



TOWARDS NEW FORMS OF LEARNING

**Exploring the potential of Participatory
Theatre in Sustainability Science**

María Heras López

**Ph.D. Dissertation, Doctoral Programme in Environmental Science and Technology
Institut de Ciència i Tecnologia Ambientals (ICTA)
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A mis abuelos: Fulgen y Rafa.

Para Olaya, contigo.

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Abstract

In face of the challenges posed by global socio-environmental change, participatory sustainability science emerges as a strategic scientific approach linking multiple sources of knowledge with action in specific contexts to foster transitions towards sustainability. Its transformative and learning potential provides methodological opportunities for the generation of actionable knowledge, the incorporation of multiple perspectives, also from outside academia, and the integration of different values and political interests. Within this context, this doctoral dissertation presents a compilation of three research articles that address the development of novel participatory methods integrating the Arts, and more specifically, participatory theatre, to facilitate engaging, open and creative learning spaces in specific contexts of sustainability action.

The Arts are well-known for their potential to transform people's consciousness by refining the senses, expanding collective imagination and establishing meaningful and emotional connections between people and their environment. Faced with the necessity of integrative tools and methods to deal with social-ecological systems' complexity, the Arts can provide insightful explorative means and combine different system's languages, connecting us to intuitive thinking and emotional and experiential insight. With these assumptions in mind, the first article reviews and assesses the potential of innovative theatre-based participatory tools and methods aimed at supporting sustainability learning and agent transformations. Such review includes experiences applying theatre-based methodologies in the academic and sustainability fields and introduces the notion of *performative methods* as an integrative research and learning approach. Five potential functions of performative methods were identified and a general framework provided to assess to what extent these new approaches can be of relevance in participatory sustainability science and learning. The second article grounds the discussion and explores the use of drama as a participatory method in Community-based Natural Resource Management, through an empirical experience in an indigenous community in Michoacán, Mexico. An interactive theatrical play was created with the aim of introducing the views of young people on community forest management into community dialogue. By doing so, such action research helped open up non-conventional, aesthetically rich spaces for new ways of social interaction, diversity recognition and empathic dialogues. Finally, the third article expands the discussion by illustrating a concrete empirical application of *performative methods* in the field of futures thinking in education. Such research explored the potential and the limitations of a theatrical prospective exercise - performative scenarios, oriented towards supporting a learning process with young people in a Man and Biosphere Reserve in Chiapas, Mexico.

Altogether, the papers in this dissertation provide both fresh theoretical reflections and empirical insights into the emerging field of Arts-based practices within sustainability science, learning and practice. By providing an analytical framework assessing the

potential role of performative methods, and by giving concrete examples on how these methods can be used in practice, this dissertation has proven the suitability of such novel Arts-based practices, and in particular theatrical performance, to contribute in a transformative way, to the field of sustainability.

Keywords

Performative methods; Applied Theatre; Sustainability Science; Sustainability learning; Arts-based research; Participatory methods; Action-research, Community-based Natural Resource Management; Futures thinking; Performance

Resumen

Frente a las limitaciones de la ciencia convencional para abordar la complejidad y los retos del cambio socio-ambiental global, la ciencia de la sostenibilidad emerge como un enfoque científico estratégico. Desde este enfoque, se enfatiza la necesidad de conectar múltiples fuentes de conocimiento con la correspondiente acción en contextos específicos, para facilitar interacciones y transiciones hacia la sostenibilidad. Por su potencial transformador y de aprendizaje, la ciencia de la sostenibilidad ofrece oportunidades metodológicas para la generación de conocimiento práctico, la incorporación de múltiples perspectivas, también desde fuera de la academia, y la integración de distintos valores e intereses políticos. La presente tesis doctoral aporta una recopilación de tres artículos científicos que tratan el desarrollo de nuevas metodologías participativas dentro de la ciencia de la sostenibilidad, integrando el arte, y más específicamente, el teatro participativo, para generar espacios abiertos de diálogo y aprendizaje en contextos específicos de acción.

El arte ha sido ampliamente reconocido por su capacidad de transformar la consciencia humana a través del refinamiento de los sentidos, la expansión de la imaginación colectiva y el establecimiento de conexiones significativas y emocionales entre las personas y su entorno. En el actual contexto de necesidad de herramientas y metodologías integradoras que aborden la complejidad del socio-ecosistema, el arte aporta un medio de exploración minucioso, capaz de combinar múltiples lenguajes y de conectarnos con nuestro pensamiento intuitivo y con formas de conocimiento emocional y vivencial. Teniendo estas premisas en cuenta, el primer artículo revisa y evalúa el potencial de métodos innovadores de aprendizaje para la sostenibilidad que integran el teatro participativo. La revisión incluye diversas experiencias en el mundo académico y en el campo de la sostenibilidad e introduce la noción de *métodos performativos*, identificando cinco funciones potenciales asociadas a los mismos. De esta manera, se proporciona un marco para valorar hasta qué punto estas nuevas propuestas participativas basadas en el teatro pueden ser de relevancia para el aprendizaje y la ciencia de la sostenibilidad. El segundo artículo aterriza la discusión y explora el uso del teatro como método participativo en el contexto de la gestión comunitaria de recursos naturales, mediante una experiencia empírica en una comunidad indígena en Michoacán, México. Para ello, se creó una obra teatral interactiva con el objetivo de llevar al diálogo comunitario las perspectivas de los jóvenes sobre la gestión comunitaria del bosque y abrir espacios no convencionales de interacción social, diálogo empático y estético, y reconocimiento de la diversidad. Finalmente, el tercer artículo amplía la discusión al ilustrar una aplicación específica de estos *métodos performativos* en el contexto de la construcción de escenarios de futuro dentro de programas educativos. Tal aplicación práctica exploró el potencial y las limitaciones de un ejercicio prospectivo teatral –*escenarios performativos*– orientado a apoyar un proceso de aprendizaje con jóvenes en la Reserva de la Biosfera de la Sepultura, Chiapas, México.

En su conjunto, los tres artículos aportan reflexiones teóricas y empíricas de actualidad sobre el campo emergente de la investigación basada en las artes, y su aplicación dentro de la ciencia, práctica y aprendizaje de la sostenibilidad. Al facilitar un marco teórico para contextualizar y evaluar el potencial de los *métodos performativos* y ofrecer experiencias concretas de uso práctico de los mismos, esta tesis confirma la idoneidad de las prácticas basadas en el arte, y en particular, del teatro participativo, para contribuir de forma transformadora al aprendizaje y ciencia de la sostenibilidad.

Palabras clave

Métodos Performativos; Teatro Aplicado; Ciencia de la Sostenibilidad; Aprendizaje para la Sostenibilidad; Investigación basada en las Artes; Métodos Participativos; Investigación-acción; Gestión Comunitaria de Recursos Naturales; Escenarios de Futuro; Performance.

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Note: On gender-sensitive writing in this thesis

In order to use a gender-sensitive language throughout this document, I have adopted several writing patterns regarding the use of gender pronouns. In this way, I have used the plural form for those pronouns referring to the third person singular (use of ‘they’, and ‘their’) as a gender-neutral alternative to the masculine forms ‘he’ and ‘his’, commonly used as generic pronouns. I have also prioritised the use of plural nouns (e.g. the participants, the students) when appropriate.



Chapter 1

Introduction

A moment of rehearsal during the theatrical workshop of Cherán. Creating animals with the body (*bestiario*).

Chapter 1

Introduction

1 Research motivation

What is a wolf?

What is it that makes a wolf a wolf?



Joe Zammit-Lucia (2012) poses these questions in an article about the role of arts in the construction of meaning. He goes on to illustrate how the definition of a wolf in the dictionary – ‘*a wild carnivorous mammal of the dog family, living and hunting in packs...*’, no matter how accurate and rich in detail, fails to cover our understanding of the wolf. And this happens basically because it describes the wolf’s physical reality or materiality, but it leaves out the emotions, the myth, the legend associated to the wolf, which by large convey our meaning associated to it. Meaning is a cultural construction created through the combination of multiple layers of understanding. Physical materiality, stories, myths and legends, the Arts, language, public and philosophical discourse... all of these play a fundamental role in the construction of cultural understanding that defines how we see and interact with the world (Zammit-Lucia 2012, p.4).

Following this argument, in the light of the current situation of global environmental change, if we want to trigger social and cultural transformations towards more sustainable futures, then, science and research need to go beyond scientific descriptions of reality and also focus on the ways we create meaning and understanding. This implies, among other things, processes of transformational learning and research capable of connecting knowledge with emotions, experiences and critical reflection. Furthermore, these processes should be able to better connect people with each other and with the Earth we inhabit and belong to, so as to reinforce relations of empathy,

love, humility, mutual support and understanding. In summary, we need processes through which we can transit again and rethink and feel our ways of *being in the world* through multiple lenses and sensibilities.

Figure 1: Social transformations



This thesis research is motivated by what is perceived as an urgent need within some strands of science and academia to better reconnect and acknowledge the role that these kinds of relationships and processes have for sustainability transformations. In recent years, more and more Arts-Sciences hybrid experiences are emerging, contributing to the creation of ‘blurred genres’ in academia which seek to co-produce accessible and meaningful research for diverse audiences beyond academic peers (Cahnmann-Taylor 2008). This is slowly but surely beginning to permeate journals and conferences in the domain of sustainability science and social-ecological resilience as well¹.

In this line, three main research assumptions have guided and interconnected my research interests:

- 1.** There is big potential for innovating in the ways we create, integrate and communicate empiric and scientific knowledge in the context of sustainability.
- 2.** Social learning is at the basis of sustainability transformations.
- 3.** The Arts provide insightful means for approaching and understanding reality in multiple ways.

These assumptions frame my context of research - sustainability science, and provide its main conceptual frameworks –social learning and Arts-based research.

¹ Just as a few examples in the last years, see the several sessions on arts and the forum theatre in the Resilience Conference 2014 (Montpellier), the session on Art and Science of Ecosystem Services in the *Congreso Hispanoamericano de Servicios de los Ecosistemas* in 2015 (Argentina), or Ecology and Society’s special issue ‘*Reconciling Art and Science for Sustainability*’ (2015-2016).

2 Research context: dealing with complexity in sustainability challenges

Sustainability science is based on the mutuality of companionship.

O’Riordan 2013

In societally relevant research, the gap between science as the active knowledge producer and society as the passive recipient in the knowledge production process will need to be replaced by a process of co-design and co-production of knowledge.

Mauser et al. 2013

This thesis is broadly fuelled by the belief that **there is a big potential for innovating in the ways we create, translate and communicate empiric and scientific knowledge**. Conventional science has been questioned in the last decades for being ill-equipped to tackle the challenges posed by global socio-environmental change and unsustainability problems (Funtowicz & Ravetz 1994; Kates et al. 2001; Rotmans 2006; Jäger 2009). The implementation of one-dimensional, short-term solutions and isolated measures to interconnected complex problems, the gap between scientific knowledge and socially-relevant, real action, and the exclusion of relevant stakeholders in the research process are some examples of why *science as usual* is not working (Kates et al. 2001, Jäger 2009). Unsustainability problems involve many stakeholders and are complex and systemic, surrounded by uncertainties and deeply rooted in our societal structures and institutions (Jäger 2011, Rotmans 2006). The persistence of these problems is related to interwoven social, economic, institutional and ecological ‘system failures’ which cannot be solved in isolation (Rotmans 2006). Hence, transdisciplinary approaches able to recognize and integrate different forms of knowledge and practice between, across and beyond disciplines have been regarded as essential in the approach to complex systems (Funtowicz and Ravetz 1994, Mauser et al. 2013, Nicolescu 2014).

Within this context, sustainability science emerged in the 2000’s as a strategic scientific approach seeking ‘to understand the fundamental character of interactions between nature and society’ (Kates et al. 2001, p. 641). Through the years this approach has increasingly focused on the generation of knowledge oriented towards the implementation of measures and the development of strategies to deal with persistent problems of unsustainability (Clark & Dickson 2003; Wiek et al. 2012). Its focus is, therefore, the design and running of processes linking knowledge with action to foster transitions towards sustainability (Jäger 2009).

As O’Riordan (2013, p. 32) reminds us, ‘because sustainability embraces all branches of knowledge, sustainability science is not ‘science’ as the concept is traditionally understood’. Indeed, sustainability science requires the integration and co-production of diverse forms of knowledge and expertise among all stakeholders involved (Gallopín et al. 2001; Siebenhüner 2004, O’Riordan 2013). On the one hand, the multi-scale, multi-domain, complex structure of unsustainability problems demands

the interaction of multiple actors at local, regional and global levels. At the same time, the character of multiple and cumulative environmental stresses can only be successfully addressed through a broad and inclusive knowledge base (Siebenhüber 2004, p. 3). On the other hand, the strategic and solutions-oriented nature of sustainability science seeks not only to better understand social-ecological problems but also to generate socially-relevant knowledge promoting transformative changes (Jäger 2011). The strategic and normative dimensions of sustainability science entail epistemological challenges related to participation and inclusivity in research processes that expect to be socially relevant. If multiple actors are to interact, share their knowledge and implement solutions together, then stakeholder involvement and commitment is required (Siebenhüner 2004). How can this be fostered? What kinds of processes motivate participation and ownership? Facilitating inclusive, deliberative and knowledge generation processes can provide a way of legitimizing and strengthening the scope of the research, as well as enhancing the ownership of its outputs, which will later be roadmaps in transitions towards sustainability. Participatory approaches through which goals, norms and visions can also be included become crucial, as they provide guidance for transformation strategies (Mauser et al. 2013). This also requires a shift in research questions to include normative and strategic questions beyond the analytical description of unsustainability problems. In the words of Wiek et al. 2012:

‘It is important to note that these additional streams of questions that demarcate the transformational from the descriptive–analytical mode of sustainability science are equally considered as research questions and not implementation tasks for persons outside of sustainability science. Pertinent research questions include: What problem perceptions exist, do they conflict, and how can they be reconciled? What values and preferences are underlying (diverging) future visions? How can value-laden stances of future generations be included in visioning processes? What are effective and efficient transition pathways? What are generic institutional barriers and coping strategies in implementing transition strategies?’

