

“Opening up” fire conflicts: Reflexive governance and transformative knowledge networks in culturally fragile indigenous landscapes

Iokiñe Rodríguez, Bjorn Sletto, Bibiana Bilbao and Alejandra Leal

Fire and Conflict



“Opening up” fire conflicts: Reflexive governance and transformative knowledge networks in culturally fragile indigenous landscapes

Despite the fact that there is much more acceptance today to the use of fire by indigenous people in forests and savannas ecosystems than there was two decades ago, it still remains a highly controversial and questioned local practice, to the point that reducing greenhouse emissions from tropical forest and savanna fires is top in the Global Change agenda. The fire issue is dominated by conflicting values, interests and world views that make reaching agreements for its sustainable use no easy task. According to the reflexive governance theory, advancing in this direction would entail developing a more plural approach to fire management, by creating opportunities for context specific public deliberations about different views of fire and its impacts, along with changing deeply entrenched institutional practices that exclude local knowledge systems. But, are we clear about the challenges that this poses in practice, particularly in the context of strong cultural change at the community level? In this context, how do we get to the point of developing ‘discourse coalitions’ and “knowledge networks” that can challenge dominant narratives about fire and change the power relations that give rise to conflicts?

By merging the STEPS conceptual framework on reflexive governance with the conflict transformation theory developed in peace studies, we show that culture, and particularly engaging with cultural difference at the community level, play an important part in opening up rigid environmental governance arenas so as to permit reflexivity over highly contentious environmental issues. We do so by reviewing three participatory research projects carried out in Canaima National Park, Venezuela which have helped the Pemon indigenous people clarify their conflicting views of fire through community-wide critical reflections on processes of cultural change.

About the Authors

Iokifé Rodríguez holds a research post at the Centre for the Study of Social Transformation, Science and Knowledge Systems at the Venezuela Institute for Scientific Research (IVIC) working on the articulation of knowledge systems for sustainable development and environmental conflict transformation. She has worked extensively in Canaima National Park, Venezuela as part of interdisciplinary and multi-institutional research teams studying environmental conflicts and helping to strengthen the capacity of the Pemon indigenous people to enter into dialogue about environmental change and sustainable development with other park actors. Between March and May 2011 she was a visiting fellow at the STEPS Centre.

Bjorn Sletto is associate professor in the Community and Regional Planning Program, School of Architecture, University of Texas at Austin. His research focuses on indigenous land rights, social justice, and environmental planning in Latin America.

This is one of a series of Working Papers from the STEPS Centre
www.steps-centre.org.

ISBN: 1978-1-78118-107-2

Price £5.00

© STEPS 2012



Bibiana Bilbao is a professor in the Department of Environmental Studies, in the University Simon Bolivar, Venezuela. She specialises on fire ecology and behaviour in the Venezuelan savannas, with a special focus in Gran Sabana, Canaima National Park since 1999.

Alejandra Leal is a professor in the Department of Environmental Studies, in the University Simon Bolivar, Venezuela. Her interest has been concentrated in paleo-ecological reconstructions, dealing with the role of climate changes, fire and human activities in the configuration of tropical landscapes, using palynological analysis in sedimentary records.

About the STEPS Centre

Today’s world is experiencing rapid social, technological and environmental change, yet poverty and inequality are growing. Linking environmental sustainability with poverty reduction and social justice, and making science and technology work for the poor, have become central challenges of our times. The STEPS Centre (Social, Technological and Environmental Pathways to Sustainability) is an interdisciplinary global research and policy engagement hub that unites development studies with science and technology studies. We are developing a new approach to understanding and action on sustainability and development in an era of unprecedented dynamic change. Our pathways approach aims to link new theory with practical solutions that create better livelihoods, health and social justice for poor and marginalised people. The STEPS Centre is based at the Institute of Development Studies and SPRU Science and Technology Policy Research at the University of Sussex, with partners in Africa, Asia and Latin America. We are funded by the ESRC, the UK’s largest funding agency for research and training relating to social and economic issues.

www.steps-centre.org.

Follow us on Twitter [@stepscentre](https://twitter.com/stepscentre)

Other titles in this series include:

- | | |
|-----------------------|--|
| Approach | Pathways to sustainability: an overview of the STEPS Centre approach |
| 1. Dynamics | Dynamic Systems and the Challenge of Sustainability |
| 2. Governance | Understanding Governance: pathways to sustainability |
| 3. Designs | Empowering Designs: towards more progressive appraisal of sustainability |
| 4. Agriculture | Agri-Food System Dynamics: pathways to sustainability in an era of uncertainty |
| 5. Health | Health in a Dynamic World |
| 6. Water | Liquid Dynamics: challenges for sustainability in water and sanitation |

For more STEPS Centre publications visit:

www.steps-centre.org/publications

**'Opening up' fire conflicts: Reflexive governance and
transformative knowledge networks in culturally fragile
indigenous landscapes**

Iokiñe Rodríguez, Bjorn Sletto, Bibiana Bilbao and Alejandra Leal

STEPS Working Paper 54

Rodriguez, I., Sletto, B., Bilbao, B. and Leal, A. (2013) *'Opening up' fire conflicts: Reflexive governance and transformative knowledge networks in culturally fragile indigenous landscapes*, STEPS Working Paper 54, Brighton: STEPS Centre

ONLINE ONLY

First published in 2013

© STEPS 2013

Some rights reserved – see copyright license for details

ISBN: 978-1-78118-107-2

For further information please contact: STEPS Centre, University of Sussex, Brighton BN1 9RE

Tel: +44 (0) 1273915673

Email: steps-centre@ids.ac.uk

Web: www.steps-centre.org

STEPS Centre publications are published under a Creative Commons Attribution – Non-Commercial – No Derivative Works 3.0 UK: England & Wales Licence (<http://creativecommons.org/licenses/by-nc-nd/3.0/legalcode>)

Attribution: You must attribute the work in the manner specified by the author or licensor.

Non-commercial: You may not use this work for commercial purposes.

No Derivative Works: You may not alter, transfer, or build on this work.

Users are welcome to copy, distribute, display, translate or perform this work without written permission subject to the conditions set out in the Creative Commons licence. For any reuse or distribution, you must make clear to others the licence terms of this work. If you use the work, we ask that you reference the STEPS Centre website (www.steps-centre.org) and send a copy of the work or a link to its use online to the following address for our archive: STEPS Centre, University of Sussex, Brighton BN1 9RE, UK (steps-centre@ids.ac.uk).



Contents

| | |
|--|-----|
| Figures and tables | iv |
| About this paper | v |
| Notes on the authors | vi |
| Acknowledgements..... | vii |
| 1. Introduction | 1 |
| 2. Canaima National Park, the Pemon and fire..... | 4 |
| 3. Reflexive governance and conflict transformation: bringing cultural identity into the picture | 7 |
| 3.1 Power and knowledge: counter-narratives as transformers of environmental conflicts..... | 7 |
| 3.2 Conflict transformation: an integral framework to conceptualise and evaluate social change... | 8 |
| 3.3 Cultural difference, justice and conflict transformation..... | 11 |
| 4. The fire policy intervention: the need for planned equilibrium | 13 |
| 4.1 Framing the Fire Narrative | 13 |
| 4.1.1 Nineteenth Century – Nineteen fifties: naturalists and explorers discover the Gran Sabana. | 13 |
| 4.1.2 Nineteen fifties to the present: the arrival of development | 15 |
| 4.2 The role of science shaping the fire narrative | 16 |
| 5. Cultural identity and opening up fire governance in Canaima National Park | 18 |
| 5.1 Participatory research and community deliberations about fire | 19 |
| 5.1.1 Participatory community Life Planning in Kumarakapay (1999)..... | 19 |
| 5.1.2 Participatory mapping and participatory research of fire use (2001-2004) | 19 |
| 5.1.3 The Risk Project and participatory Life Planning in Kavanayen (2007 to present)..... | 20 |
| 5.2 Results of the experiences | 21 |
| 5.2.1 Opening up contested knowledge of fire at the community level | 21 |
| 5.2.2 Opening up reflexive deliberations between Pemon and external actors | 23 |
| 6. The transformation of the fire conflict in Canaima National Park..... | 26 |
| 6.1 The dimensions of conflict transformation..... | 27 |
| 6.1.2 The cultural dimension: re-signifying meanings of fire | 27 |

| | |
|---|----|
| 6.1.3 The personal dimension: reconnecting with identity | 28 |
| 6.1.4 The Interpersonal dimension: the emergence and articulation of new knowledge networks | 28 |
| 6.1.5 The structural dimension: changes in fire policies | 28 |
| 6.1.6 The contextual dimension: re-thinking fire at a wider scale | 29 |
| 6.2 The stage of conflict transformation: closer to re-negotiating meanings of fire?..... | 30 |
| 7. Conclusion..... | 32 |
| References | 33 |

Figures and tables

Figures

Figure 2.1: Location of Canaima National Park and World Heritage Site

Figure 3.1: Dimensions of Conflict transformation

Figure 6.1: The evolution of the Fire Conflict 1999-2012

Tables

Table 2.1: Pemon uses of fire

Table 3.1: indicators of conflicts transformation

Table 5.1: Pemon perceptions of fire in Kumarakapay

Table 5.2: Examples of inter-net linked networks that have triggered reflexivity about fire in Canaima National Park

Table 6.1: Indicators and drivers of change in the transformation of the fire conflict in Canaima National Park

About this paper

Despite the fact that there is much more acceptance today to the use of fire in forests and savannas ecosystems by indigenous people than there was two decades ago, it still remains a highly controversial and questioned local practice, to the point that reducing green house emissions from tropical forest and savanna fires is top of the Global Change agenda. The fire issue is dominated by conflicting values, interests and world views that make reaching agreements for its sustainable use a difficult task. According to the reflexive governance theory, advancing in this direction would entail developing a more plural approach to fire management, by creating opportunities for context specific public deliberations about different views of fire and its impacts, along with changing deeply entrenched institutional practices that exclude local knowledge systems. But, are we clear about the challenges that this possesses in practice, particularly in the context of strong cultural change at the community level? In this context, how do we get to the point of developing 'discourse coalitions' and 'knowledge networks' that can challenge dominant narratives about fire and change the power relations that give rise to conflicts?

By merging the STEPS conceptual framework on reflexive governance with the conflict transformation theory developed in peace studies, this paper shows that culture, particularly engaging with cultural difference at the community level, plays an important part in opening up rigid environmental governance arenas to permit reflexivity over highly contentious environmental issues. It does so by reviewing three participatory research projects carried out in Canaima National Park, Venezuela which have helped the Pemon indigenous people clarify their conflicting views of fire through community-wide critical reflections on the processes of cultural change. These experiences suggest that once marginalised environmental knowledge is publicly recognised within the context of endogenous cultural processes, indigenous people feel more confident in engaging in dialogue about fire with other actors. Through these new encounters a counter-narrative of fire can start to emerge which can begin to change the relations of power in the conflict and bring about a systemic transformation of the conflict in all its dimensions: personal, interpersonal, cultural, structural and contextual¹.

¹ A shorter version of this manuscript is available in Rodríguez I., Bjørn S., Bilbao B., Sanchez-Rose I. & Leal A. (2013) Speaking about fire: reflexive governance in landscapes of social change and shifting local identities. *Environmental Policy Making and Planning*. On-Line First, 18 February 2013, DOI:10.1080/1523908X.2013.766579

Notes on the authors

Iokiñe Rodríguez holds a research post at the Centre for the Study of Social Transformation, Science and Knowledge Systems at the Venezuela Institute for Scientific Research (IVIC) working on the articulation of knowledge systems for sustainable development and environmental conflict transformation. She has worked extensively in Canaima National Park, Venezuela as part of interdisciplinary and multi-institutional research teams studying environmental conflicts and helping to strengthen the capacity of the Pemon indigenous people to enter into dialogue about environmental change and sustainable development with other park actors. She has also carried out action research on local knowledge of fire with the Wapishana and Makuxi indigenous peoples in Guyana and works in close collaboration with Latin American Institutions seeking to develop a regional specific conflict transformation approach to environmental conflicts, focusing on issues of power, environmental justice, equity and intercultural dialogue. Between March and May 2011 she was a visiting fellow at the STEPS Centre.

Bjorn Sletto is associate professor in the Community and Regional Planning Program, School of Architecture, University of Texas at Austin. His research focuses on indigenous land rights, social justice, and environmental planning in Latin America. He has investigated environmental conflicts and land rights' struggles in Venezuela, conducted participatory mapping with the Pemon in the Gran Sabana and Yukpa in the Sierra de Perijá, and conducted action research and studio projects in informal settlements in Santo Domingo, Dominican Republic. Dr Sletto works closely with partner institutions in South America to further international scholarship on representational politics and social justice in vulnerable communities, while teaching Geographic Information Systems, Environmental Justice, and Latin American Planning and Development.

Bibiana Bilbao is a professor in the Department of Environmental Studies, University Simon Bolivar, Venezuela. She specialises on fire ecology and behaviour in the Venezuelan savannahs, with a special focus in Gran Sabana, Canaima National Park since 1999. Over the last decade she had developed a growing interest in contributing to the development of interdisciplinary approaches for the study and management of complex socio-ecological systems. Currently she is the coordinator of the 'Risk factors in the reduction of habitats in Canaima National Park: vulnerability and tools for sustainable development' Project, as well as of the 'Ecological basis of fire and Pemon traditional knowledge: local solutions for global problems of climate change' Project.

Alejandra Leal is a professor in the Department of Environmental Studies, University Simon Bolivar, Venezuela. Her interest has been concentrated in paleo-ecological reconstructions, dealing with the role of climate changes, fire and human activities in the configuration of tropical landscapes, using palynological analysis in sedimentary records. She has worked with Holocene records from Gran Sabana (during her PhD studies), and with records of other areas of the Orinoco Basin. She has also actively participated in projects on the forest/savanna ecology in the Canaima National Park, including the analysis of changes in savanna composition and structure, and the role of savanna-forest transitional communities in the dynamic of vegetation mosaics. Currently she is co-researcher in multi-disciplinary projects in coastal ecosystems of Venezuela, and in the Orinoco Basin, linking archaeology, geochemistry and paleoecology.

Acknowledgements

We wish to thank the STEPS Centre, particularly Ian Scoones, for having inspired us to write this paper. His enthusiasm for our putting into writing our ideas and experiences was of great value to us in the writing of the paper, as were the comments received from a wide variety of scholars from the STEPS Centre during an oral presentation of this paper in March 2011. Likewise, James Fairhead's comments on an earlier version of the paper are greatly appreciated. In Latin America we thank *Grupo Confluencias*, which acts as a think tank on environmental conflict transformation theory in the region, and with whom Iokiñe Rodríguez has developed an important part of the conceptual framework of this paper. In Venezuela we are grateful to the National Fund for Science and Technology (FONACIT) for funding the Risk Project (Proyecto No. G-2005000514). In Gran Sabana we thank Anibal Herrera, Antonio González, Antonio Pérez, Erica Duran, Héctor Fernández, Julio Enrique Lambos, Juvencio Gómez, Leobaldo Pinzón, Mario González, Yraida Fernandez, Yírolaisa Pérez, Rafael Rodríguez, Alicia Contasti and their families, as well as numerous other youth and elders in Kumarakapay, Monte Bello and Kavanayen for their support and participation in the field investigations. In Kavanayen we especially thank our colleagues in the Risk Project: Filiberto Lambos, Ana Karina Lambos, Michel Mariño, Humberto Chani, Salvador Peña, Francisco Perez, Jesús García, Irene Basabe and Valeriano Constatí. We also thank other members of the Risk Project, especially Lionel Hernandez, Judith Rosales and Hebe Vessuri for nurturing many reflections made in this paper and the Parupa Biological Station for all the logistical support in the field investigations from 2007. The support of Noeli Pocaterra, Asamblea Nacional; Gabriel Picon, EDELCA; and Stanford Zent and Eglee Zent, Instituto Venezolano de Investigaciones Científicas, was also invaluable for the completion of Bjorn Sletto's field research, which was funded through a Fulbright-Hays dissertation award; a Peace Studies Fellowship from the MacArthur Foundation (administered by the Peace Studies Program, Cornell University); an NSF Geography doctoral dissertation research award (no. 0221324); a Mellon Graduate Fellowship from the Cornell Society for the Humanities, Cornell University; and scholarships from the Mario Einaudi Center for International Studies and the Department of City and Regional Planning, Cornell University. All omissions and errors are those of the authors alone.

