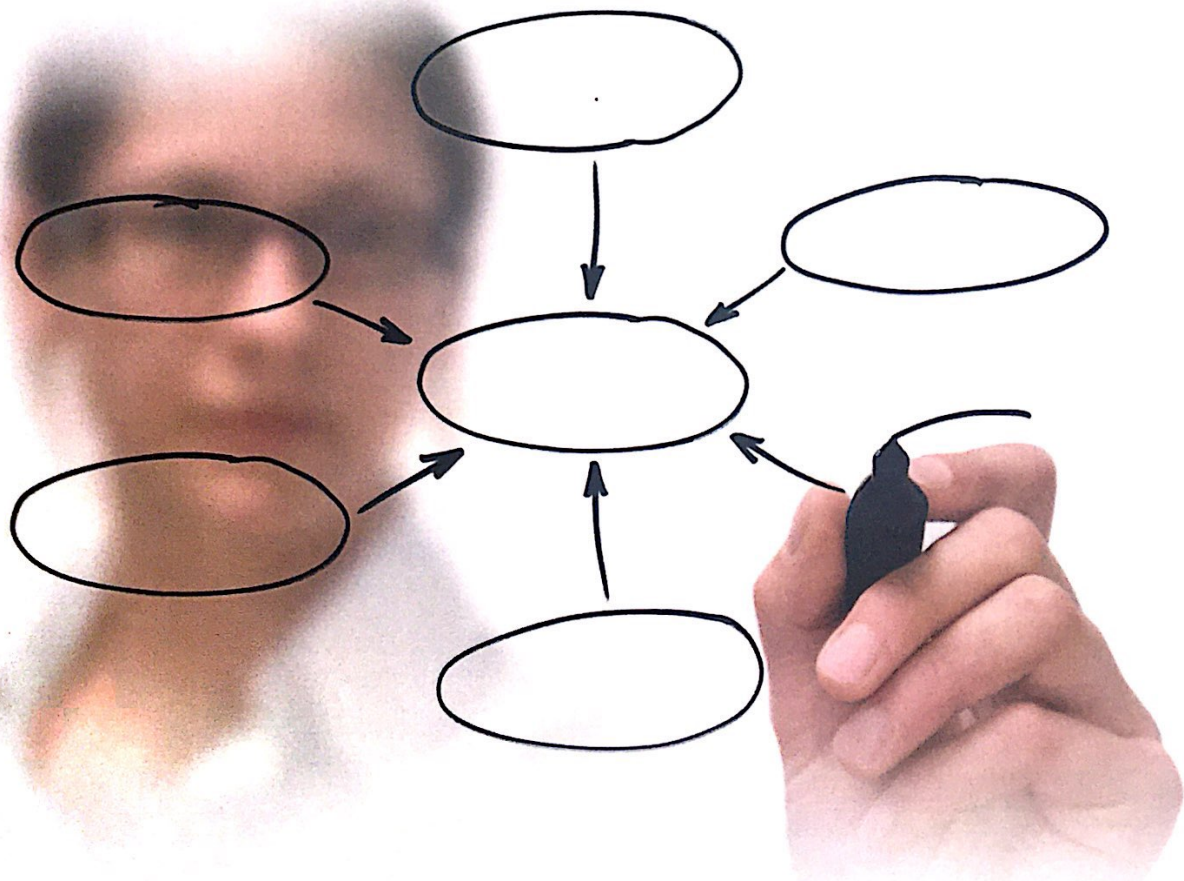


# Mapping environmental sustainability

REFLECTING ON SYSTEMIC PRACTICES FOR PARTICIPATORY RESEARCH



EDITED BY  
SUE ORESZCZYN AND  
ANDY LANE



**"An invaluable resource for all researchers interested in participatory methods for mapping environmental sustainability, covering both systemic concepts and practical realities."**

*Julie Ingram, Countryside and Community Research Institute, University of Gloucestershire, UK*

**"Inspiring and pathbreaking, the importance of this book extends beyond the crucial role of visual methods in transdisciplinary research to address the deepest challenges of sustainability itself."**

*Andrew Stirling, University of Sussex, UK*

While there is growing interest in participatory research to address issues around environmental sustainability, the focus of analysis tends to be on the results or products of the research rather than the processes involved. Addressing this gap, the authors draw on their experience of specific mapping techniques, based on different systemic concepts and theories, that have helped facilitate, explore and capture different understandings of the relationships, perspectives and boundaries within situations involving environmental sustainability.


The development of visual mapping techniques is explained and practical case studies describe their application in environmental sustainability projects, from working with farmers and their networks to using visual mapping with indigenous communities and managing coastal environments. Each case study provides a 'real world' project example from researchers with extensive experience of using these techniques to research different aspects of environmental sustainability over several decades.


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# Using visual approaches with Indigenous communities

*Andrea Berardi, Jay Mistry, Lakeram Haynes, Deirdre Jafferally, Elisa Bignante, Grace Albert, Rebecca Xavier, Ryan Benjamin and Géraud de Ville*

## Editors' introduction

In this chapter we are told the story of longstanding and ongoing research on natural resource management working with Indigenous forest communities in South America. The authors included here represent the range of people that Andrea Berardi and Jay Mistry, as lead authors, have worked with over the years. Their biographies can be found at the front of this book and reading these is considered by the lead authors to be important for a full understanding of their research story. The authors consider their experiences, their challenges and the ethics involved in what they did. Like the other examples in this book, their research drew heavily from systems theories and, as with previous chapters, the authors describe the way that their research processes evolved over time. In this case, moving away from their quantitative origins and becoming increasingly more visual and inclusive over time. This chapter places diagramming within the wider context of visual approaches more generally. Going beyond diagramming, the authors explain how they developed visual techniques relevant for their particular context, including (and combining) video, drawings and photo stories as well as diagramming. Here they explain the way that their approach and use of visual techniques helped to strengthen the capabilities of marginalised people.

## Introduction

For over 15 years, the authors of this chapter have been engaged with the Indigenous communities of the North Rupununi, Guyana, in working through complex natural resource management dilemmas.