(p. 6-7)

Most importantly, participation across disciplines and among different kinds of stakeholders can provide social learning opportunities. It is precisely the ‘intention to actively contribute to social learning and change processes’ that distinguishes sustainability science from other research approaches (Jäger 2011). As Kates et al. (2001) remark, combining different ways of knowing and learning is a necessary strategy to allow different social actors to work together and cope with uncertainty and limited information. These processes should recognize the ‘wide range of outlooks regarding what makes knowledge usable within both science and society’ (Kates et al. 2001, p.641). Processes of social learning leading to the transformation of social-ecological interactions emerge, thus, as a crucial requirement to navigate transitions towards sustainability and an expected outcome of sustainability science (Kates et al. 2001, Blackstock et al. 2007, Jäger 2011). Such learning processes include, among

others, the recognition, articulation and negotiation of the diverse identities, perspectives, values and interests that configure both sustainability problems and pathways towards more sustainable futures.

The transformative and learning implications of sustainability science pose new methodological challenges related to the generation of actionable knowledge (*what is relevant in which context?*), the incorporation of knowledge from outside academia (*who is a knowledge actor?*), and the integration of different values and political interests (*what is our purpose?*) (Miller et al. 2013, Wiek et al. 2012). There is, consequently, an opportunity for innovation and inspiration in the development and implementation of methodological approaches bringing different kinds of actors, sensibilities and forms of knowledge into participatory processes within sustainability science. This thesis research addresses such space of opportunity through a specific methodological approach that emphasizes dialogue and learning within highly engaging processes of community participation.

3 The research challenge: main objectives & questions

Within this context, this thesis explores the potential of using applied theatre, through the form of participatory theatre, to foster participation and knowledge creation and integration in the context of sustainability learning processes. This is expected to inform methodological developments and innovations in participatory methods within sustainability science.

As an open, goal-searching research process, I started with an initial broad research question, which guided the challenge of ‘going into the unknown’:

How can participatory theatre contribute to the development of new methods of fostering social learning in sustainability science?

This question was broken down into two general research objectives:

- 1.** To approach, combine and integrate participatory theatre techniques into a performative methodology in the context of social learning for sustainability
- 2.** To assess the potential and the limitations of such methods to foster social learning and community participation in specific contexts of implementation.

These broad questions and objectives guided a process of reflective practice through which different and new questions emerged as the literature review and the empirical experiences were taking place. Most specifically, the following specific research questions emerged through the theoretical and the empirical stages of this research.

The first published paper (Chapter 3) provides a literature review contextualising theatrical experiences within sustainability science based on the following research questions:

- What kinds of theatrical approaches can we find in scientific and academic research? What kinds of performative methods are already being used in sustainability-oriented interventions?
- What are their main motivations, purposes and reported outcomes?
- Taking this into account, what is the potential role of performative methods in supporting learning and transformational processes in sustainability science? What key elements constitute this potential?

The second paper (Chapter 4) focuses on the implementation of the methodology within the context of Community-Based Natural Resource Management (CBNRM), as an explorative and community dialogue tool. Two main research questions emerged through the implementation which guided the analysis:

- How can artistic tools, in particular participatory theatre, contribute to the fostering of creative spaces where collective problems and potential actions can be openly discussed and imagined to support sustainability learning?
- How can methodological developments in performative arts and in particular in ‘Conservation Theatre’ contribute to the integration and mobilization of new knowledge actors within CBNRM, especially among the younger generations?

The third paper (Chapter 5) explores the application of applied theatre in the context of futures thinking and learning processes, through an intervention within an educative project in a Man and Biosphere (MAB) Reserve. Two main research questions emerged through the implementation which guided the analysis:

- What methodological features from community theatre can provide an added value to the design of performative future exercises within educational programmes with young people?
- How can these novel methodological designs contribute effectively to sustainability learning in contexts such as the MAB Reserves?

4 Conceptual framework: Towards new forms of learning and knowledge integration

The following sections briefly describe the common conceptual frameworks underlying the three research papers introduced in the main chapters. They are expected, thus, to complement the state of the art and theoretical frameworks introduced in such papers.

4.1 Learning, knowledge and social change

Sustainability is what lies between catastrophism and denial. The challenge is to fill the concept with a positive meaning, reclaiming a collective sense of purpose

Dewandre 2011

To be operative (and not just a catchy slogan), the concept and meaning of sustainability needs to be (re)negotiated and (re)approached through specific and tangible contexts of action. In this regard, sustainability needs to be understood as a performative concept: it becomes alive in specific performance, as a dynamic and evolving system property emerging from specific social-ecological practices (Robinson 2008, O'Shea 2012). Such a procedural approach has gradually transformed the conception of sustainability from the accomplishment of certain fixed goals to seeing it as a **broad learning process** (Robinson 2008, Barth 2013, Tàbara 2013). When purposively aligned with sustainability, this learning process should be able to catalyse the cultural transformations that are at the basis of social-ecological reforms. Sascha Kagan (2012) describes it through a very clear metaphor:

‘The global crisis of unsustainability is not only a crisis of the hardware of civilization. It is also a crisis of the software of minds. The search for a more sustainable development in the ‘developed’ world has, so far, been focusing too much on hardware updates, such as new technologies, economic incentives, policies and regulations, and too little on software revisions, that is, cultural transformations affecting our ways of knowing, learning, valuing and acting together. The cultural software is, nevertheless, at least as much part of the fundamental infrastructure of a society as its material hardware’.

(p.10)

Within this cultural approach, social learning can play a crucial role as a potentially transformational practice breaking cultural limits to sustainability. But this transformational practice should be open enough to engage with the multiple intelligences, sensitivities and imaginaries of the people taking part in it. Due to the scope of my research I was particularly interested in those learning theories that approach learning processes involving wider social units, like social learning, and contextualized within social-ecological systems, like sustainability learning (see below).

Learning as a process is intimately related to meaning making. Through learning we make sense of information and experience and transform it into further understanding and/or meaningful practice (Tàbara and Chabay 2013). When learning ‘goes beyond the individual to become situated within wider social units or communities of practice through social interactions within social networks’, it can be framed as social learning (Reed et al. 2010). Social learning has been a recurrent topic in social-ecological adaptation and management contexts, where system complexities emphasize the need for diverse knowledge and perspectives to bear on environmental and resource problems

(Keen et al. 2005, Sinclair et al. 2008, Ravera et al. 2011). In these contexts, it is crucial to develop common frameworks of understanding and a basis for joint action (Schusler et al. 2003, Diduck et al. 2012).

Furthermore, in the framework of sustainability, relevant knowledge is linked to the social-ecological system where the agents produce and use such knowledge (Tàbara and Chabay 2013). Following this line, the concept of *sustainability learning* has been proposed to refer to cognitive and structural processes aimed at improving the capacity of different agents to manage, in an integrative and organic way, the social-ecological system they belong to (Tàbara and Pahl Wostl, 2007). These processes require a systems' thinking approach breaking with the duality human society-nature and recognizing different forms of knowledge and knowledge generation, as well as the values they carry (Milbrath, 1989; Tábara and Pahl Wostl, 2007). Beyond expanding and improving our knowledge about already existing techniques and strategies ('*single-loop learning*'), sustainability learning seeks for knowledge which is able to recognize, question and re-approach the values and assumptions intervening in the learning process ('*double loop learning*', Argyris and Schön, 1978; Lee 1993). It feeds therefore from previous transformative learning theories that similarly identify different 'orders of learning' connected to different 'levels of consciousness' (Mezirow 1997, Kitchenham 2008). These learning orders are conceived as nested knowledge systems, in which everyday thoughts and actions lay at the most superficial level, influenced by deeper levels of knowing composed by rooted assumptions, values and worldviews that are operative but not always recognized (Sterling 2010). When the learning process is able to address such deeper conceptions and perceptions, and transform 'taken-for-granted frames of reference', then, such learning can have the potential of being transformative (Mezirow 1997).

These learning frameworks have been departure points in my thesis research from which to approach participatory methodological developments contributing to social-ecological change. There is a rooting assumption that different kinds of learning can produce different types of knowledge and 'revelations' which, in turn, lead to different processes of change (Dieleman and Huisling 2006). In this regard, and according to transdisciplinary research (Pohl and Hirsch Hadorn 2007), we can identify three types of knowledge related to social-ecological change. *System knowledge*, or knowledge about the current status of a situation, answers research questions related to the origin and developments of a given problem, as well as its possible interpretations according to different perceptions of goals and possibilities of change. *Objective knowledge*, or knowledge about the status we want to achieve, tackles issues related to identifying and characterizing the need for change, desirable goals and better practices. It is, therefore, built upon a plurality of norms and values. Finally, *transformation knowledge* answers questions about technical, social, legal and cultural resources and other action mechanisms making possible the desired changes (ibid). These kinds of knowledge are obviously closely interwoven: we need to know the system to define and design transformation objectives, and we need these objectives to carry out purposeful transformations.

Acknowledging the multiple requirements of social-ecological change and the complexity of the unsustainability problems we are facing emphasizes the **need for developing tools able to cope with these different kinds of knowledge and integrate them into system's thinking frameworks**. Dieleman and Huising (2006) propose the use of 'non-cognitive' or experimental approaches in order to address systems' thinking complexity, since 'on an emotional and intuitive level, we are capable of apprehending and 'experiencing' complex systems' (p.839). Playful, imaginative and creative methodological approaches can offer a way of combining different system's languages and connecting us with intuitive thinking, as well as with emotional and experiential insight (Kagan 2008, Manejà et al. 2010, Scheffer et al. 2015).

Similarly, **research practices based on artistic performance** (e.g., dance, theatre or music), **have been applied in social sciences**, like ethnography or anthropology, with the aim of complementing other existing techniques and overcoming what is considered 'an hegemony of empiric rationalism' (Conquergood 2002). This is reflected and transmitted through very specific channels –like written text- and is frequently related to power dynamics, colonialism and oppression (ibid). Indeed, the Arts provide alternative (to conventional science) and insightful explorative means for approaching and understanding reality. Navigating through this third assumption, my research explored specific methodological developments applying participatory theatre to support social learning and knowledge integration processes in diverse sustainability contexts. The next section provides a focused overview of the implications of Arts-based practices developed within learning processes.

4.2 The Arts as understanding

On aesthetical experience and Arts-based research

A culture populated by a people whose imagination is impoverished has a static future. In such a culture there will be little change because there will be little sense of possibility.

Eisner 2002

The Arts as a language, as a form of representation, have been a companion to humans since early times, whether that be as paintings, dances, music or ritualistic performance (Schechner 2013). Through these media people have not only been able to communicate what they consider important, but also to do this in ways capable of conveying emotions and images that were not affordable by literal language (Eisner 2003). If the Arts can help us represent the world/s we perceive and build and convey meaning around them, then, they represent, indeed, 'ways of knowing' (Arnheim 1954 in McNiff 2008, Dewey 2008, Knowles and Cole 2008, Barone and Eisner 2012). In his book '*The Arts and the creation of mind*', Eisner (2002) argues for the essential role of the Arts in transforming human consciousness by refining the senses –as the primary resource through which the qualitative environment is experienced- and enlarging the

imagination –the key to reinventing and projecting ourselves in the future. How they contribute to this can be summarized in the following paragraph:

‘the arts provide a kind of permission to pursue qualitative experience in a particularly focused way and to engage in the constructive exploration of what the imaginative process may engender. In this sense, the arts, in all their manifestations, are close in attitude to play. Constraints on the imagination are loosened. (...) Imagination (...) also has a critically important cognitive function to perform aside from the creation of possible worlds. Imagination also enables us to try things out (...) without the consequences we might encounter if we had to act upon them empirically. It provides a safety net for experiment and rehearsal. As for sensibility, the arts invite us to attend to the qualities of sound, sight, taste, and touch so that we experience them; what we are after in the arts is the ability to perceive things, not merely to recognize them. We are given permission to slow down perception, to look hard, to savor the qualities that we try, under normal conditions, to treat so efficiently that we hardly notice they are there’.

(Eisner 2002, p. 4.)

In this regard, the Arts allow the development of thinking skills in the context of an art form –with specific qualities such as sound, sight and movement- while at the same time facilitating ‘forms of experience that are at once moving and touching, experiences of a consummatory nature, experiences that are treasured for their intrinsic value’ (ibid, p. xii). Such conception of the Arts is aligned with approaches to the aesthetic that emphasize its experiential, subjective and socially-constructed aspects (Greenwood 2011).

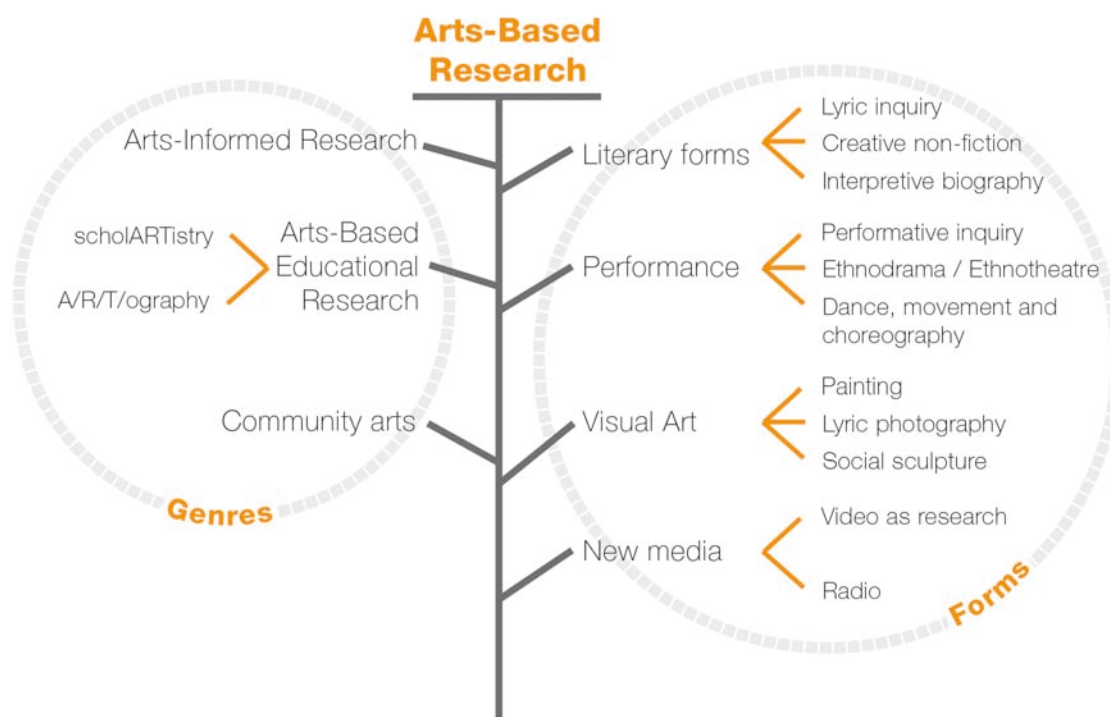
Aesthetics are important in this thesis research as they provide a framework through which we access and better understand the theatrical experience². Reviewing the ideas of cultural anthropologist Clifford Geertz, Jackson (2005, p. 108) reminds us that ‘our relationship with art, our ability to understand it and talk about it, is culturally constructed. Nonetheless, there is (...) some artistic commonality across cultures, and that is, its aesthetic quality: it appeals to the senses, it is perceptual, and it tends to be non-utilitarian’. For Dewey (2008) such quality is inherent to the experience of creating an artwork or interacting with it. Furthermore, he argues that an artwork acquires its aesthetic meaning through the active contemplation of the viewer (ibid). In a similar way, meaning in literature can be seen as constructed when the reader connects the structures of the text to their experiences (Iser 1978, in Jackson 2005). In this regard, Iser distinguishes between the artistic and the aesthetic process; the former centred on

² It is not my intention here to make a review of the different meanings and approaches historically linked to the concept of aesthetics. Rather, I would like to share some lines on those perspectives which emphasize the experiential dimension of the aesthetics, as they will help the reader follow my thesis arguments and developments.

the craft and significance of the art work by the artist, and the later on the active creation of meaning, by appealing to our aesthetic imaginations and sensibilities (ibid, p. 110). Thus, such an approach relates the aesthetic both to the quality of the work appealing directly to the sense perceptions of those who interact with it, and to the response itself (Jackson 2005). Response or experience is therefore at the core of these approaches to the aesthetic. According to Greenwood (2011, p.48) who conceptualizes aesthetics as a complex and dynamic ‘system of semiotics, responses and meanings’, the aesthetic response is culturally situated and consequently, as an experience, it is located within different frames of reference. These frames go from the performance itself, to what it means for the people performing it, both individually and collectively, to the act of performing in front of an audience and the interaction it generates.