1. Introduction

Reflexive and deliberative environmental governance approaches have increasingly captured the attention of scholars and practitioners as a means for addressing conflicts over different knowledge systems in the environmental policy making process and for developing more plural, socially just and co-produced pathways for sustainability (Hendriks and Grin 2006; Voss *et al.* 2006; Leach *et al.* 2007; Ojha *et al.* 2009; Leach *et al.* 2010). Yet the challenges involved in putting into practice these concepts are still little understood and documented. As pointed out by Leach *et al.* (2007) there is still a great need to understand, 'what conditions enable an opening up of more rigid governance arenas so as to permit deliberative governance; and, having identified power relations that hinder deliberation, what scope and processes help bring about improved forms of deliberation that include the interests and perspectives of poorer people'.

One issue that has received little attention in the reflexive and deliberative environmental governance literature is the question of cultural difference. In particular, there is a paucity of discussion about the conditions necessary for reflexivity about present and future uses of nature among different actors in intercultural settings, especially in the context of shifting local identities and rapid cultural change among indigenous peoples. Despite its sensitivity to social meaning, historical contexts, and the importance of human subjectivity, the reflexive governance literature tends to assume that dialogue and deliberation takes place in culturally uniform settings or in contexts where culture itself is not being contested at a local level (Sánchez-Rose 2010).

Yet, the reality in most of the developing world is that indigenous peoples are undergoing rapid processes of cultural change which may seriously constrain reflexivity over environmental issues. In Latin America, particularly, modern nation-building is premised on narratives of national identity and modernity that have contributed significantly to undermining 'traditional' views and values of nature among indigenous people. This trend has continued even within emerging multicultural nation-state models, such as those currently favoured in Venezuela, Mexico, Paraguay, Guatemala and Ecuador, where, at least nominally and in different degrees, indigenous peoples' rights are acknowledged and recognised in foundational legal frameworks, such as national constitutions (Méndez 2008). This loss of traditional knowledge is uneven and varies between and within indigenous groups and communities, thus giving rise to contested and shifting views and knowledge about environmental management at the community level. These local conflicts, in turn, act as a strong barrier for discussing and defining sustainability pathways at the community level.

At the same time, natural resource conflicts in indigenous peoples' territories must be understood as emerging within a broader context of identity politics and struggles for cultural survival. At least on a discursive level, in Latin America indigenous people and particularly their political leaders increasingly promote their own agendas for sustainable management of their lands, which are often founded on recognition of local knowledge coupled with attention to other fundamental issues such as the need for historical reconstruction, land ownership and the right to self-determination (Leff 2004; Jansasoy and Pérez 2005; Pizarro 2006; Leon 2010). For deliberations about sustainable development to be meaningful to indigenous people, they must be set within this wider local agenda of cultural reaffirmation.

In this paper, we argue that in order to facilitate deliberative and reflexive approaches for environmental governance that involve indigenous people and external actors, it is necessary first to examine critically the ongoing and often conflicted processes of cultural change and identity formation that are shaping, and will continue to shape, strategies of environmental management at the local level. These processes of cultural change, in turn, inform complex relations of power that tend to hinder deliberation in developing countries such as Venezuela. Ultimately, a critical understanding of changing identity formations and local views of nature is crucial for developing

more just and productive forms of deliberation, where the diverse forms of knowledge of marginalized groups are brought to the foreground in discussions about present and future processes of environmental management. Furthermore, we argue that in conflicts that are strongly rooted in a clash between value systems, public discussions about processes of social change are key in triggering the transformation of environmental conflicts because they can help bringing out to the fore issues at the cultural level that are commonly hidden or latent. Once the cultural dimension of a conflict is made visible, changes in other dimension (such as the personal or structural) can follow, thus achieving a wider process of conflict transformation.

In order to carry out this analysis we bring together the conceptual framework of conflict transformation theory developed in peace studies with the reflexive and deliberative governance framework developed by the STEPS Centre. Although these frameworks do not generally 'speak to each other' they have many points in common, as well as areas in which they complement each other. We bring them together to achieve an integrated analysis of environmental conflict transformation and to understand how spaces for greater deliberation and reflexivity in the environmental policy making can be opened up in the context of strong local cultural change.

From the STEPS Centre framework we adopt the notions of system framings (narratives and counter-narratives) for understanding the nature of power relations in conflicts over different forms of knowledge and their potential transformation. Particularly we draw on the work of Leach *et al* (Leach *et al.* 2007; Leach *et al.* 2010), as well as on previous work of some of the Centre's members (Leach and Mears 1996; Keeley and Scoones 1999) which has nourished many of the present ideas of the Centre. From the conflict transformation theory the paper draws particularly on the work of Jon Paul Lederach (Lederach 1995; Lederach 2007; Maise and Lederch 2004), who has developed an integrated conflict transformation framework which helps identify and consider the different dimensions that give rise to conflicts (personal, interpersonal, cultural and structural), as well as ways in which we must work in order to achieve long term and profound changes in social systems.

Despite the fact that these two bodies of knowledge can help analyse the causes of conflicts and how to transform them, neither refers specifically to cultural difference and the challenges that poses for enabling the opening up of spaces for deliberative and reflexive governance. In fact, this is a flaw of social and environmental justice theory as a whole. Thus, our work seeks to inform this broader body of knowledge, adding to the call of other Latin American scholars (Escobar 2001; Leff 2001; Fontaine 2004:503-533; Zapata 2009; Olivé 2011; Torres 2011) who have also pointed out the need for greater attention to cultural difference and recognition of environmental and social justice thinking.

To develop further our argument, the paper describes and analyses a conflict over the use of fire in Canaima National Park (CNP) in south east Venezuela, where endogenous processes of deliberation about cultural change over the last ten years have played an important role in 'opening-up' the conflict in a new form of reflexive and deliberative governance regarding fire management, leading to changes in power relations between indigenous people and institutional actors.

The case is relevant for those concerned with how reflexive and deliberative governance may be grounded in practice, and also for those engaged in fire management in other parts of the world, as references in the literature to concrete examples of deliberative and reflexive governance processes in fire management are practically non-existent. Interdisciplinary and intercultural approaches to fire research and management seem still to be the exception rather than the rule, which limits our understanding and management of fire as a complex social-ecological system (Carmenta *et al* 2011).

We build our discussion on three separate but complementary participatory research projects carried out between 1999 and 2009 in the Gran Sabana, a mixed grasslands-forests region located

within CNP and extending across the borders into Guyana and Brazil. Although fire has been a permanent component of the Gran Sabana landscape for a millennia (Leal 2010; Montoya *et al* 2011b) it is a highly contentious issue in Venezuela. We have drawn on similar methodological approaches to help the Pemon indigenous people clarify their views of fire in order to strengthen their capacity to engage in dialogue and negotiations with other actors, as well as to facilitate opportunities for dialogue about the use of fire and its impact among different park actors (Rodriguez 2004a; Rodriguez 2007; Sletto 2008; Sletto 2009a; Sletto 2009b; Sletto 2010; Sanchez and Vessuri 2009; Bilbao *et al.* 2009; Bilbao *et al* 2010; Leal 2010).

In each of the three cases our research on local knowledge and views of fire has been conducted within the context of community-wide critical reflections on cultural change and identity. In the first research project, deliberations about fire, culture and identity took place within the participatory development of community 'life plans' (Planes de Vida). In the second project, dialogue about meanings of landscape, fire and culture emerged during a four-year participatory mapping project to demarcate Pemon traditional lands. In the third case, Pemon views of fire have been discussed within an ongoing multi-disciplinary and inter-institutional research project known as the 'Risk Project'². This uses a knowledge articulation research approach to evaluate the ecological and socio-institutional vulnerability of the park at different spatial and time scales and to create conditions for dialogue among the Pemón and other actors in conditions of equity (Bilbao and Vessuri 2006; Sanchez-Rose and Vessuri 2009, Rodriguez *et al.* 2009).

The paper is divided in five sections. In the first is a description of Canaima National Park, the Pemon and of the fire conflict. Sections two and three follow with a discussion of the key concepts that have guided the authors' thinking about reflexive governance in situations of serious, persistent conflict coupled with rapid cultural change. Section four analyses the fire control policies in the park and their relationship with the existence and persistence of a narrative of fire, linking into the following section where the authors' different participatory research experiences, and the influence they have had in the emergence of a counter-narrative of fire, are discussed. In the final section the importance that community wide critical reflection on the cultural dimension of the fire conflict has had in triggering a wider process of conflict transformation are examined.

² The formal title of the Project is 'Risk factors in the reduction of habitats in Canaima National Park: vulnerability and tools for sustainable development'.

2. Canaima National Park, the Pemon and fire

Canaima National Park (CNP) is located in the state of Bolívar in southeastern Venezuela, abutting the borders with Brazil and Guyana (see Figure 2.1). The national park was established in 1962 with an area of 10,000km², but its size was increased to 30,000km² in 1975 in order to safeguard the watershed functions of its river basins. The Guri Dam, which generates 70 per cent of Venezuela's electricity, is located 300km downstream of the north-western border of the park. In recognition of its extraordinary scenery, and geological and biological values, CNP received World Heritage Status in 1994. The best-known feature of CNP is its characteristic flat-topped mountain formations, known as *tepuis*, a term derived from the local indigenous name *tüpü*, which lie in the Precambrian Guiana Shield, one of the oldest landscapes in the World.

Figure 2.1: Location of Canaima National Park and World Heritage Site



The vegetation in CNP is divided between a savannah-forest mosaic in the eastern sector, known as the Gran Sabana, and evergreen forest in the west. The question of the origin of this mixed forest-savannah landscape is still subject to controversy (Rodríguez *et al* 2009, Rull 2009; Rodriguez 2004a; Sletto 2008). Some authors believe the savannah patches might be a product of a rain shadow caused by the eastern *tepuis* (Huber *et al.* 2000) or of a process of savannah expansion during drastic climatic fluctuations in the Pleistocene-Holocene boundary and during the early-mid Holocene (Rull 2007; Montoya *et al.* 2011a). Others (e.g. Galán 1984; Dezzio, 1994) have suggested that the formation might be largely anthropogenic, resulting from repeated burning by indigenous peoples.

CNP is home to the Pemon indigenous people, a Carib indigenous group (Thomas 1980) roughly divisible into three subgroups on the basis of phonetic differences: the Arekuna; Kamarakoto; and Taurepan. All three subgroups are found in CNP: the Arekuna are primarily settled in the north; the Kamarakoto in the middle reaches of the Caroni River; and the Taurepan in the south. The date of their settlement of the Pemon in their present-day territory is unknown, although they already occupied the south of what is now Bolívar State when the first Europeans arrived at the end of the eighteenth century (Thomas 1980). Two pre-Hispanic archaeological sites which could date from the late Pleistocene/early Holocene (c.a. 11,000-9,000 yr BP) are known in the vicinities of Canaima and in the Cuyuní River (Gassón 2002), but no direct connection has yet been established with the Pemon (Schubert and Huber 1985). Today, the population of Venezuelan Pemon approaches 28,000 (INE 2001), with about 18,000 living in CNP (World Bank 2006). Very few non-indigenous inhabitants live in CNP. Most Pemon live in villages of 100 to 1000 inhabitants, but some still follow the traditional settlement pattern of dispersed nuclear families and pursue traditional subsistence activities, including shifting cultivation, gathering, hunting and fishing. Although fire plays a central role in most of these traditional livelihood activities (see Table 2.1), controversy surrounds the

Pemon practice of savannah burning because it is perceived to be threatening forest patches in the Gran Sabana. Nearly 70 per cent of detected fires take place in savanna areas but some occasionally cross the savanna-forest boundary (Ablan *et al.* 2007).

Table 2.1: *Pemon uses of fire*

| | |
|--|---|
| Domestic use: | Cooking; keeping warm; lighting; firewood; cleaning around homes; burning rubbish |
| Healing and spiritual use: | Smoking out evil spirits when a person is ill; chasing away dangerous spirits or, in some cases, summoning good spirits (e.g. the rain spirits) |
| Environmental protection (wildfire prevention): | Preventing large fires entering forests (savannah patch-burning and forest fire breaks); fighting big hazardous fires (fighting fire with fire) |
| Communication: | Signalling during hunting, fishing, gathering, and emergencies |
| Aesthetic: | Making the savannahs look pretty and green |
| Safety: | Cleaning paths when going fishing, hunting, to agricultural plots, on visits, etc; clearing around houses; chasing away dangerous animals (jaguars, snakes) and mosquitos |
| Grazing: | Producing fresh green grass for cattle and deer |
| Fishing: | Making the fish come out while fishing (the smoke resembles the dusk) |
| Gathering: | Smoking out grasshoppers |
| Agriculture: | Burning of farmland; fertilizing farmland |
| Hunting: | Flushing out animals; circle burning (<i>rampüm</i>) |
| Resistance to fire control policies: | Irritating the EDELCA and making the fire-fighters 'work and get wet'. |

Source: Rodríguez 2007 and Sletto 2006

The principal actors in the conflict over fire management are state resource managers, academics and Pemon, although colonial explorers, missionaries, naturalists, the military, and politicians have at various times constructed a dominant narrative of fire as a detrimental factor in the Gran Sabana (Rodríguez 2003). It is important to stress that these principal actors are not homogenous; rather, there are different factions and stances with respect to fire (Sánchez-Rose and Vessuri 2008). Among state resource managers and academics, at one extreme, there are those who see fire as an external component of the landscape and therefore as innately negative; at the other extreme, fire is viewed as a natural component of the landscape by other actors. At the risk of oversimplification, this difference is manifested in a preference for one of two different fire management approaches: fire 'control' which is premised on fire suppression (the historically dominant view), and fire 'management' which is premised on participatory approaches and controlled burning (a previously marginalised, but emerging, view).

The fire control approach finds its clearest expression among state resource managers, including National Parks Institute (INPARQUES) personnel and administrators of the fire control programme operated by the Caroni Electricity Company (formerly EDELCA, now CORPOELEC). EDELCA is a former subsidiary of the Corporación Venezolana de Guayana (CVG), an autonomous regional development corporation created in the 1960s to oversee the industrial development of the Guayana region, including the building of Guri Dam. Due to the strategic importance of Guri Dam, in 1981 EDELCA was assigned the responsibility for developing a fire control programme to protect the watershed functions of CNP. The fire control programme is premised on rapid response to fire events that are

judged to be threatening areas of conservation priority and has historically drawn on academic literature critical to the use of fire in the area (Hernandez 1984; Hernandez 1987).

This critical view of anthropogenic fire traces its origins to ecological research by forest botanists and agronomists who focused on the study of the ecological fragility of ecosystems, particularly forests (e.g. Dezzio 1994; Fölster 1986; Fölster 1992; Fölster and Dezzio 1994). However, a new generation of environmental scholars has recently begun to advance the idea of fire management in opposition to fire suppression (Bilbao *et al.* 2009; Bilbao *et al.* 2010; Leal 2010). More generally, within the academic community, different views of fire are most marked between social and natural scientists. Typically, social scientists have a more tolerant view of indigenous fire use, while natural scientists support a more critical perspective.