Over time, we have developed a critically reflective approach to collaborative research with Indigenous community members in order to evaluate the type of research methods and techniques we apply, to reposition power relationships in the research processes, and analyse the immediate and long-term impact of the research intervention on participants. Why do researchers and participants engage in the use of visual methods? What are their differential motivations and how does this affect decision making during the research process? Who participates in and benefits from this research? What is the role of technology? How are Indigenous people's rights and knowledges taken into account and advanced? How do visual methods contribute to transformative change and social justice? With what limits?

Like other chapters in this book, in this chapter we discuss our transition from an expert led research approach, which was dominated by quantifying research methods imposed by non-Guyanese academics, towards increasingly more participatory, qualitative and visual approaches, and the challenges that we faced in this transition.

Not all of the authors of this chapter were involved at every stage of research (although all participated in Project Cobra – see below, and all participants are now part of the Cobra Collective – for more information about the work of the Cobra Collective, visit [www.cobracollective.org](http://www.cobracollective.org)), and not all of the individuals contributing to our evolving practice are listed as authors. However, the composition of chapter authors represents the range of perspectives that were involved over the years, and our aim here is to try and represent these perspectives within our narrative. Only individuals that have agreed to be named as co-authors in this publication are named in the text. The author's biographies are particularly relevant here and may be found in the Notes on Contributors section at the front of the book. These biographies demonstrate the personal motivations and experiences underpinning the research and reflections outlined in this chapter.

The way this chapter was developed took into account the specific circumstances of the co-authors and their preferred working practices. An initial call for co-authors was sent out by Andrea to 12 individuals. The ones that responded positively are the co-authors described in the Notes on Contributors section at the front of the book. Andrea then initiated a number of email discussions by asking individuals their views on a number of questions, including:

What motivates you to use visual techniques, such as drawings, photos or videos?

How do visual techniques affect the way we work together?

How do visual techniques affect the way we engage communities during the research?

Who do you think benefits from the use of visual techniques?

What do you think is the role of technology in the use of visual techniques?

How are communities' rights and knowledges taken into account and advanced when we use visual techniques?

How do visual techniques contribute to positive change, including sustainability and justice, within communities?

What do you think are the limits of visual techniques?

Co-authors were asked to illustrate their responses with specific examples based on their experiences of having worked together in one or more projects in the North Rupununi. These responses, and the discussions that ensued, provided the foundations for the chapter, which was drafted by Andrea. Drafts were sent out to the co-authors and critical readers for comments, and Andrea tried his best to address these. The result is what you are about to read.

## **The context: North Rupununi, Guyana**

The North Rupununi, a region approximately 8,000 km<sup>2</sup> in size (almost equivalent to the area of Yellowstone National Park in the USA, or the Greek island of Crete), is one of the most biodiverse hotspots of the world, and also home to the Makushi and Wapishana Indigenous groups. It is located in the south-west of Guyana, South America, and is characterised by a mosaic of wetland, savanna and rainforest ecosystems determined in large part by the seasonal flooding of the Rupununi River, a major tributary of the Essequibo River, which drains into the Caribbean Sea. The North Rupununi is home to an estimated 7,500–8,000 Indigenous community members which have traditionally thrived through direct sustainable exploitation of their natural resources. Contact with the outside world has been challenging in the past, and continues to be challenging now. Depending on the weather and its state of maintenance, a 450 km unpaved laterite road through almost uninterrupted and scarcely populated rainforest connects the North Rupununi to the coast, where the majority of Guyana's 746,000 people live. Politics in the region is complex. Since colonisation by Europeans, the Indigenous communities of the North Rupununi have been increasingly disempowered with a gradual erosion of resource user rights (see Mistry et al, 2009a, for an in-depth account of the region's environmental history). In 1969, shortly

after Guyanese independence from its British colonial masters, an attempted uprising in order to gain greater autonomy for the region was brutally put down by Guyanese military forces, and the region became a backwater for many decades as the Guyanese government poured resources into developing the coast while essentially leaving Indigenous communities to fend for themselves.

With the opening up of Guyana to international trade and investment in the 1990s, the North Rupununi communities have increasingly come under intense pressure to abandon their traditional land use practices in support for ecotourism, mining, oil exploration, logging and commercial fishing and agriculture. However, the historical exclusion of the Indigenous communities from the decision making process has continued, due in part to their inability to access and develop information about their own region and the political and policy process determining access and user rights. In particular, the use of the written English language underpinning most decision making processes, as exemplified through legislation that controls access to, and beneficiaries of, the region's natural resources, has effectively excluded Indigenous participation in the decision making process.

Engagement in decision making is also challenged by a myriad of other factors, including limited educational prospects and tough working conditions: high temperatures and humidity; exposure to diseases combined with poor medical facilities; low security; alcoholism; limited infrastructure; nepotism; the emigration of the most able youth; cultural loss; and feelings of helplessness in many that remain. These are just a few of the issues that communities face in their day-to-day struggle for survival. In addition to the grave social challenges, the region is increasingly facing chaotic weather patterns frequently oscillating between extreme droughts and floods. Climate change, combined with population growth, permanent settlement and the introduction of technologies such as fishing nets and chainsaws, has depleted many natural resources, with individuals having to travel further afield and work harder for less return. As exemplified by the following statements given by Rupununi residents in MacDonald (2014), community members are finding it increasingly difficult to maintain traditional livelihoods, while the attraction to collaborate with non-Indigenous stakeholders in less sustainable commercial practices and/or fall into a downward spiral of alcohol abuse, violence and depression, are increasing in the region:

‘when people go to Brazil, they adapt the, they kind of adapt to the, to the lifestyle of the Brazilians. They have practices

that is unacceptable when they return to the villages, like for example, criminal acts. Acts of violence.’ (Wapishana community leader, quoted in MacDonald, 2014: 90)

‘[youths] got into alcohol and drugs and gang violence, so when they come back here, that is what they tend to come back with. And that is really something, you know, harmful to the community.’ (Makushi elder, quoted in MacDonald, 2014: 90)

‘our culture is almost dying, I must say in all the communities, so. Some people are not, very few people are hunting, very few of our youths could, let’s say for example, make the handicrafts, make our staple foods, very few, they now rely on the older folks to, you know, make it more conveniently ... The traditional way of life is, is basically under threat.’ (Wapishana community leader, quoted in MacDonald, 2014: 91)

## **The development of a systemic, participatory and visual research approach**

The following is an account of how our systemic, participatory and visual research approach has emerged over more than 15 years of collaborative working in the North Rupununi.