This perspective of the Arts and aesthetical experience opens the stage for multiple developments in which the Arts can be applied with additional learning and research purposes. In Chapter 3, Arts-based research and education practices (ABR hereinafter) are introduced as a key reference point in my thesis investigation and development. By incorporating the processes, forms and approaches of artistic practices in academic scholarship (Sinner et al. 2006), Arts-based research attempts to broaden the conceptions of the representation tools that we use to approach the world, but also to redefine and enlarge the meanings of research itself (Cahnmann-Taylor 2008, Leavy 2009, Barone and Eisner 2012). In this regard, ABR represents ‘an effort to extend beyond the limiting constraints of discursive communication in order to express meanings that otherwise would be ineffable’ (Barone and Eisner 2012, p. 1). This is attempted through a ‘hybrid, practice-based form of methodology’ (Sinner et al. 2006, p. 1224), that places the researcher in an ‘in-between space’: a space between their role as a researcher, as a facilitator or a teacher, and, eventually, as an artist (Pinar 2004).

Interestingly, as forms of representation, the integration of the Arts is not so much directed towards enhancing certainty, but towards raising questions in people interacting with them, as they re-experience aspects of the world previously unnoticed. It is precisely this promotion of disturbance and disruptiveness that, at its best, may allow us to revisit the world in new directions, ‘with fresh-eyes’ (Barone and Eisner 2012). This is of special relevance to sustainability science which itself is conceived as ‘a new and fresh way of engaging and learning’ (O’Riordan 2013). Thus, I was particularly interested in the possibilities that these practices based on aesthetic experience can open for providing engaging and transformative learning experiences in the context of sustainability learning challenges. Indeed, the forms of exploration and representation that we use influence the aspects of the world that we are able to experience and perceive: ‘every form both reveals and conceals’ (Eisner 2008).

Figure 2: Different genres and forms within Arts-based research

On the other hand, as a relatively young approach that applies new assumptions and methods, ABR also poses challenges and generates tensions that should be acknowledged and explored. Eisner (2008) identifies several persistent tensions present in Arts-based works related to how the aesthetical challengingly approaches research objects and goals. These revolve around the tensions between the role of the imaginative in the Arts vs. the need for referential clarity in research; the particular of an experience vs. its capacity for generalization; the recourse to aesthetic properties vs. verisimilitude in representation; the provision of inspiring questions and disturbance vs. the need for answers; and metaphoric novelty present in ABR vs. its practical utility (ibid). Furthermore, several authors highlight the need for more explicit training for researchers to practice these hybrid methods that apply techniques from the Arts and sciences, so as to enhance the quality of ABR and create a critical community (Piiro 2002, Cahnmann-Taylor 2008).

On theatrical performance, aesthetic learning and embodiment

In my thesis research I have specifically focused on the use of theatrical performance through a form of applied theatre or drama³ broadly known as participatory theatre. Participatory theatre engages people through dramatic techniques and theatrical representations by identifying and critically analyzing issues of their concern and

³ Following other authors (Nicholson 2005) applied theatre and applied drama are used here interchangeably.

thinking together how to bring about change (Sloman 2011, see Appendix 1 for a detailed description). Through participatory theatre, theatrical performance has been approached in this thesis as an explorative and communicative participatory method which can potentially facilitate different ways of understanding and learning (see Figure 3).

Figure 3: Theatrical performance along this thesis: location among scholars' broader approaches to performance. Source: own elaboration based on Pellas 2008.

Broad approaches to performance in academic research



Theatrical performance has been commonly associated with learning experiences (Bolton and Heathcote 1996, Nicholson 2005, Schonmann 2011). Greenwood (2011) distinguishes three interconnected kinds of learning associated to aesthetics that are important in theatrical performance: learning *about* the aesthetic, learning *through* the aesthetic and *aesthetic* learning. The first kind of learning makes reference to learning about the performative medium, either practically (e.g. learning the movements, sound and rhythms of a dance) or theoretically (e.g. conceptual frameworks behind that expressive language). The second kind of learning emerges while engaging in aesthetic experiences and it is not necessarily about the art form but about the topics and aspects this evokes (for instance, learning about cultural differences through a traditional dance). Finally, aesthetic learning is learning that emerges from the aesthetic experience, which is located in the body: ‘visceral, emotional and intuitive’ (Greenwood 2011, p. 41). The author further argues for the value of such learning regarding other forms, like conceptual or behavioural learning:

‘(Aesthetic learning) gives us experience, both embodied through our participation, and empathetic, through exploring another’s world. It allows

us to absorb a multiplicity of new stimuli, cognitive and visceral, that we can unpack and play with. It permits ambiguity, incompleteness, contradiction and complexity, and provides a means to express these without reducing them’.

(Greenwood 2011, p.51)

In the way it is framed in this thesis, theatrical performance through participatory theatre has, at least, the potential to approach these interrelated forms of learning through embodiment, critical engagement with experience and the intersubjectivity built through social interactions.

Performance is an embodied practice: bodily experiences are the base of performative action. Coherently, aesthetic learning through this artistic form relies heavily on embodiment. In the context of theatrical performance, embodiment can be seen as ‘an intensely sensuous way of knowing’ (Conquerwood 1991, p.180) in which insights emerge and are communicated through the body, a ‘knowing body’, dependent upon participatory and empathic skills, and situated politically (Pelias 2008). As a location of knowledge, the body brings together knowing that is cognitive – mainly relying on physical and vocal behaviours brought forth through rehearsal, affective – through a sense of the attitudes, sentiments and passions of what is being performed, and intuitive –it comes intuitively through performed action (ibid). Following this line, Margaret O’Shea identifies embodiment as a ‘generative state – generative of meaning, relationships, and an understanding of self’ (O’Shea 2012, p. 35). She argues that human processes of knowing and understanding begin in the body and through bodily encounters with the world, which: i) go beyond corporeality -embodied experiences can also be felt through empathy and projection, ii) are dialogic or relational –they are contingent on material and social interactions; and ii) are affective –our body experiences emotions and affect, influenced by our cultural and social worlds (O’Shea 2012). However, as the body offers ‘an opportunity for error as much as wisdom’ (Gingrich-Philbrook 2001, in Pelias 2008), critical engagement with and a reflexive turn to embodied experience is also required.

It is in this process of critically engaging with embodied experiences that learning opportunities can emerge. Through theatrical creation participants create their own experiences of meaning-making, which are subjected to individual and collective participation and mediated through the body (Sæbø 2011). Thus, the participants’ resources used to construct these experiences will shape their learning potential, as each participant builds their own experience by interacting with the subject content. At the same time, the participants’ individual constructions occur within the collective context provided by improvisation and theatrical action (Sæbø 2011). The collective dimension is therefore crucial in the context of learning through theatrical performance and is critically manifested through intersubjectivity, i.e. the creation of shared meanings by people through their interactions (Seale 2012). Intersubjectivity strongly emerges in the creative process, in which participants collectively negotiate meanings and

representation forms to work towards a shared creation. Furthermore, it is also manifested through the performer/s-audience relation when the performance is shown: public representation can be seen as the unfolding of an aesthetical dialogue, which is deeply rooted in the audiences' contexts and expectations (Jackson 2005).

This way, the dialogic process also becomes essential, both as a powerful driver in (shared) meaning-making through the arts, and as a core phenomenon in learning processes that expect to be emancipatory (Freire 1970). In this regard, the scope of the learning process will be much dependent on theatre's capacity to embody multiple 'voices, ideas and cultural forces', challenging participants and audiences' preconceptions and requiring active engagement and reflection (Jackson 2005, p.111). In the words of the same author (*ibid*, p. 117), the quality of the experience provided by a dramatic form is related to 'the liveliness' of the event, the emotional resonances it can offer, the dialogues that can be generated, and the complexity of texture that defies easy closure'.

All these elements –**aesthetical experience, embodiment, intersubjectivity and dialogue**- are key dimensions of Arts-based practices that apply performance and have played an important role in my thesis as conceptual anchors. It is by bringing these aesthetical elements into play - through the specific proposition of community theatre as a valid participatory method for knowledge integration and sustainability learning, that this thesis expects to contribute to methodological innovations within sustainability science. In this way, it expects to further connect the participatory and integrative needs of sustainability science, with the development of experimental learning approaches to systems' complexity and the imagination, togetherness and sensibilities fostered by the Arts.

5 Research design and approach

This section introduces the thesis research approach, strategy and corresponding methods. Due to the methodological nature of this dissertation, I will briefly review the research strategy that has been carried out and the design of the case studies, including the research methods developed for assessing the theatrical experiences. Theatre as a participatory method has been approached in each of the research articles and is further detailed in Appendix 1, on participatory theatre.

Due to the action-oriented and practical nature of participatory theatre, this research has been framed within the approach of Participatory Action Research (PAR), based on an artistic practice: applied theatre. Although not all Arts-based research (ABR) is participatory, ABR practices are commonly located within the approach of PAR and applied to engage participants in collective research and dialogical processes, due to their capacity to integrate multiple languages of expression, connect emotionally with

people and foster engaged critical reflection (Leavy 2009, Barndt 2012, Cahnmann-Taylor 2008).

PAR involves researchers and participants working together in a cyclic and self-critical research process oriented towards explicit social change and shared benefits of the research. Though first expanding in the 70's, PAR approaches and methods have seen an explosion of recent interest in the social and environmental sciences (Kindon et al. 2007). PAR processes are generally designed as a participation continuum (Pretty et al. 1995) negotiated by co-researchers and participants during the 'research' process. Therefore, their action-oriented and locally committed approach creates a more flexible and socially-owned process, where a diversity of methods and epistemologies can be put into practice. Among them, Arts-based methods have found a niche of implementation and innovation.

In my case, open participatory spaces were provided through the theatrical workshops and plays, in which the methodological approach was put into practice in a specific context of action.

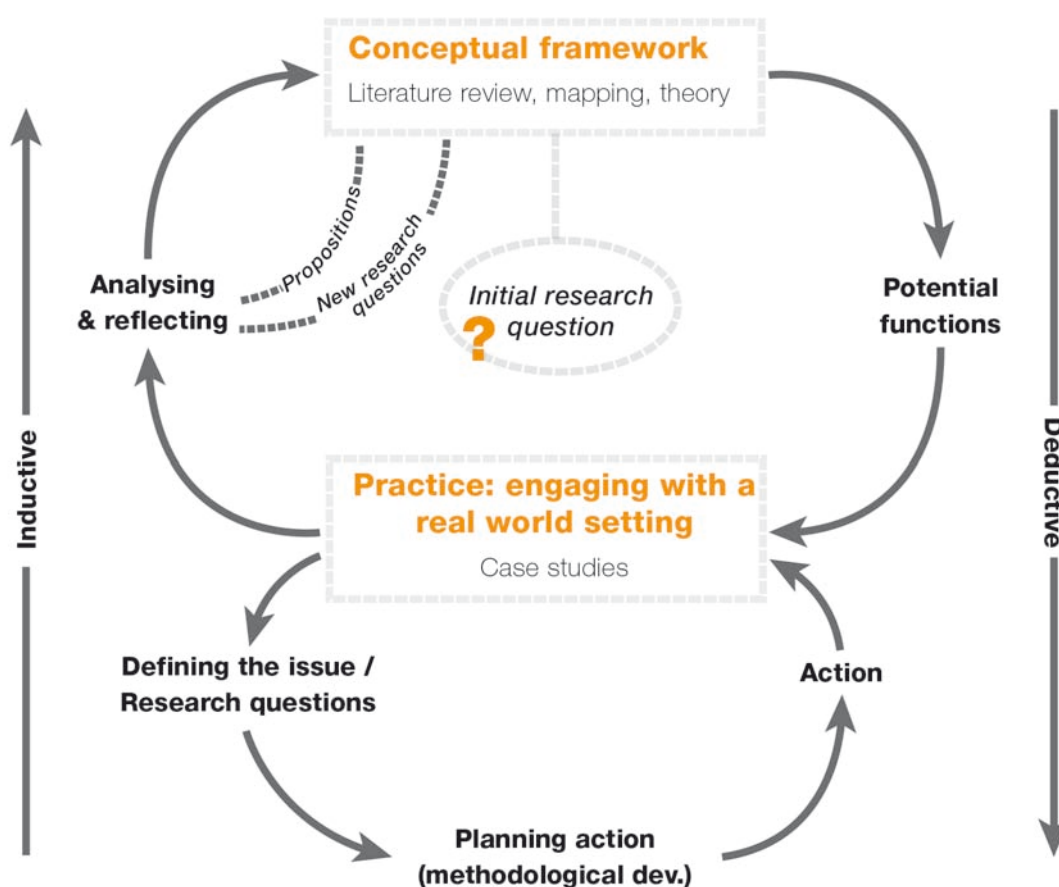
5.1 Research strategy

This thesis has followed a two-pronged research strategy combining two scales of analysis in constant loop and feedback:

- A theoretical and deductive approach, consisting of a **literature review and a mapping of experiences** through which an initial analytical framework was built, allowing for the methodological proposal of *performative methods* and posing different research questions; and
- An empirical and inductive approach, in the form of **two case studies** through which specific designs of performative methods that apply participatory theatre were developed and tested, feeding the theoretical approach and generating new research questions.