Among the Pemon there are also differences in the way young people and elders view fire and its impact, as well as between residents of centrally located, larger communities that have been subject to rapid cultural change, and more isolated settlements where traditional knowledge and practices still prevail (Rodriguez and Sletto 2009). In remote communities, young people learn how to practice traditional fire management, including prescriptive burning, and they tend to share the perspective of elders. In large, rapidly changing communities, however, many young Pemon have a critical attitude towards traditional fire use, largely due to a loss of traditional knowledge exacerbated by the school system and EDELCA's environmental education efforts. At the same time, some young people in these modernising communities hold on to traditional perspectives of fire and demonstrate their resistance to fire control policies through a 'silent' form of protest (Scott 1990), both by continuing traditional burning practices despite EDELCA and community narratives, and by setting small fires to irritate EDELCA managers and to make the firemen 'work and get wet'.

In contrast to their subtle resistance to fire control policies, the Pemon have openly confronted tourism and large scale development projects (Rodriguez 2003). The most widely known conflict is their protest against a 230Kw high voltage power-line built through their lands in 2001 in order to export electricity to Brazil. Despite their failure to halt the project, this struggle gained iconic significance to the Pemon and the wider Venezuelan indigenous struggle for territorial rights, and contributed to the inclusion of an indigenous rights chapter in the 1999 Constitutional Reforms. However, despite the fact that the Venezuelan legal framework now acknowledges the rights of indigenous peoples to ancestral 'habitat', land demarcation and titling have still not taken place in most parts of the country, including Pemon lands (Mansutti 2006; Caballero 2007).

The fact that CNP is an area of great geopolitical significance due to its strategic location along the Guyanese and Brazilian borders and its wealth of natural resources explains to a great extent the lack of political will to advance the demarcation process of Pemon territory. However, Pemon fire use has also been an important justification for not granting them territorial rights, since their supposed uncontrolled use of fire is seen as evidence of their inability to manage their lands (Rodriguez 2003). This narrative of destructive burning, coupled with differences in perspectives between generations in traditional and more modern communities, has made Pemon reluctant to openly discuss their knowledge and views about fire with non-indigenous people. Thus, one of the biggest challenges to reflexive environmental governance in CNP has been to develop forms of deliberation that are perceived as respectful by the Pemon. In the following section, we reflect on key concepts that have guided our thinking about reflexive governance in such situations of serious, persistent conflict coupled with rapid cultural change.

3. Reflexive governance and conflict transformation: bringing cultural identity into the picture

Although we have pursued our research on the fire conflict in CNP independently and during different periods, our work is informed by similar concerns for power relations of power shaping knowledge production in environmental management, and we find inspiration in critical insights from the fields of conflict transformation and reflexive/deliberative governance. Although the focus of these analytical frameworks is slightly different, the former focusing on the end problem (conflicts) and the latter on the cause (the policy-making process), they share many points in common and complement each other well for the study of transformation and change in environmental governance.

As can be seen below, many of the features of conflict transformation theory are shared by the STEPS reflexive and deliberative governance framework. Attention to equity, justice and power-relations is central to both bodies of knowledge. Also, unlike more instrumental ways of conceiving deliberative and reflexive governance (Voss *et al.* 2006) the STEPS framework shares with the conflict transformation theory an emphasis on the need for dynamic approaches in conceiving the political dimensions of reflexivity and deliberation. Despite their commonalities, the conflict transformation theory has been developed and applied mostly in the context of war conflicts. Therefore it offers only a limited contribution to the understanding of power-relations in environmental conflicts. This is an area in which the STEPS framework has much to offer, particularly in the study of conflicts over different knowledge systems such as the one being discussed here.

3.1 Power and knowledge: counter-narratives as transformers of environmental conflicts

The STEPS framework emphasises the significance of system framings (narratives) and subjectivities (different values and representations of nature) for understanding conflicts over different forms of knowledge. Similarly, the STEP's conceptualisation of reflexivity and deliberation as a process by which environmental policies (and their framings) are contested and reshaped through the construction of new alternative narratives, or counter-narratives, is useful in understanding how power relations in the knowledge production system may be shifted and environmental conflicts transformed (Leach *et al* 2010).

In environmental conflicts that originate from a clash between knowledge systems, like the fire conflict in Canaima National Park, power is commonly exercised through an invisible apparatus of discourses, narratives, actors and institutions that frame and determine a particular way to see, understand and think about the environment (Keeley and Scoones 1999). The narratives of savannisation, global change, desertification and deforestation are some examples (Adger *et al.* 2001; Dryzek 1997; Leach and Mearns 1996; Laris 2004; Roe and van Eeten 2004). Common to these narratives is the emphasis placed on the idea of an environmental crisis or catastrophe, as well as on rural/indigenous communities, as the cause of environmental change and degradation, to justify achieving and accentuating external control (primarily of the State) in the use and management of natural resources, as well as to privilege techno-scientific solutions to environmental problems.

What is peculiar to this process of institutional embeddedness of environmental discourses and narratives is that it takes shape without paying attention to the geographic, historical, ecological, social and cultural specificity of each case. On the contrary, interpretations of environmental change are generally based in insufficient and superficial scientific research, although scientific discourse is often used to legitimise degradation (Leach and Mearns 1996). The direct consequence of this in many cases has been the implementation of badly informed and often mistaken environmental policies that impact negatively on the lives of rural communities and ignore more effective means to

control degradation, with conflict generally being the end result. If it is assumed therefore that power relations in these types of conflicts are developed and perpetuated through the construction of environmental narratives, it must also be assumed that the great challenge to transform them is to find ways to change these narratives. The goal is to develop environmental policies that reflect in a more plural way the different perspectives about nature, its uses and changes over time. The question is, how?

One way is through criticism, identifying the weak points of the story or discourse and exposing it publicly. But as Roe and van Eeten (2004) have indicated, criticisms contribute little to stabilise decisions as they do not tell their own story. An alternative is through the formation of counter-narratives, such as scenes or arguments that people might find more convincing than a dominant narrative (Roe 1995). The final aim of counter-narratives is not necessarily to eliminate the dominant narrative, but to re-focus it so that it becomes less questionable (Roe and van Eeten 2004). It is suggested that through the construction of counter narratives new actors-networks are re-aligned and more visibility and voice is given to the views, knowledge and perspectives of groups and actors that have been marginalised and excluded from the policy making process (Leach *et al.* 2010). This can be achieved through: a. the generation of new scientific knowledge that can prove the in-exactitude, lack of precision or falseness of supposed scientific truths; b. publicly questioning the weak points of the narrative (giving rise to a scientific controversy); c. opening space for marginalised knowledge, such as that of local and indigenous peoples, to flourish; and d. expressly generating or facilitating processes of collective deliberation about the different views at stake. It is in the making of this process that opportunities for opening up the policy making process may arise and more socially just pathways for sustainability constructed (Leach *et al.* 2010).

In recent times the emergence of a counter narrative of fire has played a very important part in 'opening up' the fire conflict in Canaima National Park and in starting to produce a change its power relations. However, this paper argues that in order to understand the role that this counter-narrative has paid in transforming the conflict, highlighting its existence is not enough. Understanding the process by which this counter narrative has emerged is significant in terms of understanding the real challenges for opening up governance in a way that furthers justice and equity. In order to do, so attention to the policy-making interface and to how contestations take place, as suggested by the STEPS framework, is not enough. A framework is needed that conceives change as a much wider and integral process, and which acknowledges in a more direct way the role that culture plays in this process. This is an area where conflict transformation theory proves very useful and complements well the contribution of the STEPS analytical framework for this paper's analysis.

3.2 Conflict transformation: an integral framework to conceptualise and evaluate social change

In the field of peace studies, scholars and practitioners are generally influenced by two dominant approaches for conflict intervention: conflict resolution/management and conflict transformation. The conflict resolution approach is the most widely known and used, and focuses on maximizing individual gains and on achieving a mutual satisfaction of interests among actors, or win-win solutions, through negotiation and consensus seeking (Fisher Ury 1981; Ury *et al.* 1988). Under this approach, conflicts tend to be seen as negative phenomena which must be avoided due to their negative impact on policy making and implementation.

However, the conflict transformation framework differs from traditional conflict resolution approaches by emphasising three aspects in the study of conflicts, which we share in our work: the notion of conflicts as a catalyst of social change; the importance of engaging with power to achieve transformation; and the importance of understanding the cultural roots of conflicts (Dukes 1996, Lederach 1995). Because of its emphasis on issues of equity and justice, therefore, conflict

transformation differs from traditional conflict resolution approaches in seeking to achieve a more profound change in relations of power that underlie and reproduce conflicts.

Jon Paul Lederach, one of the early proponents of the conflict transformation approach, defines conflict transformation as:

'The process that helps us visualise and answer to the flow and backflow of social conflict as life opportunities...that can create processes of constructive change...reduce violence, increase justice in interactions and social structures and respond to the real problems of human relations.' (Lederach 1995)

Conflict transformation is therefore a process of engaging with and transforming the relationships, interests, discourses and, if necessary, the very constitution of society that serve to reproduce conflict. Conflict transformation theory also recognises that conflicts are transformed gradually, through a series of smaller or larger changes as well as specific steps by means of which a variety of actors may play important roles (Miall 2009). The emphasis is not so much put on external actors mediating or promoting change, but on building the capacity of the actors to transform the conflicts they are involved in:

'Conflict transformation must actively envision, include, respect, and promote the human and cultural resources from within a given setting. This involves a new set of lenses through which we do not primarily see the setting and the people in it as the problem and the outsider as the answer. Rather, we understand the long-term goal of transformation as validating and building on people and resources within the setting'. (Lederach 1995)

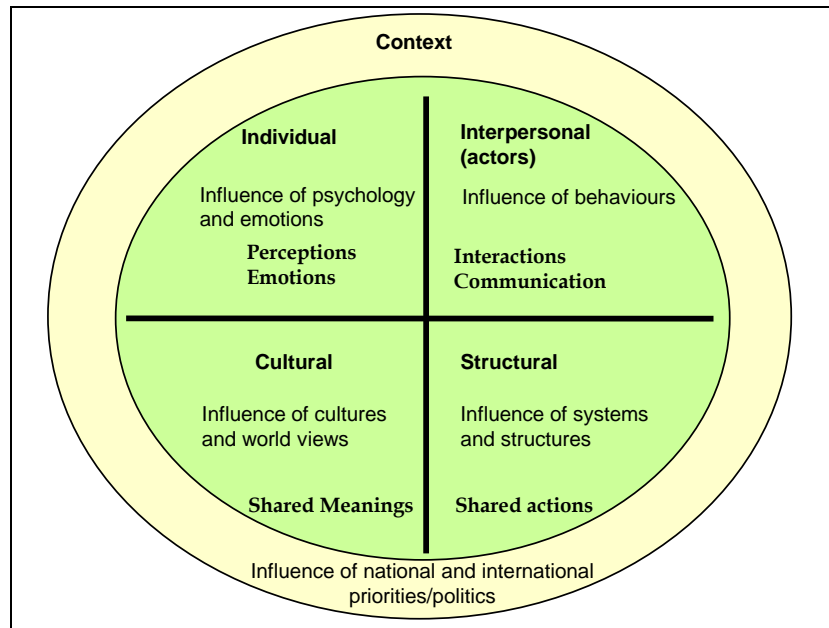
Jon Paul Lederach (1995) conceptualises transformation and intervention for conflict transformation in four dimensions that form part of an integral system (see Figure 3.1). These four dimensions are: a. individual (emphasising changes in personal emotions and perceptions); b. interpersonal (emphasising changes in communication and collective perceptions); c. cultural (emphasising changes in meanings, values systems and world views); and d. structural (emphasising changes in institutional, legal and political frameworks). Vayrynen (1991) adds another dimension to this analysis: context transformations (emphasising changes in regional and international priorities) (see Figure 3.1). Within this system, changes may take place in different time scales (short, medium or long term) affecting different dimensions in different moments in time.

The analysis of the process of conflict transformation seeks to capture the changes that have taken place in each one of these dimensions and their impact over the conflict as a whole (Maiese and Lederach 2004) (see Table 3.1). The Steps framework focuses to a great extent on the interpersonal (actor) dimension, paying attention to how networks and alliances determine the closing or opening up of environmental governance, but it focuses less on the cultural and structural (or political-economy) dimensions, which are also crucial in explaining conflict, resistance and/or change.

One subject discussed among conflict transformation theorists which is also relevant in terms of understanding how the opening up governance can take place, is the ideal sequencing of actions in order to achieve conflict transformation (Miall 2009) or in other words, 'What types of actions or interventions are appropriate in each of the dimensions, and when, in order to achieve conflict transformation?' There are no universal answers to this question as it depends on the nature of each conflict, for example: a. which of the five dimensions has a greater impact on the origin of the conflict; b. what stage the conflict going through (latent or manifest); c. the history of the conflict; and d. the power relations, both at its structural and interpersonal levels within the conflict.

In the analysis that we develop below we will show that in the case of the fire conflict, work at the cultural level, through reviving and revaluing identity, culture and history, has been key in initiating conflict transformation so as to allow in further stages of the conflict the development of new alliances and knowledge networks (interpersonal dimension) which have started crafting a new narrative of fire in the park. However, it is important to mention that in an independent manner, simultaneous changes in the structural and contextual dimensions have also played a part in the transformation of the conflict.

Figure 3.1: *Dimensions of Conflict transformation*



Source: adapted from Maiese, M. and Lederach, J. P. (2004) 'Transformation', in H. Burgess and G. Burgess (eds) *Beyond Intractability*, Colorado:University of Colorado Conflict Research Consortium

Table 3.1: *Indicators of conflict transformation*

| Type of transformation | Indicators |
|---|---|
| Context transformations | Change in regional and international priorities |
| Structural transformations | Change in legal, political and institutional frameworks, |
| Actor transformations | |
| a) In their power relations | a) Changes in leadership, in political mobilization, in networks, partnerships, coalitions. |
| b) In the quality of their interactions | b) Better communication, increased trust, increased feeling of respect, and improved recognition of the other. |
| Cultural transformations | Better understanding of different cultural framings and world views. More openness to the visions and framings of others. |
| Personal transformations | Changes in the self-esteem, emotions, perceptions and individual spirituality |

Source: Adapted from Vayrynen (1991) and Lederach (1995)

3.3 Cultural difference, justice and conflict transformation

Apart from contributing to systemic conflict transformation, attention to the cultural dimension has been essential for opening up fire governance in Canaima National Park in socially just ways. Social and environmental justice theory emphasises three elements of justice: distribution, participation and recognition. From these three elements, recognition of cultural differences has tended to receive little attention from social and environmental justice theorists, in part because it is often confused with, or included in, the other two (Scholsberg 2004).

We, as well as others (Leff 2001; Escobar 2001; Fontaine 2004; Scholsberg 2004; Zapata 2009), argue for the need to give more, or at least equal, importance to cultural difference in discussion over social and environmental justice. On one hand, the emphasis on distributive rights tends to treat natural resources principally as material resources, when natural resources are also symbolic resources which legitimate or reaffirm the identity of different social groups according to the definition they have of themselves (identity) and the values, belief systems and interests they have about nature and its use. Struggles over the land, forests, fire, and rivers, among others are symbolic struggles (over meanings), and therefore in essence, struggles over identity (Greider and Garkovich 1994; Leff 2001; Escobar 2001). On the other hand, there are struggles, like the one being here discussed, when political opportunities to manifest dissent, as well as the demand for participation, simply do not arise because of the way that the identity and cultural meanings of the nature of marginalised groups have been silenced away or do not find a way of publicly flourishing on their own. In such a case, procedural rights do not have such a central part to play in doing justice, as does cultural recognition. If anything, the lack of recognition of cultural difference (through the dominance of one value system and identity over another) can hinder spaces for participation, through the 'closing off' of marginalised groups to participate in dialogue and deliberation.

