

**The COBRA Project: a community-based approach to  
public engagement in science**

Andrea Berardi

The Open University, UK

[andrea.berardi@open.ac.uk](mailto:andrea.berardi@open.ac.uk)

Jay Mistry

Royal Holloway, University of London, UK

Celine Tschirhart

Royal Holloway, University of London, UK

Elisa Bignante

University of Torino, Italy

Lakeram Haynes

North Rupununi District Development Board, Guyana

Deirdre Jafferally

Iwokrama International Centre for Rainforest Conservation and Development

**Abstract**

Scientific research and communications is dominated by a command-and-control approach which lacks the ability to engage the public in managing and adapting to surprises and rapid change. These initiatives emerge from higher-scale structures e.g. national institutions, which are not always compatible with the realities and perspectives of communities. The failure of top-down, 'deficit model' approaches to science communication have encouraged communities to support an alternative, bottom-up,

culturally and ecologically sensitive approach to communication for addressing complex socio-ecological problems. This paper explores the development and promotion of a 'community-expertise' model of public engagement through the COBRA Project, a participatory project involving indigenous communities of South America. The project's aim is to significantly scale up the sharing of indigenous expertise and knowledge through photography, video and online platforms. We will present the results of how this expertise is identified, recorded and shared with national and international scientists and policymakers. We report on the conflict between the principles behind participatory community engagement and the demands of policymakers for scientific, empirically validated data, which clearly require an imposition on the type and process of data collection, analysis and modes of communication. We argue that participatory methods that engage local indigenous communities are empowering for these involved, but it is in the end up to the scientific and policy-making establishment to accept the validity of these 'non-standard' forms of science communication.

## **Introduction**

The native, indigenous communities of South America, and their associated traditional territories, occupy, or should occupy, a significant proportion of their original homeland – in the Brazilian Amazon alone, indigenous territories make up approximately 20%, or just over 1 million km<sup>2</sup>, of the region (Pimm et al., 2001). Clearly, the current and future land use of this vast area has significant implications for not only the livelihood and identity of these indigenous communities, but also global biodiversity conservation and climate regulation (Nepstad et al, 2006). It is in this context that we find the scientific community falling over themselves in order to undertake research with regards to the significance of this region, and then attempt to communicate their findings to policymakers in order to determine the region's, and the world's, future. However, this scientific communication strategy is often developed through an expert-led, top-down vision which has the potential to significantly damage the interests of indigenous peoples themselves. A case in point is the quantification and measurement of environmental externalities (including the delivery of ecosystem services for which indigenous territories are increasingly targeted) in order to support decision-making within higher

levels of governance, and in order to influence associated financial flows increasingly mobilised at international level. This, however, is how indigenous civic society organisations are viewing the situation:

“The development of [the United Nations’ Reducing Emissions from Deforestation and forest Degradation (REDD+)] tools, standards and the methodology (measurements/monitoring, reviewing and reporting) adopted is guided by ‘expert’ meetings and technical agencies often informed by Scientific research with little recognition and input of both Indigenous peoples and Indigenous Knowledge.” (Riamit & Tauli-Corpuz, 2012, p.41)

These expert-led, top-down approaches to scientific research and communication tend to focus on decoupled social-ecological systems, and present outputs in aggregate, standardised, homogenised and quantitative forms that fail to represent the perspectives and aspirations of indigenous peoples within their specific socio-ecological contexts, often directing policy making towards promoting a modernist, neoliberal and market oriented notion of community development and environmental management (Lohmann, 2011, Sullivan, 2012).

There is clearly a failure of existing science communication frameworks, and the resulting policies, for appropriately representing the perspectives and aspirations of indigenous peoples embedded within their specific environments (MRGI, 2012). As Altman and Rowse (2005) state, there is significant divergence between the goals of indigenous communities for autonomy, self-determination, and traditional landcare, and those of other stakeholders primarily interested in achieving, often contradictory, aims regarding socio-economic development, resource exploitation, biodiversity conservation, and/or climate regulation. More often than not, this is carried out with limited regard for the impact on indigenous culture, identity and their intimate ancestral relationship with their environments.

It is within this context that the COBRA Project emerged. The aim of the COBRA Project is to integrate indigenous community owned solutions within international policies in order to address emerging social-ecological challenges, through accessible and visual information and communication technologies (see [www.projectcobra.org](http://www.projectcobra.org)). The focus of our community engagement is the Guiana Shield region of South America and

involves ten partners across Europe and South America including civil society organisations (CSOs), research institutions, and a small and medium enterprise. Integral to the project is **community participation** in leading and controlling the identification, recording and sharing of information.