This strategy allowed for a self-reflective, iterative learning process in which reflection on action reinforced theoretical propositions, illuminated methodological developments and generated further research questions (see Figure 4).

Figure 4: Circular research process. Source: own elaboration based on my PhD research experience and the Research Wheel (Rudestam 2007)



A first literature review, crossing different fields of knowledge (sustainability science, social learning and performance studies), was developed along with a mapping of theatrical tools, techniques and exercises used in scientific research and sustainability contexts. These experiences were systematized according to different criteria (i.e. typology, focus, approach) and analysed taking into account the framework provided by the literature review. As a result, a novel analytical framework was provided, connecting participatory theatre with sustainability science as an action-research method and identifying five potential functions of such *performative methods* for sustainability learning processes. Research questions were also reframed according to the insights gained in this research phase. The scientific paper introduced in the third chapter of this thesis is the material outcome of such a process (see Chapter 3 for further details).

This first deductive approach was further enriched and explored through different empirical developments that started with several informal and pilot experiences and crystallized in two illustrative case studies based on theatrical workshops and a theatre play. Through context-specific implementations, the case studies provided a fruitful terrain to put into practice different performative developments and approach research

questions concerned with the ‘how’ of the methodology. Each case study implied a new review of literature and experiences, which, along with empirical insights, contributed to the theoretical body of this research in a rather inductive and circular manner.

5.2 The case studies

Case studies (Yin 2003, Berg 2007, Fretchling 2010) were chosen as a research strategy due to their capacity to inform theory by providing deep understanding of phenomena, events, people and organizations and entering the processes by which individuals make sense of such phenomenon and events (Berg 2007).

Both case studies were located in Mexico, following an opportunity criterion, related to the accessibility of the community and the motivation and enthusiasm of key contacts, and a strategic implementation, i.e. the community needed to be immersed in a context where the theatrical participatory process could provide an added-value. Case studies involved:

- A methodological design and implementation of the research process and the theatrical workshop, tailored to each action context; and
- An assessment of such workshops to explore the capacity of the performative process to generate learning and participatory experiences in different sustainability-oriented implementations.

The next subsections describe each of these dimensions.

5.2.1 *General workshop design*

As a result of the theoretical overview and mapping, a definition of *performative methods* was provided. *Performative methods* are participatory forms of inquiry that integrate elements from the performing arts into research and learning processes, in a flexible and context specific manner in order to support individual, community and institutional reflexivity and transformation (see Chapter 3). The open definition of performative methods required the selection of a performing art and a specific design in each of the case studies. Participatory theatre was chosen due to my experience in the field both as a performer and a facilitator.

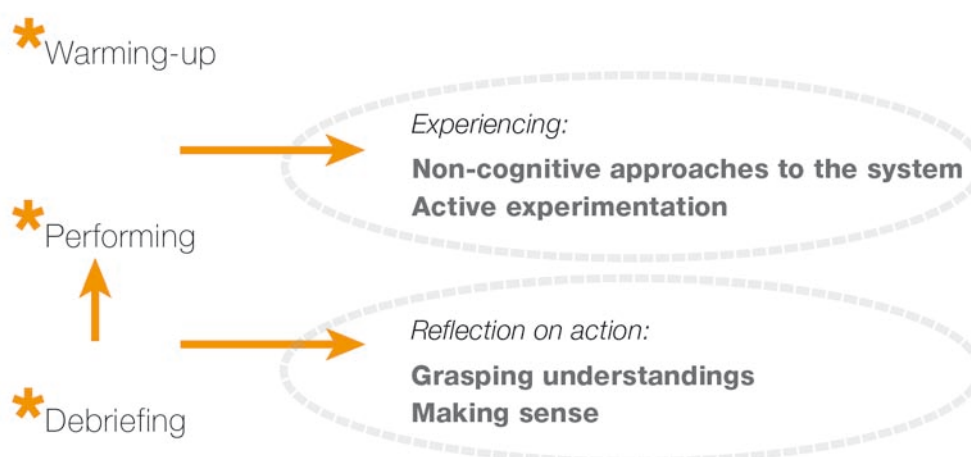
In both case studies, different participatory theatrical techniques were combined to facilitate a learner-centred process, in which participants could share, explore and reflect on their own understandings and expectations of the topics addressed, and connect them to personal motivations and actions. The theatrical sessions were designed with a common structure, consisting of:

1. A first block of theatrical games and exercises, used as a warm-up and introduction to the theatrical language

2. The main performative activity, involving collective discussion and creation in subgroups and performing to the whole group
3. A group debriefing, in which participants and facilitators shared appreciations, insights and reflections about their performances, felt experiences and topics emerged.

This sequence was designed so as to facilitate different forms of experiential learning (Kolb 1984): i) Experiencing or apprehension, based on the experiences felt while performing; and ii) Understanding or comprehension, based on the later debriefing or reflection *on* action, connecting experiential insights to wider systems and critical thinking (see Figure 5). The action-oriented stance of the research approach implied a sharing of mutual needs and interests with the communities and research partners involved, which then nurtured the final design and development of the participatory workshops. A detailed description of the sessions and contents is present in Chapters 4, 5 and Appendix 3.

Figure 5: The sessions common structure and the expected learning experience behind it



5.2.2 Assessing the experience: data collection and analysis strategies

Due to the scope of my research, the analysis of the workshops was focused on the exploration and assessment of both their potential to facilitate social learning experiences and their limitations. For this purpose, I applied a mix-method approach focusing on the exploration of the experience facilitated by the process and its capacity to foster any changes on participants. Specific assessment purposes were tailored to each case study implementation contexts and research questions. Appendix 4 shows

common and specific evaluation purposes and guiding questions initially identified for the case studies.

The experiential dimension of both theatrical practice and learning was approached through an explicit emphasis on participants' subjective experiences and appreciations of the performative process. These were captured through methodological triangulation as a strategy to increase the reliability of collected data and enhance research robustness (Fretchling 2010). Through methodological triangulation in the assessment I could contrast researchers' insights and reflections with participants' perspectives; the later, in turn, captured through diverse qualitative and quantitative means and at different moments to enhance their reliability. The next subsections briefly describe what data gathering and analysis strategies were used and their purposes. Additionally, Appendix 4 contains the original evaluation tools devised in each case.

5.2.2.1 *Data gathering tools*

Observation

Through the workshop, direct observation (Berg 2007) was applied as a way to capture events and participants' reactions 'as they happened' and as a strategy to contextualize and help interpret participants' responses in the written evaluation. Due to the Arts' focus on experience, observation is one of the data gathering techniques most associated to Arts-based practices (Knowles and Cole 2008, Leavy 2009) and has also been extensively used in educative research as a means of approaching students' behaviours in less obtrusive and more natural conditions (Bernard 2000, Foster 1996).

Observation in this research followed a participant, unstructured approach (Punch 2013), in which observations were made during the theatrical workshop by the researcher-facilitator/s in an open-ended way -without using predetermined categories or classifications. Rather, the different aspects addressed in the evaluation questions were used as an observation guide. Following Gold's typology, which cross-classifies participant and observer roles, I was a 'participant as observer' or 'observer as participant' rather than a 'complete participant'⁴ (see Figure 6).

⁴ This later category is commonly associated with ethnographic approaches in which researchers 'go native': they get immersed into the cultural and social setting they are studying to get the insiders' perspective (Punch 2013). In my case I was participating while facilitating the theatrical workshop and directing the play, but I was not immersed in community life, neither in the school setting.

Figure 6: My role within Gold's typology of researcher's roles in observation.
Source: Gold 1958, in Punch 2013

	<ul style="list-style-type: none"> • Complete participant
Mainly participant	<ul style="list-style-type: none"> ▪ Participant as observer
<hr/>	
Mainly observer	<ul style="list-style-type: none"> • Observer as participant • Complete observer

As mentioned above, the performative workshops were designed to facilitate moments of active exploration (through theatrical creation and improvisations) and moments of reflection and collective debriefing. Similarly, researchers'/facilitators' observations were applied in both case studies to capture insights related to two main dimensions: i) group dynamics and process facilitating and ii) emerging contents and participants' insights. Researchers'/facilitators' notes were supported by audiovisual recordings (i.e., pictures, audio-recordings and videos) of theatrical improvisations, group discussions and debriefings during the workshop and discussions generated by the audiences of the theatrical play⁵ (in the case of Cherán, Mexico).

After each workshop session, a session log was filled in, describing the activities carried out, the participants' reactions and general and specific impressions regarding the participatory process. The document was later complemented with data from the audiovisual recordings. In the case of La Sepultura MAB-Reserve, the second researcher/facilitator also contributed to the session logs, enhancing the reliability of the observations.

⁵ Theatrical improvisations and debriefings were also rich sources of data, which were later used in the content analysis. They could therefore be framed as data gathering tools facilitated by the performative methodology. However, they are not described here as they are part of the methodological design of performative methods and not explicitly of the evaluation.

Table 1 Data gathering tools applied in the assessment.

Implementation moment	Data source	Method	Justification
Pre-performance	Workshop participants	Self-reported measures: Likert scale on attitudes and beliefs towards issues addressed in the workshop.	To gather data prior to the process in order to assess possible changes in attitudes, beliefs and perceptions.
During performance	Theatrical workshop	Participant observation and field notes Recordings of the sessions: video, photo, audio Group debriefings	To get as much raw material and insights related to group dynamics, participants' shared impressions and feelings, and emergent topics.
	Workshop participants	Reflection cards*	To get participants fresh impressions after each session on their learning experience.
Post-performance	Workshop participants	Open-ended questionnaire on participants' individual experiences. Self-reported measures: Likert scales * Feedback questionnaire* Evaluation dashboard**	To explore their overall perceptions and feelings about their experience and their reflections about the performative process. To compare with previous data and assess changes in attitudes, beliefs and perceptions after the process. To return researchers' main conclusions and assess the effectiveness of the workshop as perceived by participants. To assess technical aspects of the workshop.
	Audience**	Audio-visual recordings and notes from the forum generated in the performance	To get as much raw material and insights from the discussion as possible, to inform later analysis on the created forum.

* Applied only in the case of *La Sepultura* MAB-Reserve

** Applied only in Cherán

Open-ended questionnaires

Open-ended questionnaires constituted, together with observation, the core of the assessment. They were designed as structured questionnaires through which respondents were exposed to the same, predetermined questions, designed to elicit and explore their thoughts, attitudes and feelings about the theatrical experience and its outcomes (Bernard 2000, Berg 2007).

In both case studies, self-administered questionnaires were given to all workshop participants at the end of the process (after the play, in the case of Cherán, and after the third workshop session in the case of La Sepultura MAB Reserve). Self-administered questionnaires allowed me, as a single researcher, to gather information from a large sample of participants in little time and reduce response effects (e.g. participants often find it easier to report negative aspects through self-administered surveys than in face-to-face interviews -Bernard 2000). Furthermore, questionnaires are a popular tool in environmental education assessments to explore behaviour changes (Thomson et al. 2010).

In the case of La Sepultura MAB-Reserve, reflection cards were also distributed to participants after the first and second session. The reflection cards encouraged participants to share impressions about the activities and personal insights through the sessions. They were, thus, devised to capture fresh impressions and feelings after each session.

Specific questions and implementation contexts are presented in Appendix 4, which contains a copy of each of the questionnaires applied.

Self-reported measures (Likert scales)

Likert scales (Grover and Vriens 2006, Thomson et al. 2010, Punch 2013) were additionally and distinctively applied at different moments of the implementation to get further insights on participants' attitudes and perceptions towards the topics addressed in the workshop and track possible changes.

Although my research was mainly qualitative and the groups were small, the Likert scales were designed as complementary data gathering tools, which could triangulate answers to the open questionnaire. In the case of Cherán a 19-item Likert scale on participants' attitudes and perceptions of their community and community forest management was prepared and handled before the workshop and used to better describe the group and contextualise the intervention in the final report to the community⁶.

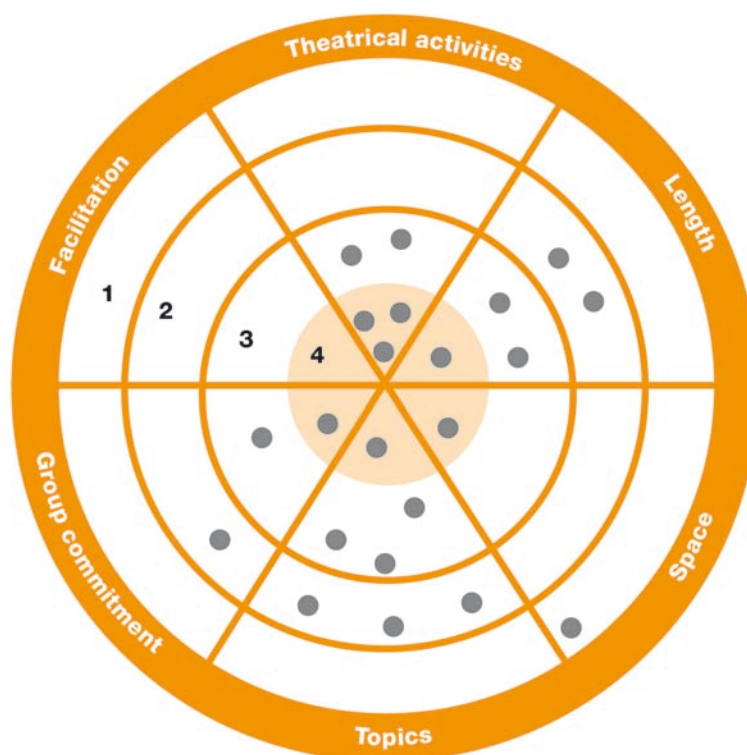
⁶ The post-workshop questionnaire was not handled in this case due to a mismatch in the number of participants that initially and anonymously answered the questionnaire (n= 19, the whole group attending the theatre and storytelling workshop) and the final number of participants who followed the whole theatrical process (n= 9).