Thus, we posit that if social justice is to play a role in reflexive and deliberative environmental governance in intercultural settings, much more importance needs to be paid to recognizing cultural difference. Shifting cultural identities and non-uniform local knowledge and views about nature can mark the start of very inequitable conditions for reflexivity and deliberation between managers, scientists and indigenous peoples over nature and its use. In such conditions, cultural reaffirmation and revival is a necessary precondition for reflexivity and deliberation, both at the community level and with other actors.

This process of cultural revival only makes sense if it is relevant and meaningful to indigenous people, and this can be achieved through feeding into their own ongoing political agenda of cultural reaffirmation, which many indigenous peoples in Latin America currently have. In the case of the Pemon, their agenda of cultural reaffirmation follows two principal trajectories: the pursuit of territorial rights and the development of their own 'Life Plans' (*Planes de Vida*). While the Pemon conceive of territorial control as the primordial material base for cultural survival, the Life Plan is the ideological, spiritual and philosophical base for it. Thus, their concurrent pursuit of territorial control and a Life Plan are central in their struggle for cultural reaffirmation, environmental integrity and the defence of the territory.

The Pemon Life Plan is conceived as a process of self-reflective analysis about their current situation, social changes and their values, helping them understand, 'who they are and want to be'. As a Pemon leader from the village of Kavanayen stated, 'perhaps the Life Plan can become our space to think and reflect about ourselves. Just as western people have universities, we also need a space to think and mature our ideas as a society'. By developing a clear vision of their identity, needs and desires, a Life Plan will allow them to negotiate more strategically with state and other external institutions, '...our own Life Plan will not only strengthen us as a people, but also facilitate the

necessary interactions with the institutions with which the Pemon interact, helping such institutions structure their initiatives and activities with the communities'. (World Bank 2006: Annex 20)

The Pemon's desire to articulate their own views of development, land use planning and resource management as a precondition for dialogue with other actors is shared by many other indigenous peoples in Latin America (Avensur *et al.* 2007). The concept of a Life Plan was originally conceived in Colombia (Jansasoy and Pérez 2005), where Life Plans are already used as articulating mechanisms between indigenous peoples and external advisers in land-use planning processes (Pérez and Argueta 2011; Vasquez *et al.* 2005). Indigenous peoples in the Andean region are furthering their own perspectives of development through the concept of '*El Buen Vivir*' (To Live Well; *Suma Qamaña* in Aymara and *Sukak Kawsay* in Quechua) which seeks to place local culture and priorities at the core of interactions with external academic, political and economic actors (Huancuni 2010; Leon 2010).

However, despite the desire and intention of the Pemon to achieve territorial rights and develop their own Life Plans, both processes require skills and technical know-how that are lacking in the Pemon communities. This suggests that in order to facilitate reflexive governance in intercultural settings, it is necessary to develop local capacity to carry out these processes. In Section 5 we will discuss how this process of cultural identity building has taken place and the contribution it has had in 'opening up' the process of reflexive and deliberative governance over fire in Canaima National Park in a multiplicity of spaces.

Prior to that, however, we will turn to discussing the fire control policies in the park and their relationship with a particular dominant narrative of fire.

4. The fire policy intervention: the need for planned equilibrium

Fire policies in Canaima National Park are a perfect example of what the STEPS framework has defined as a 'closing down' type of policy intervention (Leach et al 2010). Fire policies on the park have sought to:

- Reduce the degree of fire damage to vegetation in the priority sectors, by rapid intervention of the fire brigade
- Reduce or minimise the start of fires through the implementation of an intensive programme of fire prevention
- Ensure adequate fire management by the Pemon.

(Gómez 1995)

These three objectives have been carried out through: a. fire-fighting activities; b. prevention of fires (environmental education); and c. research on fire.

Underlying this policy intervention there is a very important distinctive feature: the emphasis on external control, and therefore the exclusion of Pemon knowledge of fire management. This policy is, in many ways, a consequence of a historical narrative of fire that has served to simultaneously delegitimise Pemon fire use and justify top-down fire suppression approaches. Three important themes characterise the historical, hegemonic fire narrative: the view that the landscape has unquestionably and systematically been degraded by the Pemon; the view that the Pemon do not have the capacity to manage their land, due in part to the false assumption that they are recent settlers in the area and therefore have little knowledge about how to manage the land; and the threat that all this is causing to more global (national) development goals by reducing the life span of the Guri Dam, located 300km downstream from the National Park. Therefore, the only way to ensure a 'planned equilibrium' in the area is by keeping a tight control on the Pemon use of fire.

This can be better understood by taking a look at how the fire narrative has been constructed over time.

4.1 Framing the Fire Narrative

4.1.1 Nineteenth Century – Nineteen fifties: naturalists and explorers discover the Gran Sabana.

The dominant view of fire in Canaima National Park which shapes the prevailing fire control policies is the product of more than a century of misinterpretation of the Pemon use fire by non-indigenous people. Early explorers initiated this process in the nineteenth century. It is their published accounts that the Venezuelan government consulted when national interest to explore and 'develop' the Gran Sabana first arose (e.g. Aguerrevere *et al.* 1939; CORPOTURISMO *et al.* 1974). Inseparable from more objective information about the area were particular readings of the Gran Sabana landscape as well as of Pemon fire practices, which appear to have been influential in framing the present views of fire in the park.

These are some examples:

'One of our party while in the valley below had carelessly thrown down in the dry grass the match with which he had lighted his pipe; and now down in the valley below us already a great field of fire was moving almost as rapidly as the shadow of a flying cloud across the vast plain.' (Im Thurn 1885:10) (Underlining is ours)

'...the steep hill-side across the stream had been hideously burnt, and there were evidences of recent Indian encampment and of fish-poisoning in the river. Indians are an admirable people in many ways, but they scarcely deserve their goodly heritage, since all that they do for their beautiful country is to poison the fish in its exquisite streams and to disfigure the fair hills by continual grass-burning.' (Clementi 1920: 232) (Underlining is ours)

'The lowlands about Roraima are scantily peopled by the Arekuna (Jarekuna of Brazil) Indians who inhabit the basins of the Cotinga, Kukenam, and Caroní rivers. They have a deplorable custom of setting fire to the grasslands of their territory. The fires sweep over hundreds of acres of savannah annually and, entering the forests, destroy or greatly alter the component vegetation of large tracts.' (Tate 1930:64) (Underlining is ours)

By the time the first official Venezuelan expedition to the Gran Sabana took place in 1939 (Aguerrevere *et al.* 1939), it had become established in scientific literature that inappropriate indigenous practices were responsible for the destruction of forests in the area. However, whilst some emphasised repeated and uncontrolled savannah fires in their explanation of the formation of the local landscape, others gave more importance to slash-and-burn agriculture:

'This land was originally covered by forest....At some moment in time these lands were chosen as cultivable lands by nomadic people. It is well know that in such circumstances, the first thing these people do is to cut the forests and burn the organic matter...all the humid matter which accumulated throughout centuries is rapidly and totally lost...After a series of years in which the Indians have grown their crops, and after the destruction of the secondary forest, a gramineous vegetation more or less dense has been established...Such agricultural practices, which have given such bad results, should be excluded from modern farming practices.' (Christoffel 1939: 596-597)

But this negative view of fire was not just based on the perceptions of fire by early century naturalists. It was also influenced by a whole set of new values produced by industrialisation, which involved a total re-conceptualisation of the development process, both in rural and urban areas.

At the beginning of the twentieth century, fire was being used by farmers and cattle ranchers in the Guayana Region (the eastern half of Venezuela, which encompasses the CNP) as well as by indigenous peoples for subsistence. With increasing modernization, however, reliance on fire in agriculture became unacceptable. Fire became a symbol of under-development and primitivism and its use in farming throughout the Venezuelan Guayana started to be strongly criticised. This is reflected in the following passage from a local newspaper published in 1940:

'It is necessary that the fires, which are set to destroy snakes and ticks in the fields and are affecting the productivity of our lands, be changed for other methods... Today pesticides help to make the ticks disappear from the fields... What we need is to introduce a proper farming policy to the Venezuelan Llanos (plains), which today remain in the same state of under-development as the fifteenth century.' (El Luchador 1940)

Thus, whilst naturalists lamented the impact of fire on the natural life and forests of the Gran Sabana, proponents of modernisation in Venezuelan Guayana viewed it as a threat to soil fertility and to the productivity of forest. Although these negative views of fire emphasise different concerns, both lead to the same conclusion: the use of fire in the countryside, particularly in indigenous practices, was undesirable.

4.1.2 Nineteen fifties to the present: the arrival of development

From 1950 onwards, the use of fire in the Venezuelan Guayana countryside became even more incompatible with the development priorities of the region and of the country. The discovery of massive reserves of bauxite, iron, aluminium, gold and diamonds, led to the creation of Ciudad Guayana, one of the most important centres of industrialisation of Venezuela, formed by the fusion of the former City of San Felix with a new, planned city, Puerto Ordaz. The energy supply for this huge industrial development was to be provided by hydroelectric power, primarily through the Guri Dam. Consequently, preserving and maintaining the forest cover in the heads of the catchment areas of the Caroní River Basin became of utmost importance to the State.

In the following decades, and particularly after the CVG started to become established in the Gran Sabana, the discourse against the use of fire became particularly strong. By the 1970s Pemon burning practices were widely viewed by resource managers, planners, developers and the military as irrational and highly destructive of the environment. So established had become these views that even politicians, traditionally unconcerned with environmental issues, voiced their indignation at the extensive fires that took place in 1979:

'It is not possible that the drama of fires that we see every year in the Gran Sabana should continue occurring. They degrade the environment in that part of the Bolívar State and will leave terrible consequences for the future...those who call ourselves civilised conform ourselves with the excuse that the Indians are responsible for the destruction of our ecology. What is worse is that a large part of the Caroní River Basin, which constitutes the base for the hydroelectric development of Venezuela, has been burnt and a regular water supply from the Basin depends on the ecological state of the Gran Sabana.' (Ildemaro Martinez, Parliamentary Deputy: cited Magallenes 1979)

Apart from being seen as undermining the development plans of the region and the country, fire was not seen as compatible with the concept of a National Park. In 1974, the management plan of the newly developed Canaima National Park described the use of fire by the Pemon in the following way:

'[Fires] in this area become a pyromaniac vice; it is not possible to understand in any other way the great inclination that these people have for savannah burning, much of which is carried out without apparent reasons.' (CORPOTURISMO *et al.* 1974: 87) (Underlining is ours)

This view of the Pemon as pyromaniacs has resulted in them being popularly referred to by non-indigenous people in Venezuela as '*los Quemones*' (the burners).

Underlying the traditional narratives of indigenous burning practices in the nineteenth and twentieth centuries is the perception that the Pemon lack the necessary knowledge and skills to use fire or manage the land. This is illustrated in the regional press coverage of the fires that occurred in the Gran Sabana in 1979:

Reporter: "What caused the fires?"

General Ferreira (Regional Commander of the Armed Forces): "The lack of education of indigenous peoples, who use fires due to a lack of resources and because it is the most economic way to clean the savannah. But they never use fire-breaks...If the Ministerial Organisation of Frontiers and Indigenous Affairs would take the responsibility of directing programmes towards the indigenous people to educate them and teach them about the dangers that fire poses on the vegetation, the fauna and even themselves,

they would become aware and reason about its use.' (Pierluissi 1979) (Underlining is ours)

The reasoning has been that the lack of knowledge about fire management leads to using fire without control and that this results in environmental degradation. In 1981, the perceived lack of knowledge and control in the use of fire, together with the strategic importance of the Gran Sabana for the production of hydroelectric power, justified the external intervention in fire management in the park.

4.2 The role of science shaping the fire narrative

This fire narrative has been reinforced in the last three decades through a bias towards a particular type of ecological studies. Up until 1999, ecological research in the park had favoured studies that provided only a short-term view of savanna-forest dynamics (Galan 1984; Folster 1986, Folster & Dezzeo 1994, Hernandez 1999). Little attention had been paid to gathering sets of data to study processes of landscape change more directly, or to document long term historical changes. Instead, generalisations about the impact of fire had often been made from localised and short-term research (e.g. Galán 1984; Hernández 1987; Dezzeo 1994), though the characteristics of the soil, vegetation and burning practices vary considerably from area to area (Montoya *et al.* 2011a; Sletto 2011; Rodriguez and Sletto 2009; Otto Huber, botanist, IVIC, personal communication).

Furthermore, some researchers had been highly vocal in supporting the view of fire as a detrimental component of the park, even though research provided only partial working explanations of forest-savanna dynamics and environmental change (Fölster 1992; Rull 1992). Sometimes this was expressed in catastrophic images such as the following, which reinforced the need for external fire control intervention:

'...it is of crucial importance to stress that the rate at which [the savanization] process advances is increasing and alarming... it is not an exaggeration to predict that if measures are not taken and awareness is not increased, at the current rate the total desertification of the Gran Sabana could take place in a period of 100-200 years, or maybe less if we take into account the population increase. The Big Desert is not a remote possibility as many think.' (Galán 1984:19)

In the last three decades, researchers have also helped to introduce another element into the narrative which has helped to reinforce even further this sense of rapid landscape change and therefore the urgency for an external control intervention: the alleged recent historical arrival of the Pemon into the Gran Sabana.

Although the exact date of occupation of the Gran Sabana by the Pemon is unknown, some natural scientists have been helped to create a conventional wisdom about the recent arrival of Pemon to the area by a misinterpretation of the work of anthropologists with regard to the history of human occupation.

For instance, referring to the work of the North-American anthropologist David Thomas (1983), Schubert and Huber (1985) state, 'The date of initial occupation of the Gran Sabana by the Pemon is not known with certainty; it is presumed to have taken place at least during the eighteenth century'. Yet, Thomas' exact words were, 'As far as the historical records allow us to go back in time (approximately around 1750), the groups known as Arekuna, Kamarakoto, Ipurugoto, etc, used to occupy most of the part of what it is currently known as Pemon territory'. (Thomas 1980). Thus, Thomas suggests that the Pemon were already present in the CNP by 1750, but he gives no clear indication when these groups actually settled in the area.

Along similar lines, Dezzeo *et al.* (2004) state, 'No one knows how long the Pemon have been living in the Gran Sabana. Butt-Colson (1985) assumes the human occupation in the Gran Sabana to be recent, dating to 300 years ago.' However, Butt-Colson clarifies:

"Many thanks for letting me know the origin of the allegation in which I said that the Pemon are recent occupants of the Gran Sabana. There is a misunderstanding here. I was referring to the first contact between people from the Old and New World (merchants among others) and then to the establishment of people of the Old World in the lower parts of the main rivers (Orinoco, Esequibo, Berbice) ... There is absolutely no historical evidence to suggest that the indigenous peoples of Guyana were not, in the times of the 'Discovery' and its early contacts, in the areas they occupy today, even though there were subsequent movements due to European persecution and that of the Caribs... ...Really, we need an archaeological record to know what happened before 1492' (Audrey Butt-Colson, personal communication; Rodriguez 2004b).

Despite the misinterpretation of the historical presence of the Pemon in the area, the notion of the Pemon as recent arrivals to the Gran Sabana became deeply engrained in fire policy making circles as a received wisdom, thus helping to reinforce particular readings of the origin of, and change in, the Gran Sabana landscape as a result of fire:

'I think, based on the history, that the Gran Sabana is 300 years old; that is, the expansion of savanna began 300 years ago. Previously, this was much more forest than savanna. The proportion forest–savanna was exactly the opposite of what it is today. Now there is 80 per cent savanna, before it could have been the opposite: 80 per cent tall forest. I think humans, specifically the Pemon, have favored this multiplication of savanna. Forest has been undergoing reduction and savanna has undergone expansion. The only producer of fire (in the Gran Sabana) is the Pemon.' (EDELCA environmental manager, personal communication, 2003; Sletto 2011).