The account reflects on our evolving practice as systems practitioners. Systems thinking and practice has been central to our practice right from the first research project, but our approach has changed over time, reflecting the historical changes in systems thinking and practice through ‘hard’, ‘soft’ and ‘critical’ approaches (Checkland, 1981) and Andrea’s developing understanding of the field as a result of him joining the community of systems researchers within The Open University in 2002. Initially, we very much adopted a ‘hard systems’ approach (see Chapter Two), focusing on identifying key ‘cause and effect’ relationships and the resulting emergent properties within systems ‘out there’. We then began adopting ‘soft systems’ techniques and concepts, with more emphasis on surfacing distinct systems of interests by engaging with a wide range of stakeholders. And finally, we began introducing ‘critical systems’ techniques (Ulrich, 2005; Reynolds; 2011), where we explored the impact of power relations in determining how systems of interests are operationalised in the real world (and how these could be influenced in order to promote the interests of the most marginalised).

Concurrent with our evolving systemic and participatory approaches, we began to weave into our research practice a range of visual techniques. Our research engagement in the North Rupununi overlapped with the growing academic interest in applying visual research within participatory research with Indigenous communities across the world. Our interest in applying visual research went beyond the use of diagramming techniques. Visual research is a wider field of qualitative research that uses imagery, such as photography, video, diagrams, maps and sketches, to record, analyse, reformulate and communicate knowledge (Boedhihartono, 2012). We saw participatory visual methods as a means to giving a 'voice' to Indigenous people: supporting social change through raising awareness of issues; building capacity to engender action; and as a potentially powerful vehicle for influencing decision makers at local, national and global levels. For example, 'countermapping', where Indigenous participants develop their own maps of traditional landscape use in order to contest official designations that undermine Indigenous interests, has been successfully applied to demarcate Indigenous territories (Peluso, 1995; Taylor, 2008). Indeed, Nietschmann (1995) asserts that:

More Indigenous territory has been claimed by maps than by guns. And more Indigenous territory can be reclaimed and defended by maps than by guns.

### *First contact (1999–2000)*

The genesis of our long-term collaboration in the North Rupununi emerged in 1999 when an anthropologist working in the region contacted Jay, just a year after beginning her work as a lecturer at Royal Holloway University of London – her first full-time academic post. The anthropologist relayed an urgent request by Indigenous community leaders for help with investigating water quality in the region, and its effects on wildlife and human health. An expedition was swiftly organised also involving Andrea, who had just completed his PhD. Over a three-week period and with the support of an Indigenous researcher (now an internationally renowned wildlife cameraman), the expedition set about testing water samples from a wide variety of sources (ponds, streams, rivers and community wells) used by community members either for fishing or for drinking/washing. The resulting analysis showed, within the limitations of the sampling (including the chemicals tested, the time frame and the spatial distribution of sample points), that the low concentration of



harmful chemicals identified in the water suggested that the cause for the perceived drop in fish catches may have been as a result of other factors. However, some wells had very high acidity levels due to the presence of acid sulphate sediments in the subsurface. Water extracted from these wells could result in toxic contamination from dissolving water receptacles if these were made of, for example, aluminium (Mistry et al, 2004).

### *Darwin Project (2003–2005)*

Clearly, a more in-depth and longitudinal study needed to be carried out to investigate the local concerns for dwindling fish catches, so, with community encouragement, the initial expedition was followed up with a major three-year £135,000 project involving intense biophysical and ecological monitoring of the region's wetlands, with the ultimate aim of developing an integrated conservation and development management plan for the region (Mistry et al, 2008, 2010a). Andrea, Jay, Lakeram and Deirdre were the co-authors involved in this project. Halfway through the project, significant disagreements emerged within the academic team coordinating the research. This was fuelled by Andrea's disillusionment with the top-down, natural science led approach which exclusively focused on collecting numerical data, and his fears that a prescriptive management plan would offer very few chances of being implemented in the region. In essence, the disagreement centred around the distinction between 'doing things better' and 'doing better things' (Ackoff, 2004). The prescriptive data collection was not working according to plan as a result of extreme logistical difficulties, illnesses within the fieldwork staff (malaria is rife in the region) and low morale. One view was simply to plough on, continue with the approach that everyone was familiar with, and try to apply some 'fixes' where possible, that is 'let's just do things better'. Another view was to completely abandon the quantitative data collection altogether, and instead embark on an intensive programme of community engagement, that is 'let's do better things'. After heated and open discussions comprising all research team members, including Indigenous contributors, a major rethink in the research approach was initiated. Lakeram, working then as an Indigenous researcher on the project, and Deirdre, the project manager, both still in their early to mid 20s, played key roles in mediating between the conflicting academic perspectives, and were to take on increasingly significant leadership roles in future projects. The compromise essentially involved a significant reduction in the time and energy expended on data

collection (we decided to focus on the most accessible sites and we ended the monitoring before the prescribed date). We also introduced a community engagement programme alongside the establishment of decentralised decision making within the project. An account of the issues and the emergence of new principles for community engagement and research practices are published in detail in Mistry et al (2009b).

One of the key principles emerging from the rethink was a commitment by the research team to have positive and timely impacts on the ground through direct engagement with community perspectives and aspirations. This involved academic team members pledging a long-term commitment, and prioritising the building of trusting relationships, with the North Rupununi communities. The nature of subsequent research projects therefore departed from the typical scientific investigation, which is usually situated in a controlled time-delimited intervention involving pre-established activities and deliverables, with the principal aim of producing published research whose recommendations would hopefully be adopted by 'others'. Instead, the new approach focused heavily on community participation, not only by having the interventions emerging from community aspirations and adopting appropriate processes of community engagement, but also in looking at how information was recorded and shared. Summarising this transformative moment in our research approach, the big realisation was that the management 'plan' for the North Rupununi wetlands would not be located within a nicely bound, text-based, colour printout. Instead, the management of the North Rupununi wetlands would be embodied within the people we engaged with and their evolving practices. The focus therefore shifted towards building communities' skill sets for dealing with the complex natural resource management situation. This was not, however, a 'they all lived happily forever after' tale, as an honest assessment of the major challenges facing the community-led initiative identified what seemed to be unsurmountable barriers. In Mistry et al (2010a), we used a 'system viability' framework for developing and applying indicators to assess the long-term prospects of our management process having any impact, and nearly all indicators were below the 'viability' threshold. We had a lot of work to do.