In the case of La Sepultura MAB-Reserve, two Likert-scales were distributed at different moments. First, an 11-item scale was handled to participants before and after the workshop. Participants were asked to self-rate their perceptions and attitudes towards several aspects related to their creativity, their environmental awareness and their community roles. A second Likert scale was distributed four months after the implementation, as a feedback questionnaire to assess the workshop's effectiveness. Researchers' main conclusions regarding the workshop goals were returned and participants stated their degree of agreement and complemented their answers through open questions asking for further explanations. Appendix 4 contains the three Likert scales applied in the evaluation and further methodological details

Evaluation dartboard

Finally, an 'evaluation dartboard' was used at the end of the workshop in Cherán's case study to assess practical and technical aspects of the workshop in a visual way. A rating scale was presented to participants in the form of a dartboard drawn on a flipchart, whose different segments represented different workshop aspects to evaluate (see Figure 7). Participants used sticky dots to grade these aspects from 1 to 5 following the same logic as in the darts game (the nearer their mark was to the bull's eye, the higher their satisfaction). Evaluative dartboards are used mainly in educational settings and workshop evaluations as a quick and simple method providing 'a snapshot of participants' feelings' (WAC 2003). In my case, results provided a direct feedback to improve future workshop designs and my own facilitation.

Figure 7: Example of an evaluation dartboard



5.2.2.2 *Analysis strategies*

Content analysis

Data gathered from open-ended questionnaires and reflection cards, as well as researchers' notes and audiovisual recordings of theatrical improvisations, discussions and group reflections were analysed applying a qualitative content analysis (Andreu-Abela 1998, Berg 2007). Content analysis was chosen among the different analysis traditions as it helped me explore participants' answers in detail and identify themes, patterns and meanings related both to the contents addressed and the experience of the workshop.

In the case of Cherán, the analysis explored both personal and learning experiences associated with the theatrical process as well as its methodological contributions. Three analysis dimensions were qualitatively characterized through participants' answers: i) personal experiences of the workshop, ii) the role of the group and social interactions in such an experience, and iii) the contribution of the theatrical methodology to learning and dialogue. Furthermore, researchers' notes and audiovisual recordings of the theatrical improvisations, group discussions and debriefings were also analysed in order to create a research report for Cherán's Common Resources Council, in charge of community forest management (CFM). The analysis focused on participants' perceptions, understandings and attitudes regarding CFM and local governance issues. The analysis was guided by a list of key topics related to those issues, provided by the Common Resources Council (see Table A4).

In the case of La Sepultura MAB Reserve, Atlas.ti 6.2. was used as software support (Muñoz and Sahagún 2011), due to the high number of questionnaires (n= 80) and reflection cards (n=111). Participants' answers were first analysed creating 120 emergent codes, which were then compared and clustered into five broader learning and methodological dimensions. Each of the three groups was firstly analysed separately, allowing for later comparisons. An analysis of theatrical improvisations, group discussions and debriefings was also carried out, focusing on emerging thematic contents, group dynamics and participants' broad discourses. The different futures performed were analysed and compared in terms of common and differentiated elements, visions projected and main tensions manifested

Statistical analysis

Additionally, descriptive and inferential statistics were applied to analyse the Likert questionnaires.

In both case studies, a descriptive analysis of the data provided a basic description of its main features and allowed me summarize and classify participants answers to the Likert scale in sensitive ways to the research (Trochim 2006), basically, according to their degree of agreement to the statements.

In the case of La Sepultura MAB-Reserve, due to the large questionnaire sample (n=146, taking into account pre- and post-workshop answers), an inferential analysis was also developed. While descriptive statistics described the data, inferential statistics helped me test hypotheses of changing attitudes and perceptions so as to be able to make interpretations or inferences from that data to more general conditions (Trochim 2006). In this way, I carried out an inferential analysis of pre- and post-workshop questionnaires so as to track possible changes that could suggest potential impacts of the performative process on participants' perceptions and attitudes towards the topics addressed. Due to the characteristics of the sample (paired data, non-normal distribution), the Wilcoxon signed-rank test for non-parametric samples was applied (Sprenst and Smeeton 2001), using the statistical software Stata.13.

5.3 Limitations

The main limitations of the research approach and strategy are related to the access requirements for action research and to some constraints or trade-offs of the data gathering tools.

Firstly, the fact of being a white, female, foreign researcher entering an indigenous community context had obvious implications affecting the implementation of the case studies. Getting access to communities required time and especially the bridge provided by third persons, which were key to getting the proper contacts, their trust and the invitation to stay in the community. Consequently, my movements and my calendar were quite dependent on those of my partners and intermediaries, as I could not enter the communities on my own. This was especially relevant in the delicate case of Cherán, still threatened by criminal networks and subjected to a considerable (sometimes tiring) presence of researchers and journalists. In such a case, making the contacts and negotiating the intervention absorbed most of the time dedicated to fieldwork.

Secondly, the evaluation mainly relied on researchers' observations and participants' perceptions of the process. While this was a research choice related to the experiential focus of arts-based practices and learning, it also implied little data source triangulation. In order to strengthen data collection and the reliability of researchers' observations, audio-visual recordings were used to track relevant moments in-session. Moreover, in the case of La Sepultura MAB Reserve we were two researchers sharing observations and impressions, which further strengthened the process.

In the case of the surveys for participants, there is always the risk of a certain degree of *deference effect* (i.e. telling the researcher what she wants to hear) and/or *social desirability effect* (i.e. answering questions in ways that make the person look good) (Bernard 2000). Untruthful responses are hard to track on a Likert scale and therefore some sort of bias can be assumed. In the case of the open-ended surveys, participants' responses could be contextualized both through the questionnaire and with researchers'

observations. Hence, those identified as *outliers* were not taken into account in the analysis (e.g. ‘*Today I learned how to solve all the problems in my life*’).

A third limitation derived from the use of written surveys instead of face-to-face interviews. Face-to-face interviews are particularly effective when researchers are interested in understanding participants’ perceptions and meanings attached to experience as they are seen to enhance the opportunities for a complete and accurate communication of ideas (Taylor and Bogdan 1998, Berg 2007). In the case studies, written surveys were prioritized above interviews due to constraints on time resources. In the case of Cherán, in which the group size could have allowed for the development of interviews, different contingencies distorted initial time allocation and I had little time as well as limited possibilities of reaching participants after the workshop and the two first shows. In the case of La Sepultura MAB-Reserve, the large group size (n= 90) made the surveys a more efficient choice in terms of time. A limitation of using written surveys instead of carrying out face-to-face interviews is that I could not follow up each participant’s responses (for instance, asking for more details) and thus, some participants’ answers were quite poor. Writing skills and easiness have probably also influenced participants’ willingness to answer the questionnaires. However, self-administered questionnaires allowed me, as a single researcher, to gather information from a larger sample of participants than a face-to-face interview would have allowed. Besides, some people find it easier to express their feelings in a written way, without the ‘pressure’ of an interviewer (Punch 2013). In this regard, even if a desirability effect can be always present, response effects are absent in self-administered questionnaires and participants may find it easier to report negative aspects than in face-to-face interviews (Bernard 2000). A trade-off was therefore assumed when choosing written surveys. To minimize this trade-off, in both cases I carefully introduced the questionnaire to participants and answered their doubts, reducing the chance of misunderstood questions or confusing wording. In the case of Cherán, participants were encouraged to take the questionnaires home and had several days to elaborate on their responses. In the case of La Sepultura, a proper space was left at the end of the workshop to answer the questionnaire. I was with them at that moment and therefore, I could resolve further doubts they had and also ask for more detailed responses in some cases.

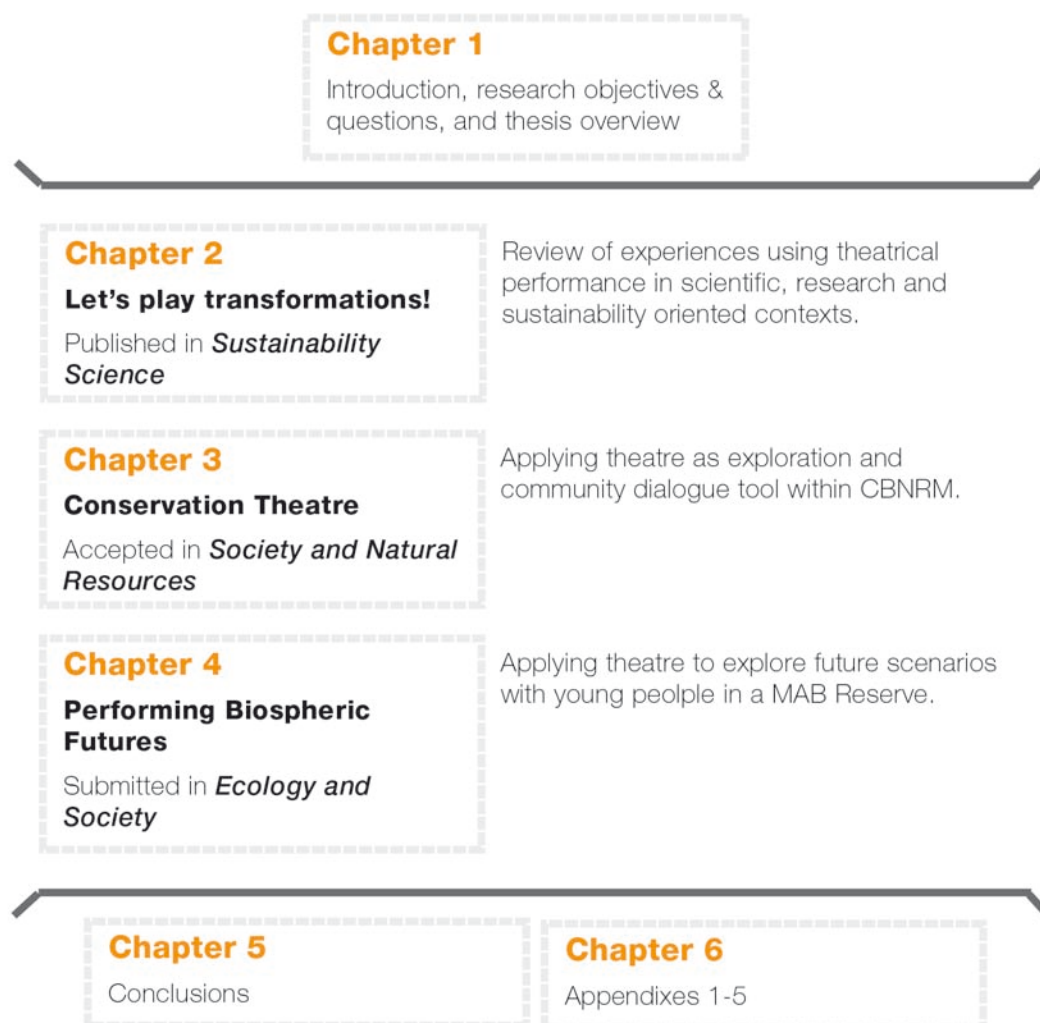
Finally, building an attitudes Likert scale implies a testing step which can involve (Punch 2009): i) Testing the understandability of the items and whether respondents can easily respond to them (interpretations and meanings attached), after which wording and phrases are refined; and ii) Testing the reliability of the items in relation to the dimension they are expected to measure (item analysis), after which a definitive list of items is selected. In the case of La Sepultura MAB Reserve (in which Likert scale results were incorporated into the research) only the first kind of testing was applied. This is a limitation while analyzing results since the researcher cannot link items to specific dimensions measured in reliable ways (e.g. items 1, 4 and 7 reliably measure environmental concern). Consequently, changes in specific items could not be extended to a dimension measured but rather be taken into account as a single item change.

6 Thesis overview and chapter summary

This thesis dissertation is a compilation of three research papers that are presented as main research chapters, embedded in a general introduction and a final chapter with main conclusions. Further thesis contents are compiled in five written appendixes, providing more details about the methodological background and the case studies, and a CD with graphic materials of the theatrical processes. The papers merge both theoretical and empirical approaches to frame the application of theatre in academic and sustainability contexts and develop different illustrative experiences of the potentials and limitations of such an approach in the specific contexts of Community-based Natural Resource Management (CBNRM) and futures thinking in education.

At the time of writing, the first article has been published, the second is in press, accepted for publication, and the third has been submitted for consideration for publication, all in peer-reviewed, indexed, international scientific journals. The following paragraphs provide an overview of the thesis structure and summarize the three research chapters.

The first article, presented in *Chapter 2*, addresses the need for innovation regarding public participation and knowledge integration methods in sustainability science. It approaches this challenge by assessing the potential of innovative theatre-based participatory tools and methods aimed at supporting sustainability learning and agent transformation. For that purpose, a review of a series of experiences applying theatre-based methodologies in the academic and sustainability fields was carried out and the notion of *performative methods* was introduced as an integrative research and learning approach. Based on empirical outcomes reported by the reviewed experiences, a general framework is provided to assess to what extent these new approaches can be of relevance in sustainability science, practice and learning. As a result, five potential functions of performative methods were identified. This first article represents, thus, an attempt to provide a first evaluation of the roles that drama techniques can play as participatory methods in sustainability science. By mapping their main potentialities and raising key research questions, the article provides a common ground to inspire future methodological developments of *performative methods* in the field. This article was published in March 2014 in the journal *Sustainability Science* (Springer).

Figure 8: Structure of the thesis

The second article, presented in *Chapter 3*, grounds the discussion through the development and analysis of an empirical experience in a community immersed in Community-based Natural Resource Management (CBNRM). The growing importance of community perspectives in CBNRM has driven the development of a range of methodologies emphasizing participation and acknowledging the importance of processes of social learning to create common visions, purposes and understandings. Vital to such processes is the creation of inclusive, participatory platforms bringing together various interests, different kinds of knowledge and multiple perspectives into dialogue. In an attempt to contribute to these methodological developments, this paper presented an empirical experience in a Mexican indigenous community applying ‘Conservation Theatre’ as a *performative method*. Through ‘Conservation Theatre’, a participatory process with young people was set up to gather personal and collective stories and perform them in an active, creative and inclusive way. As a result, an interactive theatrical play was created with the aim of introducing the views of young people into a broad, intergenerational community dialogue around community forest

management and participation. Our experience illustrated that Conservation Theatre can contribute to CBNRM while opening non-conventional, aesthetically rich spaces for new ways of social interaction, diversity recognition and empathic dialogues. It also showed limitations suggesting the importance of further work. This article has been accepted for publication in the journal of *Society and Natural Resources* (Routledge) and is currently in press.