5. Cultural identity and opening up fire governance in Canaima National Park

Largely as a result of the power of the hegemonic narrative of indigenous fire use, the relationship between the Pemon, state resource managers, and scientists in CNP has been characterized by monologue, where the Pemon have been passive recipients of messages about the need to halt their use of fire through a variety of environmental education activities. Their role in fire management has been restricted to employment as fire fighters in the fire control programme. While efforts have been made to involve young Pemon in fire policy development, elders have been excluded. Furthermore, until recently scant attention had been paid to the study of Pemon knowledge and practices of fire management. This has fueled much frustration with the environmental management institutions in the area, as suggested by an elder from from Liworiwo:

'The people from CVG, EDELCA and INPARQUES always come here to criticise the way we do things, the burning of the savannah, etc. They don't even try to find out the way indigenous peoples live and think. I know what I am doing when I burn the savannah. But instead of asking first how I think, why I act the way I do, they come to tell me that I should do things in a specific way.' (Interview extract, 1999)

In contrast, some of the younger Pemon who are influenced by the state environmental education efforts, are embarrassed about the elders' fire use and express this in comments such as the following:

'I am sick and tired of fire. Sometimes when people ask me why there are so many fires, I don't know how to answer, so I shut my ears. I always tell them,' they do it for pure pleasure'. I tell them that when the elders are gone there won't be any more fires. I think it will be better that way.' (Kumarakapay, Interview extract, 1999)

As can be expected, this intergenerational divide between young Pemon and the elders over the use of fire gives rise to considerable friction at the community level, which points to the need for deliberation within the Pemon community about different views of fire before entering into dialogue with external actors. As a Pemon leader said in response to an EDELCA manager when the latter suggested initiating a 'true dialogue' about fire in the park:

Resource manager, 'We are open to dialogue...We know there are problems in the area, so how about if we agree a meeting in which each of us brings a working paper and we can sit on a workshop and work on that.... I would truly like to invite you to a round table in which you tell us in what we have failed, in which the Pemon would tell us, 'you are wrong, the fire control programme should be ran this way', or any other thing... .

Pemon leader. 'Right now we are undergoing a process of reflection, and we have talked a lot about many things...we have talked a little about fire, about things that have made us think a lot... we need to have things clear. We would first like to clarify, in the same way that different observers have their opinions, (researchers, EDELCA and INPARQUES) of what fire is, and who the Pemon are, we would also like to reflect about that. What is fire for us? After that, ok, then we can sit down and talk about it, and say this is fire for us, and, discuss, 'what is it for you?'" (Kumarakapay, Focus Group discussion, 1999)

Since then, important progress has been made within communities to clarify the Pemon views of fire, facilitated, in part, by our respective research efforts in the Gran Sabana.

5.1 Participatory research and community deliberations about fire

5.1.1 Participatory community Life Planning in Kumarakapay (1999)

The first attempt at helping the Pemon clarify their views of fire took place during the Life Planning process in 1999 in Kumarakapay, the largest Pemon community in Sector 5 (one of eight self-designated sectors of the Pemon territory). Kumarakapay is undergoing rapid cultural change, and leaders asked that Rodriguez assist with developing a community-wide reflection process as a condition for her conducting her dissertation research in the community. The result was a year-long participatory process of self-reflection about the past, present and desired future of the Pemon from Kumarakapay, conducted by a group of approximately 30 people (about half elders and half youth).

The process started with a series of workshops aimed at developing a historical and geographical perspective of the community. The workshops focused on the origin and settlement history of Kumarakapay, changes in the community's wellbeing over time, and the definition of the community's territory, including areas for hunting, agriculture, fishing, gathering and previous settlements. This was followed by a workshop intended to elucidate Pemon views of environmental changes, focusing on the value of the different components of the community's territory (forests, savannas, rivers, *tepuis*, game, minerals, *Mauritia* palm swamps) and their changes over time³.

During this workshop, it became clear that there were marked differences in the way Pemon youth and elders viewed environmental change, particularly with regard to the role of fire. While a negative view of fire dominated the perceptions of young Pemon, elders' views tended to be more positive. The participants agreed that a more thorough investigation was necessary in order to explain these differences. Subsequently, in-depth interviews about knowledge and uses of fire use were carried out with 29 people (14 young Pemon and 15 elders) focusing on: a. meanings of fire; b. uses of fire; c. advantages and disadvantages of fire use; d. season of the year for using fire; e. methods used to prevent large fires; f. past and present frequency of fire use; and g. the history and origin of large catastrophic fires. The results of the interviews were processed and analyzed *in situ* and presented at a community meeting. They proved useful for clarifying differences in knowledge and cultural framings of fire among the Pemon.

5.1.2 Participatory mapping and participatory research of fire use (2001-2004)

A participatory mapping project was conducted between 2001-2005 in the 12 communities in Sector 5 concurrently with Sletto's dissertation research on Pemon uses and knowledge of fire (Sletto 2006). The project was initiated following a series of meetings with chiefs and community leaders of Sector 5, where it was agreed that Sletto would train a group of indigenous cartographers to work with elders to map indigenous place names in accordance with requirements in the Law of Indigenous Land Demarcation. Following the training course, Sletto and the indigenous cartographers organized a series of 11 community workshops in which groups of residents, directed by indigenous cartographers, engaged in deliberations and map-making to document traditional geographic knowledge. As well as mapping place names, land uses and resource locations, these community workshops facilitated discussions about changes in culture, indigeneity and traditional environmental knowledge (Sletto 2009a; Sletto 2009b; Sletto 2010), including the current uses of fire in different areas of the Gran Sabana. A final self-demarcated map of Sector 5 was completed in 2005 and distributed to all participating communities, as well as the National Cartography Office, EDELCA, and CVG, although it is still not officially recognized as such by the Venezuelan state (Sletto 2010).

³ This workshop was followed by others which focused on discussing socio-cultural change, views of development, critical community problems and how to solve them and views of a desired future.

During the mapping project a participatory study of fire use was conducted in the communities of Kumarakapay and Monte Bello, a small, remote community where traditional burning is still practiced. In addition to documenting cultural norms regarding fire use and everyday practices through interviews and participant observation with elder fire managers, Pemon youth and elders actively participated in developing and conducting surveys to assess the state of traditional knowledge of fire use among youth in both communities. In addition, because of the long time period of this field work, Sletto had the opportunity to facilitate numerous, informal and impromptu conversations between youth and elders about environmental change and the presumed benefits and drawbacks of traditional burning practices.

5.1.3 The Risk Project and participatory Life Planning in Kavanayen (2007 to present)

Since fire is one of the key risk factors in the Gran Sabana (Bilbao and Vessuri 2006), the Risk Project has initiated a paleoecological reconstruction of landscape history (Leal 2010), analysis of changes in the vegetation cover and land uses, and a study of fire behavior and its impacts on vegetation biomass, species composition and biodiversity, and carbon and nitrogen cycling in a savanna/forest gradient in Gran Sabana (Bilbao *et al.* 2009; Bilbao *et al.* 2010)⁴. In addition to contributing to the understanding of risk factors and habitat vulnerability in the CNP, another goal has been to facilitate dialogue among the scientific community, resource managers and the Pemon to reflect around their different perceptions of risk and environmental change (Sánchez-Rose and Vessuri, 2009). This dialogue has taken place at three scales: between institutions engaged in fire management and research; between disciplines represented by the project participants; and among residents at the community level.

At the community level, leaders in Kavanayen in 2008 expressed similar concerns over identity loss as in Kumarakapay in 1999, and it was agreed that the Risk Project could facilitate a process of reflection by using Life Planning as a platform for dialogue.⁵ To initiate the Life Planning project, an intercultural research team was formed with researchers from the Risk Project (including ecologists, sociologists and anthropologists), the community chief, the community priest,⁶ and young Pemon professionals with a technical or university degree. The project began with a series of community workshops to facilitate dialogue about community history, socio-ecological change, and residents' views of the future, and to define topics for future trans-disciplinary research. Research in the following areas is currently being carried out by trans-disciplinary teams: a. historical reconstruction; b. reconstruction of cultural traditions and practices, where customary uses of use of fire play an important part; c. land use and food security; and d) governance and political organisation.

Also during this initial phase of the Life Planning process, the workshops provided opportunities for joint reflection about fire management. Given the previous lessons learned by the authors, the workshops were specifically designed to clarify differences in perceptions between young Pemon and elders. Thus the workshops started with discussions among young Pemon about their desired future and perceptions of social and environmental change, followed by a participatory mapping project with young Pemon to delineate the community's territory and gather basic information about Pemon toponymies and land use practices.

⁴ This long-term fire experiment was initiated in 1999 under the 'Atmosphere-biosphere interaction in Gran Sabana, Canaima National Park' multidisciplinary project and continued within the Risk Project.

⁵ In 2007 work in Kumarakapay was also re-instated in the context of the Risk Project but has concentrated on updating and giving public visibility to the participatory reflection and evaluation process carried out in 1999 as a platform for inter and intra-cultural dialogue about identity, socio-environmental change and Pemon views of a desired future. The result was a community authored publication entitled 'The History of the Pemon from Kumarakapay', which is now being used in the school and other villages in Gran Sabana as a guide for the development of community life Plans (Roroimokok Damuk 2010).

⁶ Jesus Garcia, now deceased.

Following this, a workshop was organised with both elders and young Pemon, where elders were encouraged to reflect on the young Pemon's perspectives of socio-environmental change. As in the case of Kumarakapay, the workshop revealed marked differences between the young Pemon and the elders' perspectives on fire. Beyond bringing these differences to the surface for open deliberation, this workshop also served to exchange scientific and Pemon perspectives of fire through the presentation and discussion of the results of the Risk Project study of fire behavior, biomass production and biodiversity in the Gran Sabana (Bilbao *et al.* 2009; Bilbao *et al.* 2010). On a more recent occasion, the results of the paleocological reconstruction of the historical impact of fire in the Gran Sabana were also shared and discussed in a community meeting (Leal 2010).

5.2 Results of the experiences

The participatory research projects described above helped facilitate deliberations about indigenous identity and social and environmental change, and in so doing created spaces for open, reflective dialogue about fire management. We have categorised the deliberations about fire stemming from our research in two classes at two different scales: reflexive deliberations within Pemon communities, and reflexive deliberations between Pemon and external actors.

5.2.1 Opening up contested knowledge of fire at the community level

All three participatory projects revealed important norms and principles that underpin Pemon's fire management system, many of which are not known or are ignored by state resource managers, and also increasingly by young Pemon. According to the Pemon worldview, fire helps them fulfill their ancestral obligation to care for the Gran Sabana. Any attempt to eliminate or restrict fire use is perceived as a threat to cultural identity and Pemon territoriality and is likely to meet with resistance, particularly from elders and from Pemon from villages subject to less cultural change. As in the case of other indigenous people such as the Aborigines of Kakadu National Park in Australia (Lewis 1989), Pemon use fire to 'clean' the landscape and to make it look 'beautiful'. Also, like other indigenous peoples living in similar environments (Lewis 1989; Fairhead and Leach 1996; Mbow *et al.* 2000; Laris 2002; Moore *et al.* 2002; Laris 2004; Mistry *et al.* 2005; McGregor *et al.* 2010; Miller and Davidson-Hunt 2010; Rodriguez *et al.* 2011), Pemon have developed a prescribed burning system that involves setting grasslands fires during certain times of the year in order to reduce fuel accumulation and thus prevent large, destructive forest fires. Thus any reduction in the use of fire is perceived by the Pemon as a threat, since it may lead to the accumulation of flammable biomass.

Yet these community reflections about fire also revealed that indigenous knowledge and perspectives of fire are not shared by all Pemon. Social change is leading to a decline in prescribed burning, which appears to result in a critical accumulation of flammable biomass buildup in some areas of the Gran Sabana. It is also contributing to differences in perceptions and knowledge of fire management of fire between younger Pemon and the elders (see Figure 5.1) (Sletto 2006, 2008). Young Pemon from Kumarapapay, for instance, who have been subject to rapid social change, are not very aware of the important role of prescribed burning for preventing large destructive fires. A similar trend was also observed in Kavanayen during the Life Plan workshops, where young Pemon made no mention of the importance of fire in fire prevention but instead stressed its use as a productive tool. In contrast, in Monte Bello, a more traditional Pemon community, young Pemon revealed much greater knowledge of prescribed burning methods (Rodriguez and Sletto 2009).

By creating awareness of these intergenerational differences, the participatory studies contributed greatly to developing reflective capacity among the Pemon. Some young Pemon in particular, shifted from being very critical of traditional uses of fire to becoming concerned about the consequences of the loss of knowledge of fire management. In the words of a young Pemon teacher, before and after the community discussion in Kumarakapay:

Before final discussion, '[The elders] set the fires and if a number of hectares get burned, well, they will get burned...I think it does not affect them to see all the landscape getting burned.' (Interview extract, May 1999)

During the community meeting, 'We have to start thinking what will happen here in a few years, when the elders, that are those who use fire here, die. The savanna will grow too much if we do not burn it. That is very dangerous. We the younger generation will have to start thinking how we are going to use fire in the future.' (Comment, August 1999).

Table 5.1: *Pemon perceptions of fire in Kumarakapay*

| Visions of fire | Elders and “traditional” young Pemon | “Modernized”: young Pemon |
|---------------------------------------|---|--|
| Place of fire in the landscape | Integral part of the environment Fire makes <i>our land</i> feel happy. | Negative, destructive. External component of the landscape. |
| Aesthetic value of fire | Helps to keep the savanna pretty and green | Makes the landscape look ugly-burned vegetation. |
| Pemon logic in the use of fire | It is essential to live. Helps to prevent large fires. Is part of the Pemon cultural identity. | Productive use (hunting, agriculture, communication, maintenance of paths) |
| Use of fire | Free, no control is required | Requires strict control |
| Methods to control fire | Fire is controlled with fire: savannah patch mosaic, prescribed burning. Burning before rains. | Fire breaks, fire beaters, helicopters. |

Source: Rodriguez 2003

Interestingly, the participatory process in Kumarakapay also triggered reflexivity among elders about their responsibility for teaching younger Pemon about the natural world in order to prevent the loss of knowledge. As a result of the workshops, both young Pemon and elders expressed their commitment to learning and teaching each other about the use of fire. Most significantly, some young Pemon spoke of having a clearer view about the use of fire in the park and feeling better able to discuss it with government officials.

Apart from facilitating a process of self-reflection about environmental change, the development of the Life Plans provided an opportunity for sharing and discussing the results of research carried out through the Risk Project, including the study of fire behavior and its impacts on the production of biomass and biodiversity in the Gran Sabana and the paleoecological reconstruction of the landscape history.

As part of the fire behavior study, selective burns in 27 plots were carried out during the dry season over a period of seven years. The study revealed great variability in fire behaviour in terms of fire, extent, temperature, and flame height. Furthermore, it showed that the variability in fire behaviour creates a mosaic of grasslands patches with different fire histories, where the recently burned patches act as firebreaks in the propagation of fires started in neighboring patches. Based on this research, the authors concluded that the Pemon prescribed burning system reduces the occurrence of dangerous fires and also furthers spatial and temporal vegetation heterogeneity (Bilbao *et al.* 2009; Bilbao *et al.* 2010). Most importantly this study provides support for Pemon prescribed

burning as an appropriate technique for biodiversity conservation and suggests that, rather than eliminating Pemon fire management practices, the Pemon burning system is key in preventing potentially large destructive fires in critical conservation areas.

When realising that the fire experiment validated rather than questioned their fire management practices, elders from Kavanayen became much more willing to share their views of fire and to discuss past and present uses of fire. These discussions revealed past periods with absence of regular burning due to historical events, including inter-ethnic wars and the slave trade, which could help explain large fires that took place during the twentieth century, and also helped identify current areas of high risk due to a lack of systematic burning by Pemon (Valeriano Constatí, personal communication).