### *Post-Darwin and ECOSENSUS Projects (2005–2008)*

The follow-on to the Darwin Project involved another substantial grant of £108,000 focusing on building capacity for natural resource

management in the North Rupununi region and Guyana as a whole. The emphasis changed from counting ‘things’, such as getting individuals to monitor changes in the number of individuals of a certain species in a certain waterbody, to building capacity within individuals for managing complex and messy social-ecological situations that were outside of their traditional ‘comfort zone’. The ‘North Rupununi Adaptive Management Plan’ would not be situated within a printout, but within the embodied capacities of people. This is not to dismiss the value of quantitative measurement in natural resource management, but the view was that after decades of quantitative ‘top-down’ research in the region (for example, Lowe-McConnell, 1964; Eden, 1970; ter Welle et al, 1993; Castello, 2001; Mistry et al, 2004, 2008; Read et al, 2010; Pickles et al, 2011; Taylor et al, 2016), it was time to try out something different, incorporating community participation. A full account of our first attempt at this, applying ‘problem-based learning’ for building capacity in working through complex problems can be found in Mistry et al (2010b).

This shift in approach also denoted a shift in the power balance: counting ‘things’ was great for rapidly churning out papers in high impact journals but virtually useless for supporting the Indigenous communities in their natural resource management dilemmas. Indigenous community members told us they were perfectly able to monitor their own environment using their traditional ecological knowledge, with occasional support from specialists (as exemplified by our water survey described above). The key message was that community members wanted the research to support their own needs rather than the needs of foreign researchers and their careers. So, directly engaging with the messy, complex reality and traditional knowledge proved to be a major challenge for the academics involved, but did result in higher levels of community engagement and practical outcomes on the ground. The challenges were many – some stemming from our own inexperience and lack of understanding, and others emerging as a result of the time, money, energy and patience that participatory process require, often moving in directions way beyond the original objectives stipulated by the funders. We were now ‘doing better things’ but in a situation where we needed to ‘do these better things better’!

Notwithstanding the challenges, the shift in approach resulted in a major endeavour to produce practical assets that community members could actively use to advance sustainable livelihoods. So, for example, we experimented for the first time in the collaborative production of visual materials, such as ecotourism maps and a photographic guide

highlighting the wildlife and natural landscape of the North Rupununi wetlands (Wetlands Partnership, 2008a, 2008b). The maps were an especially engaging activity that involved enthusiastic community participation, and this inspired a parallel project that went into much greater depth in exploring the potential of mapping for supporting decision making in natural resource management (see the discussion of the 'ECOSENSUS Project' below).

We began to explore modes of communication that community members would find more engaging and could manage and control themselves in order to influence decision making at local, regional, national and international levels. Our initial strategy was to investigate the potential of Geographical Information Systems (GIS). As opposed to static and simplified paper-based maps, a GIS enables users to create their own map layers, and overlay these in order to analyse, for example, change over space and time within the landscape, and potentially contribute to natural resource management planning, such as, for example, the identification of non-fishing zones.

It was evident that the natural resource management dilemmas within the North Rupununi wetlands were 'spatial' – they involved complex spatial interactions between, for example, stakeholder interests; resource distribution, use and management; land tenure and access; and potential conflicts between land conversion for commercial purposes, such as logging, mining and oil exploration, and other land uses such as traditional subsistence and ecotourism. Spatial decision making in the North Rupununi was, and continues to be, characterised by multiple and often conflicting objectives, inherent unpredictability and decentralised control. But crucially, it is also visual decision making: community members are regularly observed picking up sticks and drawing maps on the ground. Andrea, in collaboration with Lakeram, wanted to explore the possibility of using information and communication technology (ICT) tools to enhance the ground-based sketches. Dealing with these issues required firstly a shared understanding between stakeholders and secondly, appropriate access to spatial information by stakeholders who traditionally may have little experience of ICTs.

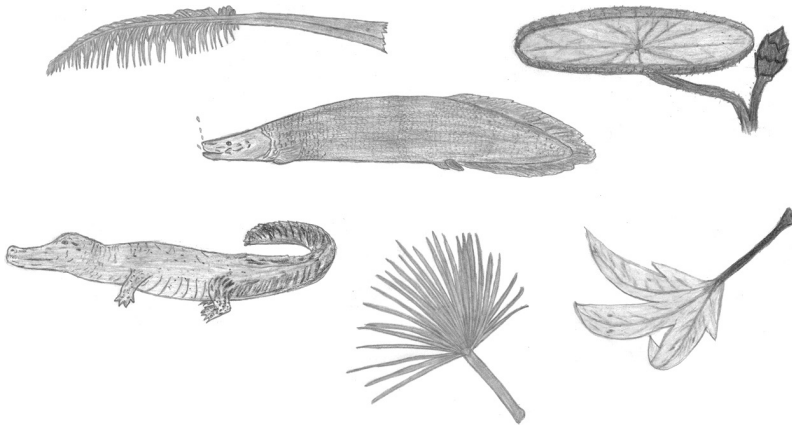
Thus, our first serious foray in the use of participatory visual tools was ECOSENSUS (Ecological/Electronic Collaborative Sense Making Support System), a pilot project undertaken over a timescale of 18 months (2005–2007) with a budget of just under £45,000 and supported by the Economic and Social Research Council (ESRC) in the UK (Berardi et al, 2006). One of the main challenges that we identified with GIS tools is that they failed to 'embed' the complex

discussions behind every map. However, we wanted to avoid having a visual tool incorporating text-based functionality for capturing the discussions. Our aim was to minimise the challenges revolving around participants' literacy levels, which went beyond just spelling and grammar, but also involved clashes between Indigenous and Western worldviews that could not be represented if participants were forced to engage in the English language, especially when writing it. Instead, we wanted to explore the possibility of integrating a visual argumentation mapping tool within the GIS. Thus, the overall aim of ECOSENSUS was to develop an integrated GIS/visual sense making tool and then to develop the practice and understanding in the use of these tools for managing complex spatial problems (always within the very real context of natural resource dilemmas in the North Rupununi).