### **Methodology**

We championed a participatory research approach in order to stimulate communities' constant reflection and, if necessary, adaptation of practices, outcomes and impacts of the project (Reason and Bradbury, 2008). Participatory video and participatory photography were the main tools chosen to support communities in recording, discussing and sharing information. The first phase of the project engaged indigenous communities in the North Rupununi, Guyana. Our methodological approach was to actively engage the communities "from the inside" in representing their own strategies for long-term survival. We, as academic researchers, did not have predetermined expectations on what was the best way to support local communities, how and what topics would be researched, what would have been the issues emerging from community participatory activities, how the analysis would be carried out, and how this would be communicated to policymakers. It was thought that the best way to deal with all these issues was through direct discussions with representatives of the communities, support a local indigenous team charged with not only leading the activities collaboratively defined by the project partners, but to discuss and define how these activities would be carried out. We embraced the call for non-standard approaches to developing indigenous 'science' and the resulting indicators to be communicated to decision-makers, including methodology and operational practices (Calma, 2005). These recommendations were to encourage greater involvement of indigenous participation in the development of information collection and dissemination which represent indigenous priorities and worldviews, and supporting indigenous communities in contributing towards the development of scientific management and policy recommendations arising out of the process.

Our participatory approach does not imply a 'free for all' i.e. an unstructured and unfacilitated exploration. We instead introduced a loose framework (see Berardi et al., 2013) to encourage communities to engage with a wide diversity of challenges that they

may be facing, and go beyond the 'here and now' problems, which understandably is the first reaction which many communities will have when asked about their challenges and potential solutions.

The COBRA project engaged with three indigenous communities in the North Rupununi, Guyana: Apoteri (an isolated forest community), Rupertee (a savanna community located close to the main road) and Fairview (an easily accessible forest community). The identification of indicators within each of the three communities was carried out by a team of five local indigenous community researchers, who were selected by the representative local CSO and employed at the beginning of the project COBRA to engage with the wider community. Indicators were identified by asking participants within the three communities to put forward the most important elements to guarantee the community survival according to a range of challenges, and these were recorded through a participatory video and photography process (Bignante and Mistry, 2013).

## **Results**

Each community identified a wide range of crucial elements that contributed to their survival. These elements were natural resources (e.g. trees, river, medicinal plants), objects (e.g. solar panels, generators, radios), issues (keeping youth in the village), institutions (e.g. local indigenous CSOs or Government agencies) and practices (e.g. hunting, fishing, self-help). In total, the three communities identified 110 elements that determine their survival. Once this information was collected through the visual techniques, the local indigenous team edited the information into videos and photostories that were screened in each community. This crucial step provided further discussion and integration of community perspectives and information. The elements were then allocated indicators (how does the community measure the state of this important element of their survival?) and thresholds (what is the community's level of tolerance before it considers this element in a bad state?) by the local team of researchers, based on the knowledge collected through participatory video and photostories from the local communities.

The indicators resulting from this activity are highly qualitative, contextual, and cover a wide range of issues. For example, 'Timber' was identified as a crucial element for the survival of all three communities. The local team of indigenous researchers argued

that the status of timber resources was directly linked to the way local communities managed the timber resources. As a consequence, a locally determined indicator of 'Timber' is "People knowing how (equipment), what (species), why (purposes), when (growth) and how much to extract". The community determined threshold is when the "Majority of people have traditional knowledge and modern equipment to extract timber". So, to maintain a healthy environment in order to sustain the regular and predictable production of this community's basic resources for survival, and to maintain traditionally sustainable resource extraction practices in the community (environmental challenges), the community make sure they not only practice timber extraction according to an intimate local ecological knowledge, but also make sure this knowledge is passed on to younger generations. This is the scientific information which needs to be communicated to policymakers. Communities know what works on the ground, and they know how to sustain these activities for their benefit and their environment in the long-term.

## **Discussion**

Bohensky and Maru (2011), in an in-depth investigation of the academic literature dealing with the interface between indigenous knowledge and science, summarised the key arguments for integration:

- Indigenous knowledge is essential for maintaining global cultural diversity and the biological diversity with which it is intricately connected. This biological diversity will only be appropriately valued and protected if both scientists and indigenous communities benefit from this integration, especially since it is the indigenous communities who play a central role in managing this diversity.
- Indigenous knowledge can provide invaluable information for science, often filling gaps in understanding that science cannot.
- Indigenous knowledge can contribute towards increasing socio-ecological resilience i.e. the ability of communities and society as a whole to withstand disturbance while maintaining original functions and identity. Resilience is built by the simple fact that traditional indigenous knowledge adds to the diversity of perspectives and options in the face of unpredictable change.