Likewise, the paleoecological reconstruction of the history of the Gran Sabana landscape revealed that, in contrast to what has been commonly assumed, fire has been a permanent component of the Gran Sabana landscape for the last 7.000 years (Leal 2010), similar to that which has been reported in the Cerrado savannas in Brazil (Mistry *et al.* 2005). As fires in the Gran Sabana have been shown to have primarily an anthropic origin, these findings suggest a long-term continuous human presence in the area and an active role of fire (and humans) shaping and maintaining the landscape. The results of this study were also presented in a community meeting in Kavanayen. Through the presentation of the results of the reconstruction of the paleoecological history of fire in Gran Sabana (Leal 2010) in Kavanayen, the Pemon were able to learn first-hand that fire has been present in this landscape over the last 7.000 years, thus providing them with arguments for facing up to those that say that fire is an external and recently introduced component of the Gran Sabana landscape.

An additional value of this exchange of views about fire is that it has given the Pemon direct access to products of scientific research carried out in CNP, something seldom done by researchers, thus providing them with useful technical information for confronting the conventional fire narrative. For instance, even though other researchers have documented continuous records of carbon in southern Gran Sabana (Montoya *et al.* 2011a), the Pemon have not had access this information before as it has been published in academic journals, generally in English. All the data files from the participatory mapping project in Sector 5, including final GIS files, were also provided to Pemon leaders in all the communities in the sector, along with the final printed maps and all the original, hand-drawn maps.

5.2.2 Opening up reflexive deliberations between Pemon and external actors

These participatory research projects also facilitated discussions on different perspectives of fire at other levels. First, some young Pemon who have been involved in the participatory studies are now in a stronger position to deliberate about fire with members of the scientific community and resource managers. For instance in 2006, during a training course for Pemon teachers facilitated by a current member of the Risk Project titled 'Fire ecology in the Gran Sabana: projects, ideas and future challenges', one of the participants most active in defending the indigenous view of fire was a young Pemon from Kumarakapay who had participated in the 1999 community fire study. During the training course seven years later, he successfully challenged scientific and technical arguments and, perhaps more importantly, argued that more equitable conditions for dialogue must be created in order for Pemon to openly share their knowledge of fire (Alejandra Leal, personal communication). A similar situation occurred in 2009 in Kavanayen shortly after the workshop with young Pemon, during a video-forum organized by CVG and INPARQUES to watch and discuss Al Gore's film 'An Inconvenient Truth'. A CVG representative used the film to trigger a discussion about the need to control the use of fire. This was met with the following opposition from a young Pemon member of the Risk Project research team:

'We are tired of you [resource managers] not understanding our way of life. You ask us to live like our ancestors, without understanding how we want to live. When we go to our farms, and do the things that our ancestors use to do, you tell us that we cannot fish, farm etc. What do you expect us to live off, the air?'

This triggered a discussion about the differences between past and present uses of fire but, most importantly, made clear the tensions present among resource managers in their views about fire, with a more open and conciliatory attitude from the part of the INPARQUES representative towards the value of customary uses of fire, and a more set and unchangeable viewpoint from the CVG representative (Isabelle Sanchez-Rose, personal communication.).

Second, the results of the studies of Pemon perspectives of fire were published in academic journals in Venezuela, leading to productive discussions in academic forums about the impact of anthropogenic fire in the Gran Sabana, with fire ecologists from the Risk Project increasingly supporting the value of anthropogenic fire (Bilbao *et al.* 2009; Bilbao *et al.* 2010; Leal 2010) as their own research results and increasing interactions with the Pemon corroborated the value of local fire management practices. These scholarly articles have been widely used in training courses in Venezuela and abroad to facilitate discussion about fire management in CNP. Some of these courses, including the Protected Area Management course facilitated by the Venezuelan NGO ACONA in 2005, have taken place in the Gran Sabana and have facilitated critical discussions between Pemon and EDELCA personnel (Maria Pia Bebilaqqua, personal communication)

Finally, in 2007 these emerging alternative perspectives of fire (both from the social and ecological perspectives) prompted the Risk Project coordinator, in collaboration with EDELCA and the Indigenous Federation of Bolivar, to organize a symposium and a workshop on fire management perspectives in CNP called, 'Institutional, ecological and socio-cultural perspectives about fires in Canaima National Park', in which the different actors presented their own views for the management of fire (García and Bilbao 2007). These meetings were attended by three Pemon leaders and the President of the Indigenous Federation, in addition to resource managers from EDELCA, CVG, the Ministry of the Environment and INPARQUES, and scientists from different disciplinary backgrounds.

Table 5.2: Examples of inter-net linked networks that have triggered reflexivity about fire in Canaima National Park

| Internet media | Reference | Role of the internet facilitating dialogue and deliberation. | Internet address |
|---------------------|--|--|---|
| News Paper | Romero (2010) <i>In Venezuela's Savanna, Clash of Science and Fire</i> . The New York Times, 23 April 2010 | Scientific controversy showing different views about the impact of fire in Gran Sabana was captured and presented for the wider public in the international press and published in the internet. | http://www.nytimes.com/2010/04/23/world/americas/23venez.html?_r=0 |
| Blog | Morillo, M. (2011). Fuego Pemon in "Las crónicas de la Frontera". | The results of the studies of Pemon perspectives of fire accessible in the internet, triggered a dialogue and reflectivity among visitors of the blog about their own misconceptions and misunderstandings about Pemon uses of fire. | http://lascronicasdelafrentera.blogspot.com/2011/05/fuego-pemon.html |
| Blog and photograph | Eggli, B. (2013) Apök, el | The results of the studies of Pemon perspectives of fire accessible in the | http://www.beaeggli.ch/ar |

| | | | |
|------------|-----------------------|---|------------|
| exhibition | fuego/Apök, das Feuer | internet were used as back ground material for a photographic exhibition in the Venezuelan Embassy of Switzerland in 2011 to present and reflect about the Pemon views and uses of fire in Gran Sabana. | chives/302 |
|------------|-----------------------|---|------------|

These two events provided the first opportunity for the principal actors in the fire conflict to exchange views of the fire problem in an atmosphere of respect, and also allowed for the building of coalitions to further more democratic fire management of CNP. Many participants agreed that dialogue had to continue and that the thrust of fire policies had to be shifted from fire control to fire management. Although this dialogue between scholars, resource managers and the Pemon has not continued due to institutional changes in EDELCA, these two events helped articulate alternative visions for fire management in CNP. Recently, this discussion has entered into public discourse more broadly via the national media and the Internet (see Table 5.2), thus contributing to greater public awareness of the various perspectives on the 'fire story' in CNP (Romero 2010; Morillo 2011).

6. The transformation of the fire conflict in Canaima National Park

Over the last decade the fire conflict in Canaima National Park has started to experience important changes as a result of the wide range of reflexive processes discussed above. Most significantly, it has started to evolve from a state of latency, which made addressing its root causes very difficult, to one of open and manifest conflict, in which social awareness of the causes of the conflict has increased and a confrontation of views and perspectives has started to take place. As part of this process of confrontation of views a counter-narrative of fire has started to emerge, emphasising four main points:

- fire is an integral component of the Gran Sabana landscape, and has been so for thousands of years
- the Pemon have an ancestral system of fire management that, if widely supported, could help reduce fires in high risk areas
- fire has to be considered one of a variety of factors that could be contributing to vegetation change in the area. Socio-cultural changes coupled with fire suppression policies are leading to a decline in the Pemon prescriptive burning system and, as a result, to complex and poorly understood landscape changes
- fire policies must change from a focus on suppression to an emphasis on management (prescribed burning) based on greater integration of different knowledge systems (traditional, social, scientific and technical)

This counter narrative is the result of important changes in all the dimensions of conflict transformation discussed in Section 3 (see Figure 3.1). However, because at its core this conflict is about tensions between meanings and identity, engaging with the cultural dimension has been key to initiating conflict transformation. Giving more visibility and voice to the views, knowledge and perspectives of fire of those Pemon who have been marginalised and excluded from the fire policy making process (primarily elders), was a necessary first step in the crafting of the counter-narrative and in triggering a change in power relations in the knowledge production system. Furthermore, once work on the cultural dimension of fire management started, changes in other dimensions followed (see Table 6.1).

Table 6.1: *Indicators and drivers of change in the transformation of the fire conflict in Canaima National Park*

| Type of transformation | Driver of change | Indicator |
|--------------------------|--|---|
| Cultural transformations | Participatory research into Pemon perspectives and knowledge of fire management Public scientific controversies | Marginalised Pemon knowledge of fire is made public. More clarity among the Pemon of intergenerational differences in the views of fire. Different views of fire have started to become discussed in scientific forums, protected area management training courses, among practitioners and wider Venezuelan and international society (internet discussions, newspapers, etc). |

| | | |
|---|---|--|
| Personal transformations | Participatory research into Pemon perspectives and knowledge of fire management | Change in perspective among some young Pemon towards traditional uses of fire |
| Inter-personal transformations a) In the power relations | New diffuse/articulated networks among social and ecology academics studying new sociological and ecological perspectives of fire in CNP. New leadership among some academics promoting dialogue of fire. Temporary networks between academics and government official to open up spaces for dialogue and new views of fire. Public scientific controversies Opening up dialogue in internet sites, newspaper articles. | Emergence of an alternative fire narrative in Canaima National Park among academic circles |
| b) In the quality of their interactions | Participatory research into Pemon perspectives and knowledge of fire management | Some improvement of communication and respect among young Pemon and elders New opportunities to discuss fire in environment of mutual respect |
| Structural transformations | Participatory research into Pemon perspectives and knowledge of fire management 1995-2000 struggles for territorial rights 1999 Constitutional reforms (New Multicultural Nation-State) More visibility of the Pemon as political actors and of indigenous rights | Mild recognition of Pemon knowledge of fire in official fire management documents |
| Context transformations | Worldwide re-thinking of fire ecology in natural areas among academia | Emergence of an alternative narrative of fire in the international arena. |

6.1 The dimensions of conflict transformation

6.1.2 The cultural dimension: re-signifying meanings of fire

The historical tensions regarding fire in the Gran Sabana have been the result of a clash between different knowledge and symbolic systems, both among the Pemon and between the Pemon and other actors, which in turn arose from fundamentally contrasting relationships they all have with fire and nature. In this respect the Life Plan and land demarcation projects served to situate the discussion about fire within a wider cultural context, thus allowing hidden Pemon perceptions of nature and fire to emerge. By grounding the discussion within their own cultural politics, Pemon from different generations have started to openly discuss complex issues related to land use, environmental change and shifting local identities.

Although this process of reflexivity was initially restricted to the community level, the clarification of local views of fire has triggered reflective discussions about fire management in the CNP in different venues, such as environmental seminars, training courses, conferences, academic journals, web sites and other places of public discourse. The public discourse taking place in this variety of arenas is contributing to a re-negotiation of meanings of fire, which in turn is contributing to the emergence of a counter-narrative of fire.

6.1.3 The personal dimension: reconnecting with identity

Through reconnecting with their identity and cultural memory, this re-negotiation of meanings of fire has led to personal changes among some young Pemon who now have a greater awareness of the cultural and environmental significance of fire management and are willing to engage in public discussions about this topic with other actors, and, perhaps more importantly, to learn about proper uses of fire from their elders.

6.1.4 The Interpersonal dimension: the emergence and articulation of new knowledge networks

The emergence and articulation of new knowledge networks has been a determinant factor in the construction of a counter narrative of fire. As it is apparent from the discussion presented above, one of the distinctive features of the transformation of the fire conflict in Gran Sabana during the last decade is that the Pemon themselves have had little to do with the search for a more equitable and just inclusion of their knowledge in a new fire management approach. It is rather from the academic sector that this pressure started to emerge. This is understandable if we consider the nature of the conflict and particularly of its power relations. As pointed out by Sletto (2008):

'Ultimately, the conflict that has held the Gran Sabana in its grip for the past two decades is not about fire, but about knowledge. What counts in this 'war for truth' (Foucault 1980) is quantitative data, and those who have the greatest political and economic means to produce numbers and make them seem valuable are in a privileged position to define 'truth'.'

In this respect, new ecological research on the behavior of fire in the Gran Sabana, as well as the reconstruction of the history of fire in the landscape at a millennia scale, are playing a very important part in illuminating the lack of precise data underlying the hegemonic narrative of indigenous burning in CNP and therefore in facilitating the emergence of the counter-narrative. The credibility and perceived neutrality of this group of ecologists has also been an important condition for creating opportunities for joint dialogue about fire between scholars, the Pemon and resource managers.

However, in terms of initiating public deliberation about fire, research into the Pemon perspectives of fire management has been more instrumental in this counter-narrative. Exposing the lack of understanding of the Pemon fire management system led to an important debate about this issue, thus giving public visibility to the core cause of the conflict and showing the need for public deliberation (Rodriguez 2004; Rodriguez 2004b; Rodriguez 2007; Dezzeo *et al.* 2004; Sletto 2008; Rull 2009). Later, the findings from ecological research in the Gran Sabana helped corroborate and legitimate the Pemon customary fire management system and introduced new ecological data to inform the discussion (Bilbao *et al.* 2009; Bilbao *et al.* 2010; Leal 2010).

6.1.5 The structural dimension: changes in fire policies

As a result of the variety of processes of reflection and public deliberation about fire carried out in CNP since 1999, the counter-narrative of fire has started timidly to find its way into the institutional discourse. For instance, in some EDELCA departments, like Environmental Management, some policy documents suggest a change in the conceptualisation of fire policies, such as in the plan for integrated conservation of the Caroní Water Basin drafted in 2007, which interestingly no longer made reference to the notion of 'fire control'. Instead the plan talks about fire management as a conservation tool for the integral management of the Caroní Water Basin (Sanchez *et al.* 2007). In this same plan there is an explicit recognition of the importance of 'privileging values, cultural and land use practices that are compatible with conservation', among them fire. Furthermore, the plan argues in favor of the need to 'rescue and apply traditional uses of fire' as a part of a long term conservation intervention.

This greater sensitivity to the cultural dimension of fire in certain fire policies could also have been influenced by an intense period of confrontation between EDELCA and the Pemon between 1995 and 2000 over the building of the power-line to Brazil. This conflict brought to the fore issues of cultural and territorial rights, and ended up by playing a very important part in the 1999 Constitutional reforms and in the birth of Venezuela's Multicultural Nation-State. This gave much visibility to the Pemon as political actors and to issues of indigenous participation and values in territorial management, which may have pushed EDELCA and INPARQUES to start re-thinking their management approach in CNP⁷.

However, it cannot be said that these factors have led to profound changes in fire policies and therefore to structural changes in the fire conflict as such. Achieving this would require a more thorough revision of the existing fire management system than so far experienced. EDELCA's public participation in a new, critical conversation about fire control policies seems to be more the result of the individual efforts of some of its personnel, than to a widespread institutional commitment to internal revision and change in the institution's approach to fire management. As Risk Project coordinator, Bibiana Bilbao, said when explaining the success in jointly organizing the 2007 symposia and workshop on cultural, institutional and ecological perspectives of fire with Selma Garcia, from EDELCA:

'Despite the goodwill and the great experience and willingness of several of the Environment Management EDELCA team, collaboration has not yet translated into coordinated effective plans within the institution, aimed at reviewing fire management programmes that incorporate indigenous and scientific knowledge generated by our projects.'