The ECOSENSUS project had, as its primary activity, the task of integrating two key software tools: Compendium (an open source dialogue/argument mapping tool)<sup>1</sup> and UDIG (an open source GIS tool).<sup>2</sup> Compendium had been developed over a 20 year time span into a powerful tool for visually mapping discussions among participants. The key purpose of such mapping is to develop a shared understanding among a diverse group of people. Compendium uses a simple visual language composed of a defined set of symbolic icons representing distinct elements of a discussion: questions; ideas; arguments in favour; arguments against; and decisions. In essence, Compendium serves as a 'sense making' diagramming tool: helping users to make sense of their experiences and thoughts through a straightforward and visual structuring of knowledge.

In ECOSENSUS, we wanted to support fluid movement between spatial mapping on the one hand, and visual argumentation mapping on the other. The idea was to develop a set of icons within the GIS tool which represented the most significant natural resources within the North Rupununi. Figure 5.1, for example, shows a number of drawings by Lakeram sketched during the project, representing some important natural resources of the North Rupununi. But we also wanted to make the software more accessible to the Indigenous communities. So, for example, on the behest of Lakeram, the icon representing the 'decision' within Compendium was changed from a hammer and block (inspired by the judicial process in Western countries) to a handshake – a powerful realignment of the decision making from a hierarchical process (a judge making a decision imposed on others), to a more equitable 'handshake' agreement among parties. This demonstrates the necessity of not presupposing participants' symbolic representations within diagramming techniques, especially rich picturing. Although

**Figure 5.1: Lakeram Haynes's sketches with symbolic representations of key natural resource management areas of the North Rupununi**



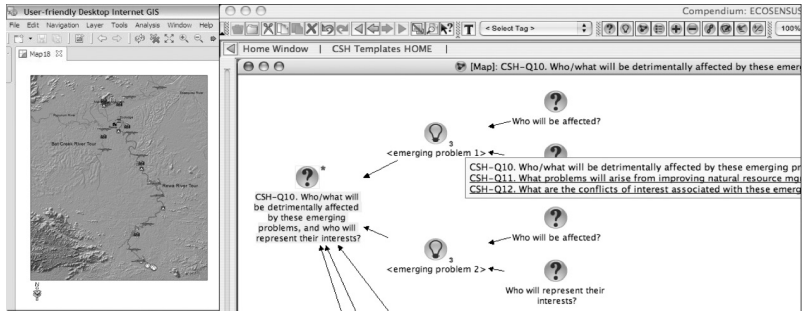
*Notes:* From top-left to bottom-right: Ite' palm (representing areas where palm thatching could be collected for roofing), giant waterlily (representing areas with a high density of ponds for fishing), Arapaima fish and black caiman (representing areas with a high concentration of wildlife), Kokerite palm (representing areas for the collection of handicraft material), and cassava (representing areas within the rainforest for rotational farming plots)

there is a tendency to use 'ready-made' clipart symbols and/or imagery downloaded from the web, our experience indicates the significance of freehand drawing in representing participants' genuine perspectives.

The various icons representing key natural resources were digitised and added as a toolbar within the GIS software, enabling a user to click and drag these onto a base map of the North Rupununi. By double-clicking on a natural resource icon, a sense making map would open up in Compendium, where users would be presented with a series of questions to help them work through the issues for that particular natural resource within that particular locality (Figure 5.2). Each sense making map could also be nested with other sense making maps so as to weave together the complex decision making processes for the region as a whole.

In integrating the GIS and argumentation mapping, we wanted to avoid seeking a technocentric approach to working through natural resource management dilemmas but rather to support the process of critical and participatory inquiry. Inspired by approaches such as Soft Systems Methodology (Checkland, 1981) as discussed in Chapter Two and Critical Systems Heuristics (Ulrich, 2005), we attempted to direct the visual argumentation mapping through a series of questions directly informed by these two approaches (see Reynolds et al, 2007, for further details). Although the process worked well when it was

Figure 5.2: Screenshot of the Compendium-uDig integration



facilitated by a team member in a face-to-face setting, the Guyanese participants struggled to continue using the ECOSENSUS software tools and process beyond these facilitated face-to-face meetings. The reasons were apparently as a result of the challenges of using quite sophisticated software tools in a difficult environment, with intermittent electricity, for example, disrupting computer-based work.

The challenges with the infrastructure may have been the most readily reported difficulty by the participants, but more nuanced issues were surfaced when discussing the visual argumentation tool. Indigenous cultures in the region are familiar with iconic representations, as many locations contain petroglyphs and cave drawings, and, until recently, many still practised symbolic body painting. However, social memory is primarily maintained through oral narration, which frequently lacks the structure of a linear and logical 'argument' as perceived in Western cultures. In the eyes of Westerners, Indigenous discussions are perceived to be circular, meandering, repetitive, indirect, long and/or appear to go off topic. Nailing down isolated, logically consistent, coherent and short argument chains (as required by the Compendium argument mapping software and SSM/CSH questions), in the limited timeframe available, was therefore very difficult to do without help from a non-Indigenous facilitator. The importance of facilitation, particularly for contentious issues, has been noted in the previous chapters; however, in this case the research team were concerned about the influence of the facilitator if 'speaking on the behalf of communities' rather than enabling communities themselves to express their views. The conclusion from ECOSENSUS was that the team would abandon argumentation mapping in future initiatives, and seek alternative visual means for working through complex natural resource management dilemmas which could be more directly controlled by the communities themselves. The lesson that we learnt from ECOSENSUS was that

not all visual techniques, however facilitated and participatory, are suitable for all contexts, so rather than insisting on using the same visual technique in all cases and/or persevering after much struggling, sometimes it is best to move on. The key is to have a variety of techniques at one's disposal.