- Recognition of indigenous knowledge has importance beyond scientific or broader societal benefits: it is about social justice, sovereignty, autonomy, and identity of indigenous peoples.

There is thus a political dimension to the use of our participatory, bottom-up approach to engaging indigenous communities. This dimension has its roots in the Freirean paradigms of conscientisation (Freire, 1970), which empowers marginalised communities by building their capacity in using tools of awareness, analysis and communication. The term 'empowerment' itself has participation at its heart, as exemplified by this definition from Maton (2008):

“empowerment is defined as a group based, participatory, developmental process through which marginalized or oppressed individuals and groups gain greater control over their lives and environment, acquire valued resources and basic rights, and achieve important life goals and reduced societal marginalization” (Maton, 2008, p.5)

In essence, the use of our participatory approach is seen as a means to give a voice to the intended 'beneficiaries' of external interventions, and ultimately enhance the ability of indigenous communities to shape what is done for their 'benefit'.

The literature tends to differentiate participatory approaches into those with functional purposes (whose objectives are to primarily increase the validity, accuracy, and cost effectiveness of the scientific research process and its dissemination) or those with empowering purposes (whose objectives are primarily aimed at directly contributing towards communities' human and social capital) (Johnson et al. 2004). It can be argued that the adoption of participatory 'citizen science' approaches primarily for lowering the costs of data collection for major global policy initiatives, such as the need for cheap labour in monitoring the implementation of REDD+ (e.g. Palmer-Fry, 2011), is potentially unethical. There is increasing evidence that participatory approaches have been used as a Trojan horse for interventions which homogenise the disparate and sometimes conflicting views of community members, legitimise extractive and exploitative processes of intervention, impose external agendas, and control or co-opt potential local resistance (White & Pettit, 2004). In addition, within the conventional scientific establishment, participatory approaches are seen to be resource intensive,

inefficient, and time-consuming, the results are 'unscientific', and the outcomes are difficult to apply through generic policy instruments as they are difficult to validate empirically or enable comparative analyses with other contexts (Gladwin et al, 2002; Hayward et al, 2004). In addition, aspects which are of significance to indigenous cultures, including spiritual beliefs; traditional social relations (including kinship rights and obligations); and socio-cultural links to the landscape, are no longer of primary importance within 'Western' scientific culture, and thus, higher level decision-makers find it difficult to appreciate the relevance of these aspects. To add to the difficulties, these aspects are not always easily measurable 'scientifically'.

Thus, although participatory research has enabled wider stakeholder groups to recognise the contextual, subjective and non-material dimensions of the indigenous socio-ecological context, there is still significant scepticism. There is a clear conflict between the principles behind participatory approaches and the demands of policymakers for scientific, empirically validated data, which clearly require an imposition on the type and process of data collection and analysis. We are therefore at a crossroads: does the scientific and political establishment continue its 'business as usual' strategy of favouring top-down, expert led scientific research and communication, or, will it open up to accepting, as equally valid, alternative participatory, transdisciplinary, visual and context-specific ways of recording and communicating what is actually working on the ground for indigenous communities?

## **Conclusion**

Our ultimate aim is to redefine the scientific communication process so that the interests and perspectives of indigenous communities are recognised and addressed by decision-makers at all levels, from local to international policymakers. A start would be to supplement existing top-down science communication frameworks with the addition of context specific communications devised by indigenous communities themselves.

Although participatory and systemic research has enabled wider stakeholder groups to recognise the contextual, subjective and non-material dimensions of indigenous life, there is still significant skepticism. There is a clear conflict between the principles behind participatory and systemic approaches, and the demands of policymakers for scientific,

empirically validated communications, which clearly require an imposition on the type and process of data collection, analysis and positioning in the public sphere.

What we do know is that it is clear that the bottom-up engagement of indigenous communities within the development, recording, analysis and dissemination of scientific information will significantly enhance their potential for autonomy and self-governance. They will also be able to engage in negotiations with a range of stakeholders, including international policymakers and funding bodies, over the resourcing of local development priorities. It is indigenous communities that have the most to lose if their territories are overexploited and degraded, and it is therefore logical to put them in charge of how scientific information about their own territories is collected and disseminated.

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