6.1.6 The contextual dimension: re-thinking fire at a wider scale

The emergence of the counter-narrative in CNP has also to be understood within a broader call for a re-framing of the fire issue. At an international scale, the notion that fire is an innate enemy of the environment is less tenable now than it was three decades ago. This is partly the consequence of global research into fire ecology, both from natural and human perspectives, which directly challenges this view. Studies in West Africa show that rather than causing net conversion of forest or shrub vegetation to savanna, indigenous fire practices are often vital for maintaining dynamic forest-savanna and savanna mosaics (Fairhead and Leach 1996; Mbow *et al.* 2000; Laris 2002). In some countries, like Australia (Press 1987; Lewis 1989; Russell-Smith 2000), a more thorough

⁷ For instance in 2006 a US\$6million project of the World Bank, financed by the Global Environment Facility (GEF) and entitled 'Expanding partnership for the National Parks System' was drafted. The three main project partners were INPARQUES, CVG-EDELCA and the Pemon's indigenous organisation (*Federación Indígena del Estado Bolívar*, FIEB). They formally agreed to cooperate on the common objective of preserving the CNP's biodiversity, guaranteeing its environmental services and improving Pemon quality of life. To the project coordinators, this agreement denoted 'a growing level of trust on the part of the Pemon and a growing willingness on the part of CVG EDELCA and INPARQUES to integrate the Pemon into a more effective and participatory governance system' (World Bank 2006). The Project was to build upon this 'historical achievement' and develop a participatory co-management model for the CNP based on four fundamental objectives: (i) threat prevention and mitigation; (ii) sustainable development of local communities by supporting local benefits; (iii) implementation of sustainable and long-term financial mechanisms to support PA management; and (iv) involvement of all stakeholders, including indigenous peoples, in the CNP Management Plan's design and implementation (World Bank 2006). However, although the World Bank approved the project, the Venezuelan government withdrew at the last minute due to a new political line from the central government that halted any collaboration with the World Bank. No further attempts have been made to establish a co-management model for the CNP.

understanding of indigenous burning practices in grasslands has resulted in their incorporation into mainstream protected area management.

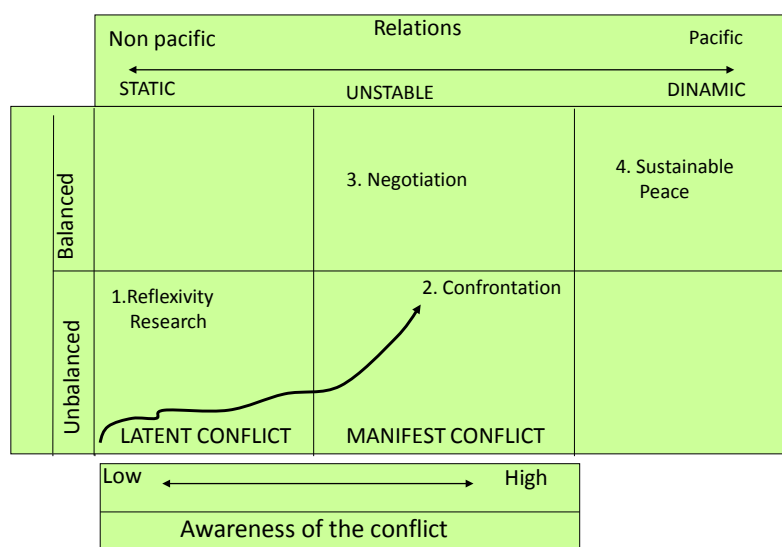
This change in discourse, research focus and priorities on a global scale has also been influential in defining an alternative research agenda on fire in Canaima National Park. Both strands of research on fire (social and ecological) emerged as a result of the exposure of respective researchers to this emerging global discourse on fire. To a large extent, this global context and discourse of fire influenced them in their search for a new approach to fire management in CNP. Now, the findings of the fire studies from both social and ecological perspectives in CNP, and the various reflexive processes that have been carried out, contribute to this global call for a new approach to fire policy-making in indigenous peoples' territories.

6.2 The stage of conflict transformation: closer to re-negotiating meanings of fire?

As suggested previously, the variety of processes of reflection carried out over the last decade concerning fire use and management in CNP have yet to lead to profound changes in fire policies. Fire control policies in CNP are shaped by complex and rigid institutional structures, and until the institutions in charge of producing such policies undergo a thorough process of self-reflection, as the Pemon have begun to do, it is unlikely that serious changes in fire policies will take place.

However, if we use as a point of reference Figure 6.1, which illustrates the evolution of the fire conflict during the last decade, we could say that the fire conflict is currently in a much more favorable stage for negotiating new fire policies than it was a decade ago (Rodriguez 2003). The power relations have started to shift from a situation of exclusion of Pemon customary knowledge in the production of knowledge about fire in CNP, to one of wider recognition of both its cultural and environmental significance. New knowledge networks have started crafting a counter-narrative of fire which exposes the weak points in the dominant narrative and suggests ways forward for a more socially just and environmentally consistent approach to fire policies. Through these new knowledge networks the Pemon have been able to start clarifying and articulating their views of fire so as to be in a stronger position to engage in dialogue with resource managers and scientists. Indeed, some young Pemon have increased their confidence to deliberate with others about the use of fire in CNP.

Figure 6.1: The evolution of the Fire Conflict 1999-2012



Adapted from Lederach (1995) Preparing for peace. Conflict transformation across cultures

As a result, overall there is a much greater clarity and public awareness of the socio-political, historic and disciplinary foundations of the fire conflict than there was a decade ago. The extent to which this might lead to opening up opportunities for negotiating a change in fire policies will depend on how these new knowledge networks continue articulating themselves, on how the counter-narrative continues positioning itself in the public discourse, and how willing new, institutional decision-makers are to take a lead in a profound revision of the institutional approach to fire (see Table 6.1 for a summary of indicators of transformation in the fire conflict).

In 2012, the Venezuelan National Fund for Science, Technology and Innovation (FONACIT) approved funds for a new project 'Ecological basis of fire and Pemon traditional knowledge: local solutions for global problems of climate change' (Bilbao 2011), which could be instrumental in linking in a more effective way traditional knowledge systems with technical know-how in fire management from the part of the environmental agencies. This project involves the direct participation of Pemon-Arekuna community researchers, students, scholars and resource managers (from EDELCA and INPARQUES) in building a common objective for fire management in the park.

Yet, the success of this knowledge network producing a change in fire policies will depend to a great extent on how the Pemon continue positioning themselves as actors in the political arena with regards to issues of indigenous rights and territorial management, and on the pressure this might continue to put on management agencies to thoroughly revise and change their exiting procedures and culture.

7. Conclusion

This paper was set out with the purpose of answering to a call made by the STEPS Centre in 2007 to achieve a greater 'understanding of conditions that enable an opening up of more rigid governance arenas so as to permit deliberative governance' (Leach et al 2007).

Our reconstruction of the transformation of the fire conflict in CNP over the last decade has shown that paying attention to cultural identity politics and, more specifically, to developing community-wide critical reflections on processes of cultural change, as well as situating discussions about environmental change within broader agendas of cultural reaffirmation, is critical for opening up opportunities for reflexivity and deliberation over highly contentious environmental issues. By situating community-based deliberations of environmental knowledge within broader, endogenous cultural and political agendas, indigenous people can develop coherent representations of their interests and be better prepared to enter into processes of reflexive governance. As the case of the Gran Sabana suggests, equitable and democratic intercultural dialogue is possible even in areas of persistent conflict and social change. However, the conditions for such dialogue must be created through a committed engagement with the political and cultural factors that hinder dialogue between state resource management and indigenous peoples, as well as among indigenous peoples. This involves paying greater attention to scaling up and down issues of identity, local history, and self-governance than normally acknowledged in the reflexive and deliberative governance literature by devoting, among other things, time and resources to help articulate and nurture the social perspectives of excluded groups so that they have a stronger platform from which to engage in dialogue with other more powerful actors. This also suggests the need for a more direct involvement by scholars and resource managers in helping to build a 'local pathway' to sustainability as part of broader deliberations about environmental change and sustainable development, which in the case of the Pemon is represented in Life Plans.

Furthermore, our analysis suggests that in conflicts that are deeply rooted in a clash between symbolic systems, it is essential to engage with the cultural dimension in all its complexity, not only to address the root causes of the conflict, but also because this can trigger changes in other dimensions (i.e. the personal, the interpersonal and the structural), giving rise to a wider process of conflict transformation and to the opening up of opportunities for reflexivity and deliberation in a variety of social and political arenas. It is through this combination of multiple, articulated, as well as spontaneously emerging, spaces of reflexivity and deliberation that ultimately the counter-narrative of fire in Canaima National Park is gradually finding its way into the public discourse in the academic and policy-making circles, as well as in the wider Venezuelan society and international community. But none of this would have been possible without attention having been paid to creating the necessary conditions for reflexivity at the community level in the first place.

References

- Ablan, M., Marianela, D., Hoeger, H., Rivas, E., and Zerpa, F. (2007) 'APOK: Un sistema para estimar el riesgo de incendios en la cuenca alta del río Caroní'. Ponencia Presentada en el VII Congreso Venezolano de Ecología, Puerto Ordaz, Noviembre 2007
- Adger, W.N., Benjaminsen T., Brown, K. and Svarstad, H. (2001) 'Advancing a political ecology of global environmental discourses', *Development and Change* 32: 681-715
- Aguerrevere, S.E., Lopez, V., Delgado, C. and Freeman, C. (1939) 'Exploración de la Gran Sabana', *Revista de Fomento* 3.19: 501-729
- Avensur, L., Prodezza, C. and Vargas, J. (2007) 'Plan de Vida en Comunidades Indígenas de la Amazonia. Cartilla para el diagnóstico y la planificación participativa, Programa de Formación y Comunicación sobre los Derechos Sociales y Económicos de los Pueblos Indígenas de la Amazonía Peruana. Perú: Fundación Terra Nuova
- Bilbao, B. and Vessuri H. (Coord.) (2006) 'Factores de riesgo en la reducción de hábitats en el Parque Nacional Canaima: vulnerabilidad y herramientas para el desarrollo sostenible', Caracas: Proyecto de Grupo-FONACIT, USB-IVIC-UNEG- Estación Científica Parupa
- Bilbao B., Leal, A., Méndez, C., Delgado-Cartay, M. D. (2009) 'The role of fire on vegetation dynamics of upland savannas of the Venezuelan Guayana', in: M. A. Cochrane (ed.) *Tropical Fire Ecology: Climate Change, Land Use and Ecosystem Dynamics*, Heidelberg: Springer-Praxis
- Bilbao, B., Leal, A., Mendez, C. (2010) 'Indigenous use of fire and forest loss in Canaima National Park, Venezuela: Assessment of and tools for alternative strategies of fire management in Pemón indigenous lands', *Human Ecology* 38.5: 663-673
- Bilbao, B. (2011) 'Proyecto Bases ecológicas y conocimiento tradicional Pemón del fuego: soluciones locales para problemas globales del Cambio climático' Proyecto Estratégico-FONACIT No. 79446, Caracas: Universidad Simón Bolívar
- Butt Colson, Audrey J. (1985) 'Routes of knowledge: an aspect of regional integration in the circum-Roraima area of the Guiana Highlands', *Antropológica* 63/64: 103-149
- Caballero, H. (2007) 'La Demarcación de Tierras Indígenas en Venezuela', *Revista Venezolana de Economía y Ciencias Sociales*, 13.3: 189-208
- Carmenta, R., Parry, L., Blackburn, A., Vermeylen, S. and Barlow, J. (2011) 'Understanding human-fire interactions in tropical forest regions: a case for interdisciplinary research across the natural and social sciences', *Ecology and society* 16.1: 53
- Christoffel, H.M. (1939) 'Informe definitivo sobre los suelos y posibilidades agrícolas en la Gran Sabana' in S. E. Aguerrevere, V. Lopez, C. Delgado, and C. Freeman (eds) 'Exploracion de la Gran Sabana', *Revista de Fomento* 3.19: 596-631
- Clementi, C. (1920) *Through British Guiana to the Summit of Roraima*, London: T. Fisher Unwin
- CORPOTURISMO, MAC and United States National Park Service. (1974) 'Parque Nacional Canaima, La Gran Sabana/Plan Rector', Caracas
- Dezzeo, N. (1994) 'Ecology of the Gran Sabana uplands (Venezuelan Guayana)', *Scientia Guianae*, 4: xv-xxxviii
- Dezzeo, N. Fölster, H. and Hernandez, L. (2004) 'El fuego en la Gran Sabana', *Interciencia*, 29.18:409-410
- Dryzek, J. (1997) *The Politics of the Earth: Environmental Discourses*, Oxford: Oxford University Press

- Dukes, E.F. (1996) *Resolving public conflict. Transforming community and governance*, Manchester: Manchester University Press
- Eggli, B. (2013) Apök, el fuego/Apök, das Feuer. Blog BeaEggli Photography, available in: <http://www.beaeggli.ch/galerie> (Last visited March 10, 2013)
- El Luchador. (1940) 'Continúan las Quemas de la Sabana', *El Luchador*. 05 de Marzo de 1940, Ciudad Bolívar, Venezuela
- Escobar, A. (2001) 'Culture sits in places: reflections on globalism and subaltern strategies of localization', *Political Geography*, 20:139–174
- Fairhead, J. and M. Leach. (1996) 'Rethinking the forest-savanna mosaic. Colonial science and relicts in west Africa' in M. Leach, and R. Mearns, (eds) *The Lie of the Land. Challenging Received Wisdom about the African Environment*, London: The International African Institute and James Currey Ltd
- Fisher, R. and Ury, W. (1981) *Getting to Yes*, Boston: Houghton Mifflin
- Fölster, H. (1986) 'Forest-savanna dynamics and desertification processes in the Gran Sabana', *Interciencia*, 11.6: 311-316
- (1992) 'Holocene autochthonous forest degradation in Southeast Venezuela' in J. G. Goldammer (ed.) *Tropical Forests in Transition*, Basel: Birkhauser
- Fölster, H. and Dezzeo, N. (1994) 'La degradación de la vegetación', *Scientia Guaianæ*, 4: 145-186
- Fontaine, G. (2004) 'Enfoques Conceptuales y Metodológicos para una Sociología de los Conflictos Ambientales': 503-533, in M. Cárdenas and M. Rodríguez, *Guerra Sociedad y Medio Ambiente*, Bogotá: Foro Nacional Ambiental
- Foucault, M., (C Gordon ed.) (1980) *Power/knowledge: selected interviews and other writings, 1972-1977 Michael Foucault*, New York: Pantheon Books
- Galán, C. (1984) *La Protección de la Cuenca del Rio Caroní*. Caracas:Ediciones CVG-EDELCA
- García, S. and Bilbao, B. (2007) 'Perspectivas institucionales, ecológicas y socioculturales de los incendios en el Parque Nacional Canaima': 144–154 in J. C. Señaris, H. Rojas and D. Lew, (eds) 'Proceedings of VII Congreso Venezolano de Ecología, La Sociedad es parte del Ecosistema', November 5- 9 2007, Ciudad Guayana: Sociedad Venezolana de Ecología
- Gassón, R. (2002) 'Orinoquia: the archaeology of the Orinoco River Basin', *Journal of World Prehistory*, 16.3: 237-311
- Gómez, E. (1995) *Programa control de incendios de vegetacion, Cuenca Alta del Rio Caroní. Plan anual temporada 1995-1996*, Puerto Ordaz: CVG-EDELCA
- Greider, T. and L. Garkovich. (1994) 'Landscapes: The social construction of nature and the environment', *Rural Sociology*, 59.1: 1-24
- Hendriks, C. and Grin, J. (2006) 'Grounding reflexive governance in practice and context: some democratic considerations', Governance for Sustainable Development Workshop. 5 - 7 February 2006, Berlin
- Hernández, L. (1984) 'Determinación de las áreas Prioritarias del sector suroriental de la cuenca alta del Río Yuruani: memoria descriptiva', Tarenken, La Gran Sabana. Puerto Ordaz: C.V.G. Electrificación del Caroní, Departamento de Protección y Mantenimiento de Cuencas
- (1987) 'Inventario biofísico de las subcuencas Yuruani, Alto Kukenan y Arabopo; aspecto vegetación', Puerto Ordaz: C.V.G. Electrificación del Caroní