### *Participatory video pilot project and Project Cobra (2007–2015)*

In 2007, Jay, Andrea, Lakeram and Rebecca initiated a small project (funded by the British Academy over 18 months with £7,000) on the use of participatory video (PV) with the North Rupununi communities. The motivations for the project resulted from discussions with local community leaders and elders where it became clear that the historical context of the region was an important influence on current natural resource management practices, and their wish for the experiences of the elders to be recorded for future generations before they died. We had also been reflecting on our research practice as a result of the ECOSENSUS pilot, and exploring the idea of simpler, more direct visual forms of participatory engagement with local communities (less reliant on sitting in front of a computer clicking on icons). We were particularly interested in investigating how social memory, expressed through shared oral narratives that influence collective thoughts and actions, influenced natural resource management practices in a way that enabled local communities to take greater ownership of the research process, present their views authentically, and provide an immediate and accessible dissemination output in the form of films. Over the PV project period, five Indigenous facilitators were trained in PV (including Lakeram and Rebecca), supported by Jay and Andrea. The team worked through iterative action research cycles of discussion and practical PV filming, editing and screening with different community members, and developed two themed films for feedback and further development. Full details of the PV process and results are provided in Mistry and Berardi (2012) and Mistry et al (2014).

This PV work was taken a step further when an opportunity to showcase how Indigenous communities were sustainably managing their natural resources came about. Project Cobra<sup>3</sup> was a European Commission funded project (€1.9 million, 2011–2015) led by Jay, with the aim to work with Indigenous communities in the Guiana Shield region of South America to identify, record and share their own solutions to emerging social-ecological challenges. Project Cobra involved ten research, civil society organisation and business partners across Europe and South America, and pulled together all the co-



authors of this chapter (see Notes on contributors): Jay, Andrea and Elisa representing academic institutions; Lakeram, Grace, Rebecca and Ryan representing Indigenous communities; and Deirdre and G raud representing civic society organisations. Although we worked with various Indigenous communities of the Guiana Shield, the most in-depth research took place with the Makushi and Wapishana of the North Rupununi, Guyana, which was led by Lakeram, Grace, Ryan and Rebecca. Using the visual methods of PV and participatory photography (PP), the Indigenous researchers on the Project Cobra team helped communities explore their current survival strategies with the aim to identify local solutions or ‘best practices’ that could be shared with other Indigenous groups. Like PV with video, PP is a technique for eliciting participants’ perspectives through the still image. The project produced numerous films and photostories which can be found on the project’s MediaGate,<sup>4</sup> but as part of the participatory visual process, there were other outputs including storyboards and spray diagrams. Storyboards, for example, were used in the planning process for the production of films and photostories, but were also used to explore how the future of the community might develop through different scenarios. The use of storyboards is picked up again in Chapter Six. A critical aspect of PV and PP is that, at regular intervals, the wider community was able to feedback through evening screenings of the videos and photostory printouts resembling graphic novels. This allowed the research team to adapt the content of these outputs through iterative cycles of feedback.

Although the photo and video technology required significant skills levels to operate, these were on a much more practical level compared to the GIS and sense making tools. Lighting, picture framing and sound were the main challenges here. We also significantly simplified the process underpinning the ‘narrative’ that had to be captured through visual means. Instead of asking participants to work through a simplification of SSM and CSH, we adapted another systems approach, Orientor Theory (Bossel, 1999) into a simple framework for exploring the survival strategies of communities. Our adaptation, termed ‘system viability’ (Berardi et al, 2013, 2015), asked participants to explore six distinct strategies for facing up to challenges within their environment: resisting temporary change; adapting to permanent change; developing efficient processes for dealing with scarce resources; developing flexible strategies for dealing with a heterogeneous environment; focusing on immediate existence needs; and engaging in partnerships with others. Once films and photostories, capturing the range of community survival strategies, were developed by the communities, these were

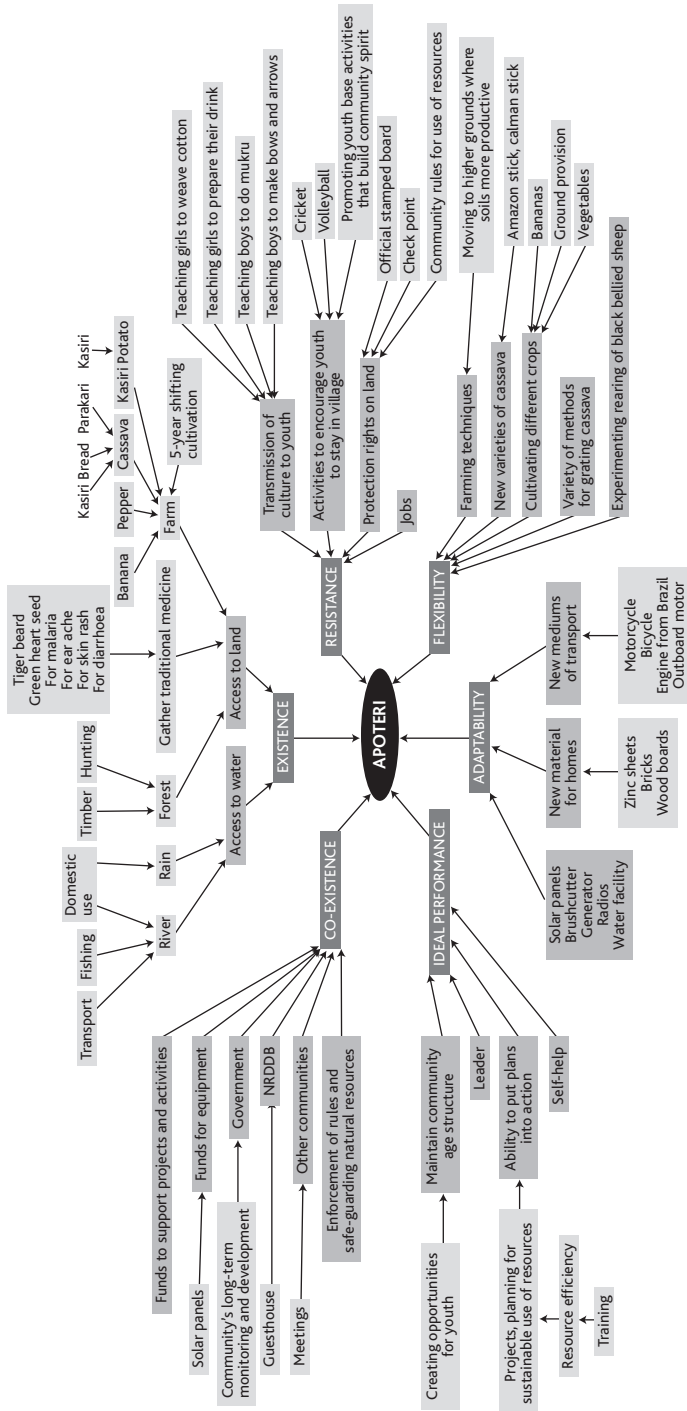
analysed by the whole team (academic and Indigenous researchers) to identify community indicators of wellbeing. These indicators were then represented in the form of spray diagrams, as large A1 posters, to present back to the communities for feedback and refinement (see Figure 5.3 for an example of the final agreed output).