The third article, presented in *Chapter 4*, expands the discussion by illustrating the application of *performative methods* in the field of futures thinking in education. Visions are essential in sustainability transformations and learning as they can offer direction and energy, providing impetus for action in the present. This experience builds, thus, on the capacity of futures thinking to engage people in learning processes and on applied theatre's quality to embody participants' narratives, hopes and fears about the future and bring future scenarios to life. Through the article we explored the potential and the limitations of a theatrical future exercise - performative scenarios-oriented towards supporting a learning process with young people in a Man and Biosphere Reserve in Chiapas, Mexico. The experience illustrated how performative scenario making can help connect visions about the future with meaning and embodied action among young people and move away from the conventional understanding of scenario-making by actively addressing the question of 'what role can I play in this future'. Through this shift, theatre features can provide a significant added value to those educational initiatives approaching futures thinking by allowing participants to experience system's complexity and providing a rehearsal arena activating individual and collective skills and motivations for action. This article has been submitted to the journal *Ecology and Society* (Resilience Alliance).

Chapter 5 draws the main conclusions, based on the three articles presented. For that purpose, an overview of the thesis as a learning process is provided and the main insights, contributions and future areas of research of the thesis dissertation are identified.

Finally, the following appendixes provide further details on several aspects of the research and methodology: Appendix 1 provides an overview of the methodology applied in my workshops: participatory theatre, under the form of community theatre; Appendix 2 contains the resulting table of the review of theatrical experiences within the academia; Appendix 3 describes the structure and main contents of the theatrical sessions in both case studies; Appendix 4 contains the original evaluation tools applied; and Appendix 5 shares several outcomes of La Sepultura scenario workshops. The attached CD helps further share the experience through audiovisual materials. It provides a photographic journey through the two workshops and fieldwork, a short video about Cherán's experience recorded for the community and a video interview filmed in Chiapas.

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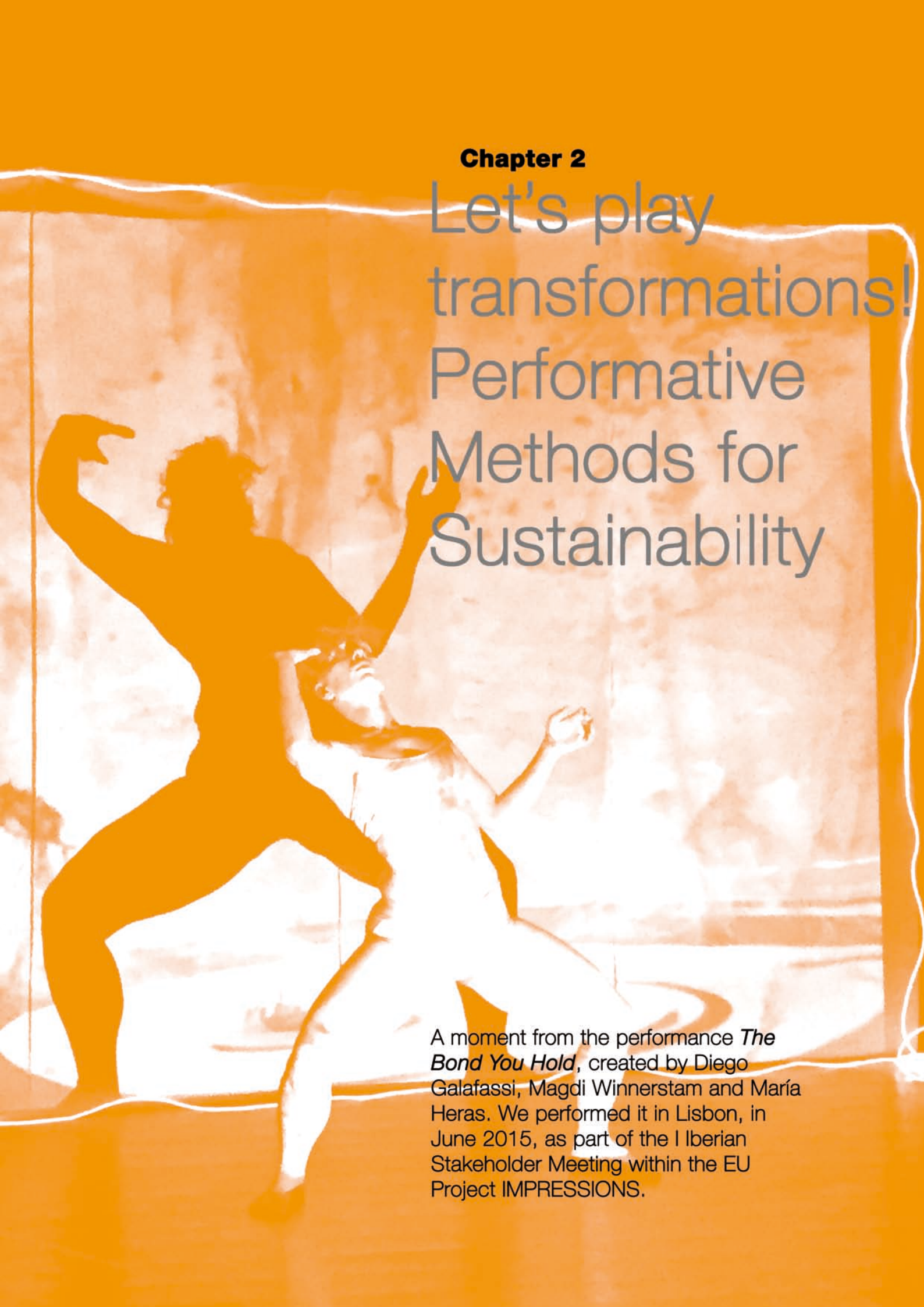
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Chapter 2

Let's play transformations! Performative Methods for Sustainability

A photograph of two performers in a dynamic pose. One performer is in a dark, form-fitting suit, and the other is in a white, flowing dress. They are positioned in front of a textured, light-colored wall. The lighting is dramatic, highlighting the contours of their bodies. The overall mood is artistic and expressive.

A moment from the performance *The Bond You Hold*, created by Diego Galafassi, Magdi Winnerstam and María Heras. We performed it in Lisbon, in June 2015, as part of the Iberian Stakeholder Meeting within the EU Project IMPRESSIONS.

Chapter 2

Let's play transformations!

Performative methods

for sustainability

Abstract

Coping with global environmental change demands new forms of civic engagement and interaction able to transform passive audiences attending to the drama of unsustainability into committed actors for sustainability. This entails linking diverse sources of scientific knowledge with personal experiences, emotion and ethical judgments. In this paper we assess the potential as well as the limitations of innovative theatre-based participatory tools and methods aimed at supporting sustainability learning and agent transformation. To this aim, we first review a series of experiences using theatrical performance and introduce the notion of *performative methods*. Second, we assess to what extent these new approaches can be of relevance in environmental action-research and sustainability science, practice and learning. Finally, we list a series of key research questions to further guide methodological innovation in this promising area of sustainability science and practice. Our findings show a growing and successful use of such methodologies worldwide, both in academia and in implementation-oriented approaches. An increasing number of topics and complexity is being embraced by these methods, offering a fertile ground for innovation in participatory sustainability science.

Keywords

Applied Drama, Performative Methods, Global Environmental Change, Sustainability Learning, Theatre, Transformation

L'imagination prend le pouvoir!
Paris 1968

1 Introduction

Our world is currently experiencing unprecedented environmental and socio-ecological changes (Röckstrom et al. 2009, EEA 2010, UNEP 2011) whose full consequences on humankind are difficult to foresee. Facing these global societal challenges will require rethinking the largely outdated ontologies, assumptions and epistemologies that we use to frame and guide mainstream goals and practices in science and education. Some of these assumptions relate to the separation between knowledge and action and between knowledge, values and emotion. Modern science can be seen as a social contract or stage play, which follows a rather strict set of grammatical rules of expression. Such rules are then followed by a community of learning, within very-well defined boundaries of participation. However, given the present limitations of mainstream science to deal with the uncertainties, unpredictability, and the bounded rationalities and values of sustainability problems, a more nuanced understanding of what constitutes relevant knowledge is required. In particular, one which promotes multiple modes of learning for the development of different kinds of knowledge in different contexts and groups in a transformative and engaging way.

The complexity of the new global situation demands imaginative ways to engage and boost our collective intelligence in order to overcome some of the cultural limits to our consciousness, extend our perception and speed up corrective actions. Sustainability is a multi-dimensional, highly dynamic and complex challenge, for which novel methods for transformational learning need to be tested and developed. Transformative learning for sustainability may be enhanced whenever multiple sources of expertise and wisdom are brought together from a perspective of open and social-ecologically coupled knowledge systems, aimed at meeting specific needs and problems (Tàbara 2013, Tàbara & Chabay, 2013). For this reason, here we look at a growing methodological strand of work that applies the Arts to produce integrative narratives by engaging audiences from very different cultural contexts and policy arenas⁷. It is the mounting realisation of the limitations of mainstream science to deal with such diversity and complexity (Pohl 2008, Pohl et al. 2010, Hirsch Hadorn 2006, Wickson 2006) and the need to connect knowledge with action, which opens up new opportunities for the development of *Arts-based research* practices.

⁷ We associate both the artistic and the aesthetic practices and experiences to those expressive activities whose interpretations (unlike science) do not require a single or predefined code of interpretations and therefore are open to multiple meanings depending on the contexts and interactions between artists and their audiences. This is coherent with the framing of sustainability as a procedurally emergent property of social practices (O'Shea, 2012) and this is why our research mostly focuses on the procedural and conceptual aspects of art-based reasoning and practice, that is, on the processes that create possibilities for reflexivity, experiencing and reframing, rather than on final outcomes of the art work.

Innovation regarding public participation methods in sustainability science is required (Kasemir et al. 2003), and our goal in this regard is to explore the potential of dramatic performance as a participatory research approach in sustainability learning and transformation. To this purpose, we first map out a series of very different experiences around the world in which applied theatre has been used in academic research and in sustainability-oriented interventions. Next, we introduce the concept of ‘performative methods’⁸, understood *as the collection of action-research techniques and heuristics, which use, develop and apply acts of collective performance within larger social and political processes with the explicit aim of supporting individual, community and institutional reflexivity and transformation*. Then, we review and analyse the empirical outcomes and insights reported by these experiences⁹, and provide a general framework for interpreting the role of performative methods in sustainability science, practice and learning. We conclude with a series of key research questions to further guide methodological innovation in participatory sustainability research and practice as outlined by some recent debates within this field (Jäger 2009, Wiek 2011, Miller 2012, van Kerkhoff 2014).

2 Let the body speak: applied theatre in science

All the world's a stage

W. Shakespeare

Different kinds of learning can lead to different types of knowledge in the same way that different types of knowledge may lead to different processes of change (Dieleman and Huisingh 2006). Knowledge, learning and social change are interwoven in very complex and non-evident forms¹⁰. Improving our understanding of such intricate interactions is one of the greatest challenges for integrated transdisciplinary sciences today (Chabay et al. 2011). Among these challenges is the quest for novel research

⁸ As observed by Conrad (2004), we borrow this term from performance studies and anthropology, where it is used as ‘performative research or inquiry’.

⁹ Although the empirical basis for this article are the experiences reviewed from the literature, it also builds upon the knowledge of the main author, who has been member of theatrical collectives for the last 10 years and has training in social theatre, as actress and facilitator.

¹⁰ Our approach is akin to phenomenological tradition in sociology (Berger and Luckmann 1967) in so far as we understand knowledge as socially constructed and whereby facts and truths are mediated by social arrangements, contextual interactions and commitments. From this perspective, what is crucial in the understanding and in the creation of the various forms of knowledge and learning is not only the ‘objective world out there’, but also the mediating artifacts and entities between them and the individuals (e.g. texts, language), as well as actual experiences and other social processes (with regard to the role of the evolution of body and movement and its relation to knowledge, see Ingold, 2011). While we consider that looking at the contributions of phenomenology is especially important in integrating everyday and commonsense knowledge as well as in the creation and interpretation of meaning, our focus in this review is much more limited. In particular, we narrow our analysis on a first account of experiences already using such perspective in the development of participatory methods in environmental and sustainability research.

methods that can support processes of transformational learning and people's empowerment, leading to social-ecological restorative collective actions across the planet. As a first step in this search, we begin by introducing Arts-based research practices and review the use of applied theatre in various scientific disciplines in order to 'set the stage' in which to assess its relevance for sustainability science and practice.

Act I: Setting the stage

The limitations of conventional approaches to science communication and public engagement are resulting in the emergence of alternative ways of understanding the roles of knowledge production and learning in sustainability. The last decades have witnessed a renewed interest in the role of Arts in science and the growing hybridization between the two. An illustration of this is the emergence of Arts-based research practices. As Chilton (2013) remarks, there is a whole plethora of terms that refer to approaches that embrace the arts in social research. These approaches can be seen as a research continuum: from Eisner's Arts-based educational research (ABER) in the 1970s to Arts-based research (ABR) adopted in the 1990s (Barone and Eisner 2012, McNiff 2008), which also represents an umbrella for other approaches like arts-informed research (Knowles and Cole 2008, CAIR 2000) and A/r/tography (Irwin and Springgay 2008). The role of the arts and the constituent of interest varies within these approaches, e.g. with different disciplinary focus –arts, education, scholarly work on the social sciences; and with a different presence of the arts during the research process - from being the basis of the research process (Arts-based research) to 'being influenced by, but not based in, the arts' (Arts-informed research, Knowles and Cole 2008).

Under all these labels, often unconventional participatory methodologies employ an ample array of artistic mediums (e.g., literary writing, performance, music, dance and others) during different phases of social research, from data collection to analysis and representation, to convey meanings that could be otherwise unavailable (Leavy 2009; Barone and Eisner 2012). These approaches combine a more social-constructivist and interpretive understanding of knowledge and social dynamics -including the role of emotions, beliefs and aesthetics, with other empiricist and critical approaches. Such art-science triangulation allows us to unveil meanings, processes and structures that condition social action (Finley 2008, Knowles and Cole 2008). Arts-based research practices are therefore co-produced and applied within the intersections of multiple disciplines and methods.