- Hernández, L. (ed.) (1999) 'Ecología de la Altiplanicie de la Gran Sabana (Guayana Venezolana). I. Estructura, diversidad, crecimiento y adaptación en bosques de las subcuencas de los ríos Yuruaní y Alto Kukenan', *Scientia Guayana*, 9:160
- Huancuni, F. (2010) 'Buen vivir/Vivir bien. Filosofía, políticas, estrategias y experiencias, regionales andinas', Lima: Coordinadora Andina de Organizaciones Indígenas CAOI
- Huber, O., Febres, G. and Arnal H. (eds) (2000) *Ecological Guide to the Gran Sabana. Canaima National Park, Venezuela*, Caracas: The Nature Conservancy
- Im Thurn, E. F. (1885) 'The Ascent of Roraima' in R. R. Marett (ed.) (1934) *Thoughts, talks and tramps: a collection of papers by Sir Everard im Thurn*, London: Oxford University Press
- INE. (2001) 'Censo Nacional de Población y Vivienda', Caracas: Instituto Nacional de Estadística, República Bolivariana de Venezuela
- Jansasoy, J. S. and Pérez, A.L. (2005) *Plan de Vida. Propuesta para la supervivencia Cultural, Territorial y Ambiental de los Pueblos Indígenas*, Washington: Fundación Zio-A'i, Unión de Sabiduría/The World Bank
- Keeley, J. and I. Scoones (1999) *Understanding environmental policy processes: a review*, Brighton: Institute of Development Studies
- Laris, P. (2002) 'Burning the seasonal mosaic: preventative burning strategies in the wooded savanna of southern Mali', *Human Ecology*. 30.2: 155-186
- (2004) 'Grounding environmental narratives: The impact of a century of fighting against fire in Mali': 63-85, in W. Moseley, and L. B. Ikubolajeh (eds) 'African Environment and Development: Rhetoric, Programs, Realities', London: Ashgate
- Leach, M. and R. Mearns (1996) 'Environmental Change and Policy. Challenging Received Wisdom in Africa'. in M. Leach, and R. Mearns, (eds) *The lie of the land. Challenging received wisdom about the African environment*, London: The International African Institute and James Currey Ltd
- Leach, M., Bloom, G., Ely, A., Nightingale, P., Scoones, I., Shah, E. and Smith, A. (2007) *Understanding Governance: pathways to sustainability*, STEPS Working. Paper 2, Brighton: STEPS Centre
- Leach, M., Scoones I. and Stirling, A. (2010) *Dynamic Sustainabilities. Technology, Environment, Social Justice*, London: Earthscan
- Leal, A. (2010) 'Historia Holocena de la vegetación y el fuego en bordes sabana/bosque y turberas de la Gran Sabana, Guayana Venezolana', Tesis Doctoral en Ciencias Biológicas, Caracas: Universidad Simón Bolívar
- Lederach, J.P. (1995) *Preparing for Peace. Conflict Transformation across cultures*. Syracuse University Press. New York.
- (2007) *La imaginación moral. El arte y el alma de la construcción de la paz*, Bilbao: Bakeaz/Gernika Gogoratuz
- Leff, E. (2001) 'Los Derechos del Ser Colectivo y la Reapropiación Social de la Naturaleza: A Guisa de Prólogo', in E. Leff (Ed.) *Justicia Ambiental: construcción y defensa de los nuevos derechos ambientales culturales y colectivos en América Latina*, Serie Foro y Debates ambientales 1, PNUMA-Universidad Autónoma de México
- (2004) 'Racionalidad Ambiental y Diálogo de saberes: significancia y sentido en la construcción de un futuro sustentable', *Polis, Revista de la Universidad Bolivariana*, 2.7
- Leon, I. (Ed.) (2010) *Sumak Kawayay/Buen Vivir y Cambios civilizatorios*, 2nd edn, Quito: FEDAEPS

- Lewis, H. (1989) 'Ecological and technical knowledge of fire: aborigines versus park rangers in northern Australia', *American Anthropologist*, 91.4: 940-961
- Magallenes, R. (1979). 'Evitar a toda costa incendios en la Gran Sabana todos los años', *El Bolivarense*, 2 March 1979, Ciudad Bolívar, Venezuela
- Maiese, M. and Lederach, J. P. (2004) 'Transformation' in J. Burgess and G. Burgess (eds) *Beyond Intractability*, Colorado: University of Colorado Conflict Research Consortium
- Mansutti, A. (2006) 'La demarcación de territorios indígenas en Venezuela: Algunas condiciones de funcionamiento y el rol de los antropólogos', *Antropológica*, 105/6: 13-39
- Mbow, C., Nielsen, T. and Rasmussen, K. (2000) 'Savanna fires in east-central Senegal: distribution patterns, resource management and perceptions', *Human Ecology*. 28.4: 561-583
- McGregor, S., Lawson, V., Christophersen, M., Kenneth, R., Boyden, J., Bayliss, P., Liedloff, A., McKaige, B. and Andersen, A. (2010) 'Indigenous Wetland Burning: conserving natural and cultural resources in Australia's World Heritage- listed Kakadu National Park', *Human Ecology*, 38.6: 721-729
- Mendez, A. (2008) 'Los derechos indígenas en las constituciones latinoamericanas', *Cuestiones Políticas*, 24.41:101 – 125
- Miall, H. (2009) 'Conflict Transformation: A Multi-Dimensional Task' in *Berghof Handbook for Conflict Transformation*, Berlin: Berghof Research Center for Constructive Conflict Management. Available online: <http://www.berghof-handbook.net>
- Miller, A.M. and Davidson-Hunt, I. (2010) 'Fire, agency and scale in the creation of aboriginal cultural landscapes', *Human Ecology*, 38:401-414
- Mistry, J., Berardu A., Andrade V., Krakô T. and Leonardos O. (2005) 'Indigenous fire management in the cerrado of Brasil: the case of the Krakô of Tocantís', *Human Ecology*, 33.3: 365- 386
- Montoya, E., Rull, V., Stansell, N.D., Bird, B.W., Nogué, S., Vegas-Vilarrúbia, T., Abbott, M.B. and Díaz, W.A. (2011a) 'Vegetation changes in the Neotropical Gran Sabana (Venezuela) around the Younger Dryas Chron', *Journal of Quaternary Science*, 26.2: 207-218
- Montoya, E, V. Rull, N. D Stansell, M. B. Abbott, S. Nogué, B. W. Bird, W. A. Díaz (2011b) 'Forest-savanna-morichal dynamics in relation to fire and human occupation in the southern Gran Sabana (SE Venezuela) during the last millennia', *Quaternary Research*, 76.3: 335-344
- Moore, P., Ganz, D., Cheng Tang, L., Enters, T., Durst, P. (Eds) (2002) 'Communities in flames', proceedings of an International Conference on Community Involvement in Fire Management, December, 2002, Bangkok:FAO and FireFight South East Asia
- Morillo, M. (2011) 'Fuego Pemon in "Las crónicas de la Frontera"', blog of Morelia Morillo, available at <http://lascronicasdelafrontera.blogspot.com/2011/05/fuego-pemon.html> (accessed 16 September, 2011)
- Ojha, H., Cameron J. and Kumar, C. (2009) 'Deliberation or symbolic violence? The governance of community forestry in Nepal', *Forest Policy and Economics*, 11.5-6: 365–374
- Olive, L. (2011) 'Los retos de las sociedades multiculturales: interculturalismo y pluralismo', *Cuadernos inter.c.a.mbio*, 8.9: 207-227
- Pérez, M. and Argueta A. (2011) 'Saberes indígenas y dialogo intercultural', *Cultura y representaciones Sociales*, 5.10: 31-56
- Pierluissi, C. (1979) '40 Incendios Forestales en la Región', *Correo del Caroní*, 1, 18 February 1979, Ciudad Guayana: Venezuela

- Pizarro, I. (2006) 'El plan de vida del pueblo Pemón' in J. Medina, A. Vladimir (Eds), *Conservación de la biodiversidad en los territorios indígenas Pemón de Venezuela: una construcción de futuro*: 11-25, Caracas: The Nature Conservancy
- Press, A.J. (1987) 'Fire management in Kakadu National Park: the ecological basis for the active use of fire', *Search*, 18.5: 244-248
- Rodríguez, I. (2003) 'The transformative role of conflicts: Beyond conflict management in National Parks: A case study of Canaima National Park, Venezuela' PhD thesis, Brighton, University of Sussex
- (2004a) 'Conocimiento indígena vs. científico: el conflicto por el uso del fuego en el Parque Nacional Canaima, Venezuela', *Interciencia*, 29,3: 121-129
- (2004b) 'El fuego en la Gran Sabana', *Interciencia*, 29 .9: 481
- (2007) 'Pemón perspectives of fire management in Canaima National Park, Venezuela', *Human Ecology*, 35.3: 331-343
- Rodríguez, I. and Sletto, B. (2009) 'Apok hace feliz a Pata: desafíos y sugerencias para una gestión intercultural del fuego en la Gran Sabana', *Antropologica*, 52.111-112: 149-191
- Rodríguez, I., Leal, A., Bilbao, B., Sanchez-Rose, I. and Vessuri, H. (2009) 'Facing up to the challenge of interdisciplinary research in the Gran Sabana (Venezuela)', *Human Ecology*, 37.6: 787-789
- Rodríguez, I., Albert, P., La Rose, C., Sharpe, C.J. (2011) 'A Study of the Use of Fire by Amerindian Communities in South Rupununi, Guyana, with Recommendations for Sustainable Land Management', study Report prepared for the South Central and South Rupununi District Tshaos Councils as part of the Project 'Securing and sustainably managing Wapichan traditional lands in Guyana (2010-2011)', Morton-in-Marsh: Forest Peoples Project (FPP)
- Roe, E. (1995) 'Except-Africa: postscript to a special section on development narratives', *World Development*, 23.6: 1065-70
- Roe, E. and van Eeten, M. (2004) 'Three - Not Two - Major Environmental Counternarratives to Globalization', *Global Environmental Politics*, 4.4: 36-53
- Romero, S. (2010) 'In Venezuela's Savanna, Clash of Science and Fire', *The New York Times*, 23 April 2010
- Roroimökok, D. (2010) *La Historia de los Pemón de Kumarakapay*, I. Rodríguez, J. Gómez and Y. Fernández. (eds), IVIC Edn, 124p. Caracas: Instituto Venezolano de Investigaciones Científicas, Fundación Futuro Latinoamericano, Inwent y Forest Peoples Programme
- Rull, V. (1992) 'Successional patterns of the Gran Sabana (southeastern Venezuela) vegetation during the last 5000 years, and its responses to climatic fluctuations and fire', *Journal of Biogeography*, 19: 329-338
- (2007) 'Holocene global warming and the origin of the Neotropical Gran Sabana in the Venezuelan Guayana', *Journal of Biogeography*, 34: 279-288
- (2009) 'On the use of paleoecological evidence to assess the role of humans in the origin of the Gran Sabana (Venezuela)', *Human Ecology*, 37.6:783-785
- Russell-Smith, J. (Ed.) (2000) 'Fire and Sustainable Agricultural and Forestry Development in Eastern Indonesia and Northern Australia', proceedings of an international workshop held at Northern Territory University, Darwin, Australia, 13-15 April 1999, Canberra: Australian Centre for International Agricultural Research
- Sanchez, R., Garcia, S. and de Armas, D. (2007) 'Rol del fuego en el del Río Caroní', presentation at a Symposium on Institutional Perspectives, Ecological and Socio-cultural for fire management in the

- Park conservation model for electric power corporation in Canaima National Basin at the VII Congreso Venezolano de Ecología, 9 November 2007
- Sánchez-Rose, I. (2010) 'Conocimientos, instituciones y territorio: desafíos para la gestión del riesgo en el Parque Nacional Canaima', doctoral research project paper for the Venezuelan Institute for Scientific Research
- Sánchez-Rose, I. and Vessuri H. (2009) 'Riesgo, ambiente y gobernabilidad. Aprendizajes de una investigación interdisciplinaria', *Pensamiento Iberoamericano*, 5: 149-170
- Sánchez Rose, I. & Vessuri, H. (2008) 'Multidimensionalidad del riesgo: El fuego en el Parque Nacional Canaima (Venezuela) visto desde distintas epistemologías', proceedings of VII ESOCITE, Latin American Conference on Social Studies of Science and Technology, 28-30 May 2008, Río de Janeiro
- Schlosberg, D. (2004.) 'Reconceiving Environmental Justice: Global Movements and Political Theories', *Environmental Politics*, 13:3
- Schubert, C. and Huber, O. (1985) *The Gran Sabana. Panorama of a Region*, Caracas: Lagoven
- Scott, J. (1990) *Domination and the Arts of Resistance. Hidden Transcripts*, New Haven:Yale University Press
- Sletto, B. (2006) 'Burn Marks: The Becoming and Unbecoming of an Indigenous Landscape', unpublished PhD dissertation, Ithaca: Cornell University
- Sletto, B. (2008) 'The Knowledge that Counts: Institutional Identities, Policy Science, and the Conflict over Fire Management in the Gran Sabana, Venezuela', *World Development*, 36: 1938-1955
- (2009a) 'Indigenous People Don't Have Boundaries: Reborderings, Fire Management, and Productions of Authenticities in Indigenous Landscapes', *Cultural Geographies*, 16.2: 253–277
- (2009b) 'We Drew What We Imagined:' Participatory Mapping, Performance and the Arts of Landscape-Making', *Current Anthropology*, 50.4: 443-476
- (2010) 'Autogestión en representaciones espaciales indígenas y el rol de la capacitación y concientización: el caso del Proyecto Etnocartográfico Inna Kowantok, Sector 5 Pemón (Kavanayén-Mapauri), La Gran Sabana', *Antropológica*, 11.3: 43-75
- (2011) 'Conservation planning, boundary-making and border terrains: The desire for order and order in the Gran Sabana, Venezuela', *Geoforum*, 42: 197-210
- Tate, G. (1930) 'Notes on the Mount Roraima Region', *Geographical Review*, 21.1: 53-68
- Thomas, D.J. (1980) 'Los Pemón', in R. Lizarralde and H. Seijas, (eds) *Los aborígenes de Venezuela. Etnología Contemporánea*, Caracas:Fundación La Salle de Ciencias Naturales
- Torres, V.H. (2011) 'Políticas públicas, interculturalidad y conflictos socio-ambientales. Una aproximación' in V. H. Torres, M. J. Narváez, P. Ortiz, V. López, S. Enge, V. Frank, P. Heylings and J. Rivera (eds) *Conflictos socio-ambientales, políticas públicas y derechos. Aproximación a un debate*, Vol II, Quito: Universitaria Abya-Yala
- Ury, W.L., Brett, J. M. and Goldeberg, S. B. (1988) *Getting disputes resolved: designing systems to cut the costs of conflict* San Francisco:Jossey-Bass
- Vasquez, M., Llano, M. C. and Ariza, E. (2005) 'La tradición cultural del pueblo indígena Awá como estrategia de conservación para el ordenamiento territorial' in F. Cardenas, H. D. Correa, and C. Mesa (Eds) *Región, ciudad y áreas protegidas. Manejo ambiental participativo*, Bogotá: Cerec, Fondo de Acción Ambiental and Fescol y Ecofondo

Vayrynen, R. (1991) 'To settle or to transform? Perspectives on the resolution of national and international conflicts' in R. Vayrynen (ed) *New Directions in Conflict Theory: conflict resolution and Conflict Transformation*, London: Sage

Voss, J.P, Bauknecht, D. and Kemp, R. (Eds) (2006) *Reflexive governance for sustainable development*, Cheltenham:Edward Elgar

World Bank. (2006) *Project brief on a proposed grant from the Global Environment Facility Trust fund in the amount of USD 6 million to the government of Venezuela for a Venezuela-expanding partnerships for the National Parks System Project*. World Bank, May 2006.

Zapata, M. (2009) 'Deliberating across differences: Planning futures in cross-cultural spaces', *Policy and Society*, 28:197–209