In this case, engagement with the spray diagrams was much simpler and straightforward compared to the argumentation mapping. In essence, we used the spray diagramming technique as a summary and classification tool for the indicators that emerged. During the feedback and refinement process, Lakeram, Grace, Rebecca and/or Ryan would go through the various branches of the spray diagram, explaining to participants the meaning of each component (often reminding them how the components were identified from the PV and PP outputs) and requesting feedback on whether the participants were happy with the components' names and their positioning within a particular branch. Participants were also asked whether there were any indicators, which had been represented within the PV and PP outputs, that they felt had been missed out and should be represented within the spray diagram. However, the technique only worked through face-to-face facilitation, and the resulting diagrams were never used again by the communities after the facilitated indicator refinement exercise. The video and photostory outputs, on the other hand, have continued to be powerful assets, both within the communities and externally.

The final indicators selected were then used to identify the 'best' survival strategies communities had developed. These included traditional farming practices, traditional fishing practices, community self-help practices, and cultural transmission practices. These 'best practices' were then filmed in greater detail and promoted in six Indigenous communities from six different countries in the region: Brazil, Colombia, Venezuela, Guyana, Suriname and French Guiana. The aim of the knowledge exchange was to inspire recipient communities to apply some of these best practices, and, in turn, document their own best practices for wider dissemination. An account of the process can be found in Mistry et al (2016) and Tschirhart et al (2016).

The videos produced during this process continue to have a life beyond Project Cobra. For example, they have been used as advocacy tools to lobby national politicians in Guyana and Venezuela. Some communities have even continued to document additional best practices for wider dissemination. At the community level, the difference between the continued interest in the videos and photostories, compared to the limited interest in the spray diagram

Figure 5.3: Example of an indicator spray diagram produced for Apoteri village, North Rupununi, Guyana



Source: Berardi et al (2012)

outputs (which were supported by the communities only within the timeframe of Project Cobra), is, at one level, relatively straightforward. Community members continue to have a fascination with watching videos and seeing pictures of themselves, family members, friends and significant individuals from their own communities, just as we occasionally look back at pictures and videos of significant moments with our own lives. Project Cobra was one of the few opportunities that communities had to film and photograph themselves, and these assets have remained as DVDs and printouts circulating within the communities. The spray diagrams, on the other hand, represent an academic exercise that might come in useful to decision makers at some stage in the future, but there is certainly no demand for these diagrams to be circulating within the communities at this moment in time.

This concludes the account of our process so far.

### Discussion

In this discussion, we reflect on questions that have arisen from more than 15 years of engagement with the North Rupununi communities and our attempts to experiment with different forms of visual techniques. These include the benefits and limitations of visual methods, the role of technology, participation in the process and the wider impacts on the Indigenous communities.

Visual techniques were perceived by community participants to be a straightforward approach for recording and communicating information. They were found to be an attractive way of getting the attention of wider community members who would otherwise be affected by ‘workshop fatigue’ (something noted in other chapters and discussed later in Chapter Ten). After decades of foreign researchers turning up within their communities requesting participation in workshops, where data was collected, but no immediate tangible output was made available to the communities, many community members reported frustration with foreign researchers and expressed a wish to avoid any workshop. In our experience, community members are more actively engaged through the use of visual techniques – they do not just listen or provide answers to questions, they do things, they are active participants by being protagonists in the creation of immediate visual assets. As a rule, for example, we always tried to put together a short film from the day’s participation which was screened in the evenings. This, in turn, encouraged more people to participate the next day. Crucially, visual methods are seen as giving a more

realistic, genuine and wider picture of the situation, stimulating broad discussions and critical thinking:

‘So many things come up you wouldn’t expect while using visual methods: people’s perspectives, stories about the place, and not necessarily the same things would come up during a traditional interview’. (Elisa)

Indeed, by “seeing the world through peoples own eyes and views of the world” (Jay), visual techniques allow us to see people ‘in action’ and it brings us closer to their problems, their lives. Visual techniques are seen to enhance participation and there are ripple effects throughout the community: the research is perceived to be more intimate and builds trust in that it allows community members to “correct the work that’s been done” (Rebecca). There is also something about the immediacy of the product. You have something to show at the end of a day’s work: a map, a diagram, photographs or video. Non-visual research approaches often leave you ‘empty-handed’ – you need to go away with your hidden audio interviews and notes, often leaving nothing behind in return for the community’s participation.

Even within the research team, working with visual techniques creates a more relaxed atmosphere, fostering creativity and helping to see problems from different perspectives. While in some phases of the research it allowed team members to work more closely (for example when editing videos), visual techniques also encourage team members to break out from the closely knit research team and interact with the wider community. Crucially, because visual methods were perceived to be ‘fun’ not only for participants, but also for the research team, individuals felt more motivated in their work, “creating a positive outlook on the outcome of the work” (Grace).

However, visual techniques are not without their challenges. Although the data collected through the methods are more representative of people’s views and ways of knowing the world, they can be highly contextual and sometimes personal, so require considerable time to interpret. For example, identifying indicators of community wellbeing from the visual materials produced by the communities required at least three iterations of consultation and feedback. As Grace emphasises, visual techniques are “difficult to access in a short time”. When digital equipment is involved, in the cases of PV and PP, there are issues with community members learning how to use equipment, and technical difficulties (for example, lack of electricity, humidity, problems in storage) that can hinder community

participation. In addition, visual methods have a range of ethical concerns. Protecting communities' rights and knowledge can be done through following free, prior and informed consent processes, where it is clear to participants what is being visually captured, how, for whom and where it is being disseminated. In Project Cobra, where Indigenous participants were involved in making videos and photostories of their most successful practices, a visual consent form outlining this information was developed and administered to all participants by the Indigenous researchers. As Elisa says:

‘their [community] rights and knowledges are taken into account if they have the freedom to decide what to film/ photograph, how to do it, how to edit and share the final product. In other words if the communities own the visual output’.