The advent of these artistic modes of inquiry is related to a shift in the conception of the Arts, not only as an emotional expression of human condition, but as a fundamental form of knowledge, hence deepening human understanding of human actions and capabilities (Dewey 2008, McNiff 2008, Eisner 2008, Leavy 2009, Barone and Eisner

2012). The artful doing¹¹ present in artistic practice invites the creation of spaces of experimentation and imagination that immediately engage action. The constant sequence of action-reflection-action is conducive to the exploration of reality from various angles in simultaneous ways, e.g., via rational analysis, introspection, embodied experimentation and emotional experiencing (Dieleman 2012). All this highlights the key role of action and embodiment for knowledge creation and the potential of reflection-in-action processes to organically link and integrate analytical intelligence, emotional intelligence and the intelligence of the body (ibid). As pointed out by Sullivan (2010), it is therefore possible to develop a critical framework theorising (visual) *arts practice as research*, given that artistic practices reveal their potential for relational and transformational inquiry:

‘(...) the process of making art and interpreting art adds to our understanding as new ideas are presented that help us see in new ways. These creative insights have the potential to transform our understanding by expanding the various descriptive, explanatory, and immersive systems of knowledge that frame individual and community awareness. These forms of understanding are grounded in human experiences and interactions and yield outcomes that can be individually liberating and culturally enlightening.’

(Sullivan 2010, p. 97)

A claim for epistemological diversity lies, therefore, behind these initiatives, which are not intended to substitute other more conventional approaches, neither to be just complementary methods. Rather, the intention is to be able to apply these methods as consistent and coherent research practices to approach research issues where traditional methods may fail to get at the particular or to represent them effectively (Leavy 2009, Barone and Eisner 2012). The need to promote human understanding through the acquisition and utilization of different forms of representation is especially acknowledged while addressing social complexity (Barone and Eisner 2012).

Although applications of these kinds are already relatively widespread in some applied disciplines within the social sciences, these novel methods have not yet been systematically assessed and applied in environmental and sustainability science. Yet, some academic voices are starting to claim the potentialities of such Arts-based practices within sustainability performance and transdisciplinarity practice. For instance, Kagan (2010, 2011, 2012) emphasizes the crucial role of the Arts and aesthetics within the quest for ‘*cultures of sustainability*’, which lies at the heart of the search process for sustainability¹². By conceptualising an *aesthetics of sustainability*¹³,

¹¹ This term was first introduced by Schön (1983) to describe knowledge inherent in practice that, like in the artistic process, is developed in a constant reflective manner (doing- reflecting- doing again- reflecting, etc.).

¹² According to the author, the search process of sustainability is first and foremost to be understood as a search for self-reflective, dynamic and porous ‘cultures of sustainability’, acknowledging that culture

he emphasizes the potential of cultural practices like the arts to foster a transdisciplinary sensibility that deals with social-ecological complexity and facilitates transformational practices.

Act II: Introducing applied theatre

Broadly speaking, applied theatre can be defined as those dramaturgic activities, primarily carried out outside ordinary theatre institutions specifically intended to benefit individuals, communities and societies who perform them (Nicholson 2005). This definition encompasses many diverse practices and arrangements as well as many different labels and terms which include social theatre, community-based theatre, theatre for development and popular theatre (Conrad 2004). As a form of knowledge creation and representation, applied theatre allows for a wide variety of expressive and engaging possibilities. This has been largely related to the specific potential of the arts for being emotionally and politically evocative, captivating, aesthetically powerful, subversive and moving, thus facilitating empathic experience, active engagement and wider understanding (Eisner 2008, Leavy 2009, Kagan 2012).

Act III: Applied theatre in action-research

To explore these features we now provide a general overview of existing theatrical experiences applied within scientific and academic fields. This first exploration is based on the examination of major science databases which span across different disciplines and applied fields. In particular, and based on Rossiter et al. (2008) a number of keywords were searched in the Scencedirect, Scopus, Jstor and Sage databases, including the following: applied theatre/drama, theatrical performance and environmental theatre. Through the references and citations found, a snowball sampling was also developed. This work made possible the identification of a sample of n=34 experiences (later reduced to n=28 relevant ones) which were then further analyzed according to the various scientific disciplines, the theatrical approach used and the objectives for applying theatre in research. Our criteria left out some fields of application, like performance studies or applied drama education. Though this may be a limitation for a complete picture of various uses of applied theatre, we deliberately focused on scientific and academic settings and most importantly, in environmental and

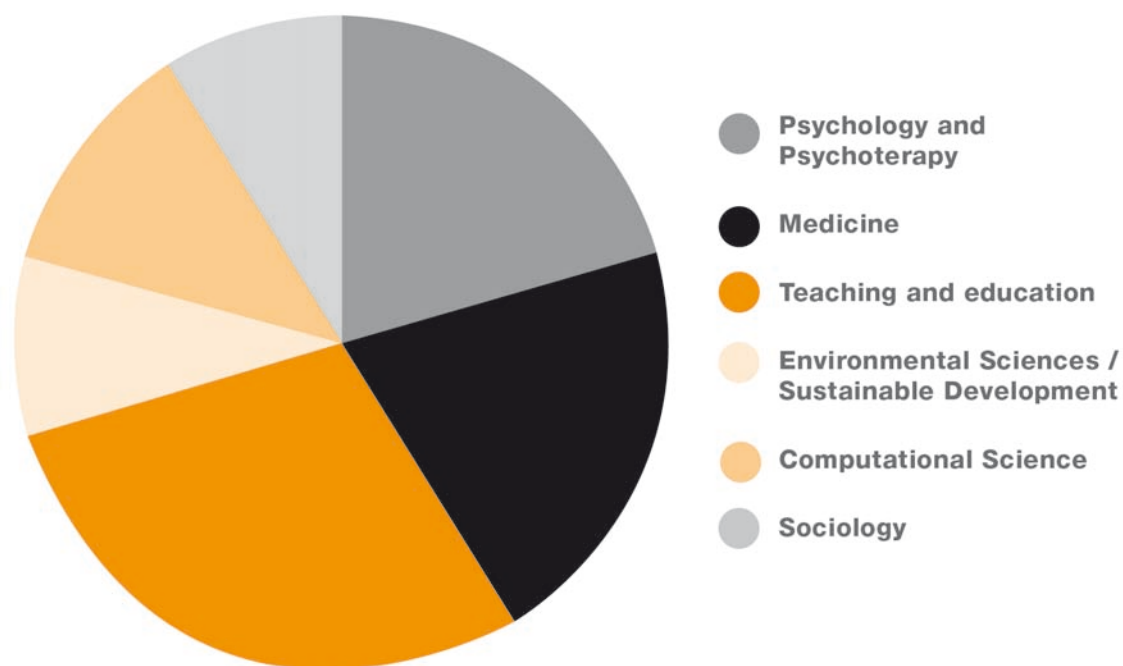
includes the combination of values, beliefs, symbols, practices and 'scripts' or rationalities that characterize social life in a specific spatial and historical context (Kagan 2010).

¹³ Based on Dewey's understanding of aesthetics as experience and Bateson's notion of the aesthetics as the pattern that connects, Kagan defines aesthetics of sustainability as 'a form of relation and process-centered aesthetics, which bases itself on a sensibility to patterns that connect at multiple levels' (Kagan 2011). This sensibility is unfolded in practice in many different ways through: topics that connect diverse patterns of relationships between different dimensions or levels of reality (considering as much antagonisms and competitions as complementarities and symbiosis); open processes enhancing skills for multiple reflexivities (beyond more rational ones); and explicit political values within an open-ethical framework (Kagan 2010).

sustainability applications. Therefore, our analysis is not intended to be exhaustive, but only illustrative of the general trends which can be observed in this field.

Our analysis identified six main scientific fields in which theatre was used in a significant manner (see Appendix 2 and Figure 9). The main fields in which theatre has been applied in academia are the following: *Teaching and Education*, *Medicine* (mostly through Public Health research) and *Psychotherapy*, the latter being ahead of the innovations regarding the implementation of dramaturgical techniques in science. This is coherent with the historical contextualization of ABR practices, in which the successful application of arts-based therapies opened the stage for wider research developments to take place (Leavy 2009). Our findings show that in the environmental and sustainability sciences, applied theatre still remains one of the less explored.

Figure 9: Scientific disciplines applying theatre in contexts of academic research



Our analysis reveals that in different scientific domains a diversity of theatrical approaches are being applied (see Table 2) with the following common features:

- They work directly with selected audiences, interacting with them;
- They all propose to go beyond entertainment and attempt to have substantive impact on the ‘participant-audience’ in terms of their pedagogical, social, or therapeutic effects.
- While goals are loosely defined, they explicitly attempt to be goal-searching, rather than goal achieving, focusing mostly on the process;

- They operate within clearly defined intervention contexts.

Or in other words, they aim to transform originally ‘passive audiences’ and spectators into active actors and narrators of their own stories.

Table 2: Theatrical approaches applied in academic contexts: main orientation and purposes, modalities and features.

Main orientation and purposes	Applied Theatre Modality	Main features
Psycho-therapeutic and/or healing	Psychodrama	Role playing, improvisation, dramatization of self-representation.
	Dance-Movement Therapy / Therapeutic theatre	Therapy based on voice and body expression, through performance
	Playback Theatre	Improvisation, based on in-situ storytelling and its representation
Supporting collective action and agent empowerment	Theatre of the Oppressed	Based on personal experiences of political or social oppression; collective creation; testing of potential actions and solutions; fostering dialogue
	Vocal workshops	Work on vocal strength and confidence; based on improvisation and performance
Communicating and helping discussion, learning and reflectivity	Collaborative play creation	Play creation through discussion groups and improvisations
	Theatrical sketches	Small sketches inside a conference, class or event
	Street theatre	Theatre piece played in the street, with or without public interaction
	Live-game show	Audience participating in a game with professional actors playing roles inside a conference or event
	Pedagogic theatre	Delivering messages, supporting educational and learning interventions
Supporting systems representation and interpretation	Ethnodrama/ethnotheatre	Dramatization of ethnographic data (researcher experiences and/or interpretations from interviews, focus groups, etc.)

Although most of these experiences can be considered participatory, the level of actual engagement and mode of participation can differ greatly and two broad approaches can be identified. On the one hand, an approach in which the personal experiences of the participants/actors constitute the basis for play creation (collective performance creation), as is the case of Theatre of the Oppressed, Dance and Movement Therapy or Ethnodrama. On the other hand, an approach in which a performance is created by a team of facilitators or promoters, and then performed with a targeted audience, which participates afterwards in diverse forum spaces, as in Pedagogic Theatre. These various approaches have also different implications regarding processes and outcomes, the advantages and limitations of which are explored in section 3.

Table 3 shows some initial motivations and empirical outcomes identified from the examples explored so far. Such experiences try to affect both subjective and collective perceptions, contribute to individual and collective reflexivity, and to the re-framing of the issues at stake. This often includes the explicit goal of trying to transform social interactions (the basis of social learning) so as to change constructively existing relationships, fostering dialogue and building trust. Thus, the collective component is central to these kinds of interventions, as is the will to facilitate and share a common experience: one which invites participants to place, feel and see themselves and the issues addressed from different perspectives.

Table 3: Applied theatre in academic literature: motivations/purposes and empirical outcomes

Motivations and purposes	Some empirical outcomes
<ul style="list-style-type: none"> • Healing, as a form of therapy • Personal capacity building and empowerment • Working on group dynamics • Supporting reconciliation • Humanising illness 	<ul style="list-style-type: none"> • Improved ‘body ownership’ and body self-awareness • Re-appropriation of personal and physical space • Increased socialization and sense of group • Enhanced communication and interpersonal skills • Improved self-confidence • More spontaneity and freedom of expression • More empathy towards others • Increased sense of responsibility and maturity • Empowerment through involvement • Real changes in community practices • Change of participants’ status • Overcoming violent impulses and rediscovering the pleasure of collective endeavour • Reconciliation within the local community • Creating new images of people with mental health problems • Impacted values, beliefs and understandings of schizophrenia • Embodied knowledge

	(Rolfe et al., 1995; Gray, 2000; Koppers, 2000; Snow, 2003; McKay and Bright, 2005; Rosenbaum et al., 2005; Mbizvo, 2006; Harris, 2007; Horwitz et al., 2010; Osnes, 2012)
<ul style="list-style-type: none"> • Education or training on a specific issue • Awareness raising • Information gathering for participatory research 	<ul style="list-style-type: none"> • Efficacy as interactive pedagogical method • Group reflections and critical thinking on the topic • Generation of a new kind of knowledge: embodied, dialogical and illustrative • Collective representing, reflecting and analysing social situations • Emerging topics from lived experiences, cognitive processing and emotive reaction • Specific technical skills • Reflections and re-evaluation skills of prejudices and misconceptions, deconstruction of previous ideas • Unveiling of social dynamics and power relations • New insights on relationships • Changing attitudes, beliefs, and behaviours • Greater awareness of best practices • Provision of data/information on controversial subjects or articulations of non-conformist positions
	(Rolfe et al., 1995; Pierre-Brans and Macharis, 1997; Gray, 2000; Mabala and Allen 2002; Snow et al., 2003; McKay and Bright, 2005; Rosenbaum et al., 2005; Mbizvo, 2006; Newell et al., 2006; Niskier et al. 2006; Colby and Haldeman, 2007; Kaptani and Yuval-Davis 2008; Bonnaud-Antignac et al., 2009; Souto-Manning, 2011; Osnes, 2012; Metcalf and Veiga 2012; Lehtonen, 2012)
<ul style="list-style-type: none"> • Dissemination of results • Facilitating a dynamic discussion • Supporting a keynote lecture • As public engagement tool • As an assessment procedure • Participation in policy development 	<ul style="list-style-type: none"> • Identification of critical concepts • Effective way of stimulating discussion, of instigating a lively community dialogue • Powerful tool for disseminating information • Eliciting public participation in policy development • Allowing for more points of recognition for audience members, through the inclusion of multiple voices and perspectives
	(Gray, 2000; Cornwall et al., 1989; Mabala and Allen 2002; McKay and Bright, 2005; Rosenbaum et al., 2005; Mbizvo, 2006; Guhrs et al., 2006; Newell et al., 2006; Niskier et al. 2006; Kaptani and Yuval-Davis 2008; Newell et al., 2011)

These experiences have been assessed using mixed methods which mostly apply qualitative criteria, but also with some quantitative evaluation techniques, applied before, during and/or more commonly only after the performative acts¹⁴. Nevertheless,

¹⁴ Evaluation methods applied in these experiences are present in Appendix 2. More discussion on assessments is presented in section 3.

post-assessments are frequently limited to questionnaires and self-perception scales and open feedback provided right after the intervention.

