardian*, June 13-19, 1997).
4. The underlying theoretical position for the different sciences, which we do not pursue here, is that the subject's evaluation of how to express need satisfactorily is an artifact of continual engagement with an environment, as opposed to disengaged thought (see Ingold 1992, Davies 1995).

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