Nevertheless, the fact that community members directly contribute to the visual products also means that they can easily be identified in videos, photographs and drawings. This could expose them to retaliation by those individuals and/or groups, both within and outside the community, if they are openly critical about an issue. On the other hand, we observed that in many of the videos, photostories and drawings, community members were selective with what they disclosed. This could be in response to worries about reprisals, but more commonly was to protect intellectual property. Visual materials could reveal the presence and/or location of natural resources to outsiders who may then exploit these unsustainably and/or remove the rights of Indigenous communities to continue with their traditional livelihoods. As Lakeram points out “visuals are one part of an information sharing or presentation. But what is not provided is the specific of a knowledge which protects the rights to the knowledge”. Ownership of visual products, is therefore, of utmost concern, and negotiating how and where material is stored and access rights is key for deciding if visual outputs can be made public, or whether they remain within the custody of communities.

Our use of technology was perceived to be a double-edged sword. ICT, such as videos, photography and associated gadgets such as projectors, made it much easier to engage participants who were unable to read or write, while cutting down on the effort needed to record and communicate in a very challenging environment where physical products such as paper can very quickly degrade. It also “adds to the beauty of the presentation allowing one to get connected and

feel involved in an activity” (Lakeram). We are often amazed by the level of community turnout in the evening screenings of the videos, or involved with discussions around spray diagramming indicator posters, encouraging both the team and participants alike to produce more artistic, entertaining and beautiful outputs that could showcase a community and its environment to the outside world. Technology was also valued as a way of recording the knowledge of an older generation for posterity that would otherwise be forgotten, and for facilitating the exchange of knowledge between communities.

But technology was also perceived to be an expensive ‘Western’ product especially distracting youth from traditional livelihoods. Often, engagement with these technologies, such as with the ECOSENSUS project, would involve a lot of effort and expense, and produce very little of enduring value, apart from the lessons learnt. A frequent observation in the North Rupununi is broken equipment lying around, rusting and deteriorating in the open air or half-burnt in waste pits. Although less enticing for participants, harder to manage for the researchers, and not so easy to copy and share, paper-based visual approaches would at least be a low-cost and non-toxic alternative. However, we also recognise that younger participants, as in all cultures, had a fascination, and a capacity to rapidly familiarise themselves, with technology. So techniques such as PV and PP did provide the allure for youngsters in learning how to operate cameras and edit the imagery on laptops. The big challenge was to try to sustain these tools beyond the lifetime of the project. So, for example, video and photographic equipment has been used by the Indigenous researchers to record weddings in return for a small payment.

Our ultimate aim in the use of visual techniques has been to contribute to some form of positive change, including sustainability and justice, within the North Rupununi communities. “Visual techniques can help redress power inequalities between Indigenous people and external stakeholders, giving Indigenous people a tool that can contribute towards self-determined development” (Jay). We have seen within Project Cobra that identifying local solutions or ‘best practices’ for natural resource management using visual methods and producing visual products that could be shared with other Indigenous groups, engendered a sense of pride among community members. A counter-narrative to the commonly held deficit model within Indigenous communities – we need help, we are helpless, the visual products showcased community owned solutions – ‘we have solutions from which to overcome challenges and there are others that can learn from us’. Indeed, the videos and photostories produced in the North Rupununi inspired

the six other Indigenous communities in Brazil, Colombia, Venezuela, Guyana, Suriname and French Guiana with whom they were shared to take action to address their own similar challenges. For example, the community in Suriname was experiencing a loss of community cohesion as a result of the influx of a cash economy, and no-one was willing to repair a bridge connecting two parts of the community, used by children on a daily basis for going to school, without being paid. The North Rupununi video of self-help (volunteer work for community good) sparked a huge debate in the community on community values, leading to a workplan for restoring the bridge, which was eventually completed within three months.

Visual techniques can also have a positive effect by allowing communities to record events as a form of transparency. They are “a powerful tool in bringing about factual information and especially sharing for the benefit of those who are directly impacted in the various areas in a community setting” (Lakeram). There are many cases where, for example, government officials come to Indigenous communities to discuss specific issues, which are then seldom acted upon. Visual techniques provide a form of transparent governance where communities have information in an accessible form that can be used to hold people to account by:

‘giving more voice to communities, allowing them to reach different audiences at different scales, by empowering communities in the use of new techniques which can be used to pursue communities goals, to become more visible to policymakers, to make their claims’ (Elisa).

## Conclusions

Despite the many challenges we have faced to date in using visual techniques, we continue to support the approach in our current work and advocate its potential for strengthening the position of marginalised groups, such as Indigenous peoples, to maintaining their cultures and environments. However, while trying to communicate our findings on the power of visual communication, many individuals within our research team have experienced significant prejudice from within the wider academic community and decision makers. The lack of ‘numbers’ and the perceived ‘amateurish’ products were not seen to be of value within professional circles and it is a struggle for the outputs to be appreciated by decision makers outside of the Indigenous communities we worked with. Thus, the benefits of visual research



are perceived by our team as being directed more to the communities themselves and it is a struggle to break out and use the visual outputs to influence wider decision making. As a result, we have been forced to fall back on the usual products in order to 'translate' the visual outputs into an impact outside of the communities: peer reviewed academic publications; keynote speeches by senior team members; glossy reports and professionally produced videos reworking the visual materials produced by communities. We are aware that making policy and decision makers more open and responsive to visual products and more specifically, to take on board the issues raised within these products and act upon them, is a key area that we have to persevere in.

### Notes

<sup>1</sup> Full details on Compendium can be found at <http://compendiuminstitute.net>

<sup>2</sup> UDIG stands for User-friendly Desktop Internet GIS and full details about it can be found at <http://udig.refractions.net>

<sup>3</sup> Full detail of the COBRA project can be found at [www.projectcobra.org](http://www.projectcobra.org)

<sup>4</sup> Project COBRA's MediaGate can be found at <http://projectcobra.org/media-gate/>

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