Most of the academic literature reviewed so far refers to the assessment of experiences using theatre mainly for education and training, therapy, and as a public discussion tool. In science, the use of theatre as an explicit academic research method is not yet widespread, with most of the experiences belonging to the social sciences. Kaptani and Yuval-Davis (2008), for instance, use theatre as a research method in sociology, applying Playback and Forum Theatre to produce different kinds of knowledge and insights regarding constructions, contestations and authorizations of identities in refugees.

In the next section, we review a series of very different experiences around the world in which theatre has been used in environmental and sustainability-oriented interventions and we introduce the concept of ‘performative methods’.

3 Applied theatre in environmental and sustainability science

The active body learns in ways that are eminently more personal, applicable, critical and long-lasting than any other teaching method

Pineau 1994, cited in Madison, 2006

Act IV: We are in the world and the world is in us

We now move to the examination of existing experiences of applied theatre in environmental and sustainability research and practices. Our exploration takes place within a vast universe of rather varied initiatives and therefore, our findings are not intended to be exhaustive, but only illustrative of the nature, kinds of topics and contexts addressed, as well as of the learning processes and intended social transformations sought by means of theatrical applications. Table 4 shows 10 theatrical experiences selected according to whether they met the following criteria at the same time: i) having an environmental sustainability focus; ii) working directly with affected communities and iii) having explicit transformational and learning goals by supporting action and change in a specific socio-environmental situation.

Table 4: Selection of theatrical experiences in environmental contexts: What and what for? Who and for whom? How? What outcomes?

Experience: WHAT AND WHAT FOR?	WHO AND FOR WHOM?	HOW?	OUTCOMES
<p>Theatre for Development (1996-2001) Promoting community's participation in policy development in community-based natural resource management (CBNRM)</p> <p>Botswana, Malawi, Mozambique, Namibia, South Africa, Zambia and Zimbabwe</p>	<p>Who:</p> <ul style="list-style-type: none"> • Africa Resources Trust and Theatre for Africa: Community Outreach Programme • Several NGO's, like SEKA <p>For: Local communities participating in CBNRM</p>	<p>5-year project coordinated among local NGO's, the Ministry and a theatre group.</p> <ul style="list-style-type: none"> • Actors are trained on acting, facilitating skills and CBNRM • Actors go to the communities: collective research and performance creation shows (2 years) • Actors re-gathering and sharing: creation of final performance that tours regionally and internationally 	<ul style="list-style-type: none"> • Development of a regional network • Dialogue facilitation between technical agencies and communities, leaders and their constituents • Inclusion of marginalised groups (women, youth and the poor) • Powerful and culturally sensitive tool to convey complex environmental and developmental messages
<p>Community theatre as a project evaluation tool (1989) Reflecting on perceptions and concerns about a community project</p> <p>Zimbabwe</p>	<p>Who: ENDA-Zimbabwe (Environment and Development Activities)</p> <p>For: Villagers Mototi Township</p>	<p>Part of a community woodland resource management project Workshop facilitated by based project staff, a community worker and village researchers:</p> <ul style="list-style-type: none"> • Group discussion on selected topics • Scenes creation based on previous debate • Performance to the village 	<ul style="list-style-type: none"> • A piece of community theatre portraying conflicts over communal resources in a form that the representatives of the community taking part felt could help promote awareness and concern • Closer identification with the issues and concerns raised
<p>Theatre for Development or Listening Theatre (Early 90's) To monitor the mood and views of the community; as ongoing feedback system</p>	<p>Who:</p> <ul style="list-style-type: none"> • SOS Sahel's Community Environment Project <p>For:</p>	<ul style="list-style-type: none"> • Performers with theatre facilitators evolved a culture-specific form of theatre based on local performance • Community performers could use it to express whatever they wished, 	<ul style="list-style-type: none"> • The plays monitored and amplified base line information about the community and allowed for a space were villagers could convey delicate issues, like complaints • Feedback for the project workers and

Experience: WHAT AND WHAT FOR?	WHO AND FOR WHOM?	HOW?	OUTCOMES
Mali	<ul style="list-style-type: none"> • Youths from Bobo minority group 	related to soil and water conservation and agroforestry in the community.	subsequent improvement
<p>Community theatre within Environmental Programmes (1995-2012)</p> <p>To encourage sustainable practices and support community responsibility for the sustainable use of their resources</p> <p>Vanuatu, South-west Pacific</p> <p>http://www.wansmolbag.org</p>	<p>Who:</p> <ul style="list-style-type: none"> • Wan Smolbag Theatre <p>For:</p> <ul style="list-style-type: none"> • Vanuatu local communities 	<ul style="list-style-type: none"> • Community-based research exploring knowledge, attitudes and practices • Play development by theatre actors • Pre and post discussions with the community • Post performance activities related to conservation 	<ul style="list-style-type: none"> • Key role of theatre groups in raising awareness and encouraging public discussion of important and often controversial concerns • Cooperation with other stakeholders and within programs, creating a network of 200 partners • Growth of environmental theatre groups
<p>‘Eau Durable’: Sustainable Water Project through Legislative Theatre (2009)</p> <p>To facilitate public participation in water management policy, support preservation of water and aquatic environment in ‘La Siagne’</p> <p>France</p> <p>www.eaudurable.org</p>	<p>Who:</p> <ul style="list-style-type: none"> • éCohérence • Echomédiens <p>For:</p> <ul style="list-style-type: none"> • Citizens • Technicians • Elected representatives 	<ul style="list-style-type: none"> • Citizens and artists work together creating a Forum Theatre play • Performance to an audience of technicians, elected representatives and citizens • Through the play, citizens make proposals to technicians and representatives, that are discussed and voted in a public debate 	<p>Emergence of possible solutions and shared choices for a sustainable future:</p> <ul style="list-style-type: none"> • 10 performances • 63 political proposals • 12.028 participants
<p>‘Dream of the Yellow River’: Environmental Community-Based Theatre Programme (2011-2012)</p> <p>To promote environmental protection and better quality of life</p> <p>China</p>	<p>Who:</p> <ul style="list-style-type: none"> • Imagination • NGO Green Camel Bell and Development Centre volunteers <p>For:</p> <ul style="list-style-type: none"> • Youth and their parents 	<p>Programme addressed to local government officials by 30 school children and 20 environmental NGO volunteers:</p> <ul style="list-style-type: none"> • Putting together stories on environmental protection using a classic song about the Yellow River. • Creation of a performance 	<ul style="list-style-type: none"> • First time in local history that a partnership is created among local NGO’s, government officials and children • Multi-age production with volunteers ranging from 5 to 70 years old

Experience: WHAT AND WHAT FOR?	WHO AND FOR WHOM?	HOW?	OUTCOMES
http://www.youtube.com/watch?v=7JdWnT5iUAY	<ul style="list-style-type: none"> • Volunteers • Lanzhou Environmental Protection Bureau 	<ul style="list-style-type: none"> • Performance in front of an audience of local people at the Lanzhou Environmental Protection Bureau's annual (Lunar) New Year's Meeting 	<ul style="list-style-type: none"> • Children's proposals about how to clean up pollution in Lanzhou
<p>Caravana Cultural /'Cultural Tour' (2008-2013) To generate and promote a cultural movement strengthening and transforming local processes towards a more sustainable society Mexico http://www.eca.org.mx/</p> <p>http://www.youtube.com/watch?v=ZIA4W1vaf6k</p>	<p>Who:</p> <ul style="list-style-type: none"> • ECA: Espacio para la Cultura Ambiental <p>For:</p> <ul style="list-style-type: none"> • Communities from 13 municipalities 	<p>Road tour in which the 'Caravana Cultural' visits a community and opens a space of collective learning combining music, mural paintings, photography, dance and theatre performances, with workshops and talks</p>	<ul style="list-style-type: none"> • 57 tours, with more than 300 workshops and activities, reaching approximately 14.000 people • Intergenerational dialogue within the communities and recovery of public spaces • Enhanced traditional knowledge and awareness about natural and cultural values of the region
<p>'Warmer': interactive, voice-movement, site-specific theatre (2008) To nurture an open creative context where our relationship to our environment is explored Canada http://www.contactimprov.ca/on/kw/warmer</p>	<p>Who:</p> <ul style="list-style-type: none"> • 'Warmer' Project/ Earthling Collective • Ontario Arts Council <p>For:</p> <ul style="list-style-type: none"> • The community • Specific partners 	<ul style="list-style-type: none"> • Café interviews and dialogue, development of electronic soundscapes • Live voice-movement-theatre workshops, • Site-specific, experiential performance-event(s) 	<ul style="list-style-type: none"> • Enhanced sense of collective empowerment • Sharing a experience of collective exploration in a way that resounds in the body and in emotions

Experience: WHAT AND WHAT FOR?	WHO AND FOR WHOM?	HOW?	OUTCOMES
<p>Global Warming Goes Down (2009-2011) To raise awareness, share perspectives, concerns and reflections on specific climate change challenges South Africa http://vimeo.com/12073691 http://climateconscious.net/climate-theatre.php</p>	<p>Who:</p> <ul style="list-style-type: none"> • Resource Africa UK • Bennde Mutale Theatre Group <p>For:</p> <ul style="list-style-type: none"> • Bennde Mutale Community 	<ul style="list-style-type: none"> • Creation of a theatre group with people from the community • Performance creation • Touring 	<ul style="list-style-type: none"> • 45 minute performance linking climate change to the local situation • Local tour in the neighbouring villages + a nation-wide tour of South Africa that made it all the way to COP17 in Durban, December 2011
<p>2 degrees of fear and desire: a theatrical inquiry into climate change (2007-2008) To reflect on and break through barriers to core behavioural change around global warming Canada http://www.headlinestheatre.com/past_work/2Degrees08/index.htm</p>	<p>Who:</p> <ul style="list-style-type: none"> • Headlines Theatre 2° of fear and desire working group <p>For:</p> <ul style="list-style-type: none"> • General public 	<p>Intimate event where an actor dialogues with the audience through storytelling and Theatre of the Oppressed techniques</p>	<ul style="list-style-type: none"> • Around 14 performances between 2007 and 2008, reaching more than 600 people • Joker's International Day of Action on Global Warming: 44 separate events, 25 countries, 6 continents

As we can see in Table 4, our findings show a greater presence of theatre experiences focusing on Community-based Natural Resource Management (CBNRM) mostly in the Global South -e.g. where direct engagement of the participative audiences to support improved understanding and management of the community's natural environment is encouraged. In contrast, theatre experiences in the Global North tend to be more focused on exploring and modifying general environmental perceptions, consumption patterns and looking for climate change alternatives and modes of action.

We observe, for instance, a growing trend in Africa in the application of Theatre for Development¹⁵. This is the case of the experiences documented by Guhrs et al. (2006) in Southern Africa, intended to help overcome communication barriers and enhance inclusive and democratic participation of communities in CBNRM. Through a five-year process, a seven-country alliance was coordinated between local NGO's and communities, national governments, technical agencies and a theatre group. Actor-facilitators engaged with local communities in action-research and produced several performances reflecting upon personal experiences, perspectives and challenges regarding CBNRM as follow: 1) These performances were first put on in various local settings, and the insights from the subsequent discussions were systematically collected; 2) After two years of fieldwork and performances, the team of facilitators shared all the experiences gathered in the different countries; 3) All these inputs were used to produce a new theatrical performance, which then toured various South African regions and also internationally and was played before audiences of policy-makers. In this way, as remarked by Gurhs et al. (2006): 'the perspectives and voices of many of the most marginalized in society were presented directly to those whose decisions impact upon their livelihoods'. This initiative opened a 'democratic space' of community participation and deliberation that did not exist before, contributing to a greater appreciation of the complexities and implications of community-based natural resource management. Moreover, a regional network of partners was subsequently created out of this work spreading new similar initiatives.

Other similar experiences in Mali (Mavrocordatos 1988) and in Zimbabwe (Cornwall et al. 1989) have used theatre to collect feedback on environmental protection programs and amplify base-line information, as well as support monitoring, facilitation and communication between the community and project workers. By using a theatrical language based on local performance traditions, community participation was enhanced, creating a space where the villagers could feel identified and engaged with the concerns expressed, and delicate issues could be raised and discussed in public (e.g. complaints about the project, conflicts over communal resources, tensions between neighbors or drinking problems within the community).

¹⁵ Applied drama was incorporated in Africa during the 80's and 90's, mostly under the form of Theatre for Development, which has been increasingly applied as a way of enhancing popular participation in the development process (Mda 1993).

Regarding the global North, in southern France, the project ‘*Eau Durable*’, developed in 2009, constituted a participatory process using Legislative Theatre¹⁶ to enhance citizenship participation in local water governance. This project was triggered as a result of increasing pressure on water resources in the region, where there was a need to engage civil society in water ecosystems’ preservation and management. Based on inputs from different experts and previous research in the area, a theatre company in partnership with institutional, associative and educative partners, created three plays on water management challenges (including domestic and industrial water pollution, overspending, floods and climate change). Ten performances were then played in nine municipalities involving 655 people and resulting in 62 political proposals which were subsequently presented to the municipalities.

The majority of the experiences reviewed explicitly aimed at enhancing the collective capabilities for reflexivity, and usually gave equal weight of importance to the actual processes of learning as to the outcomes and their use by the targeted participants. According to their assessments, theatre has successfully been used to identify and approach a large array of environmental issues and groups, thus helping to share multiple sources and forms of knowledge and personal experiences, and facilitating dialogue through creative exploration and collective reflection. Theatre has also helped to create new discussion spaces, and collectively, to devise new proposals and solutions and to foster new social networks and community bonds. Nonetheless, few of the aforementioned experiences are evaluated through a systematic procedure. In many cases, information about the assessment of impacts is not available; only in a few experiences in which applied theatre was part of broader projects have these impacts been assessed, but again only focusing on the overall project goals in which such techniques were applied.

Act V: What role for *Performative methods* within sustainability science?

From the experiences explored in this review, we can take a number of key elements which can help us to identify and understand the role of applied theatre in sustainability science. We will generally refer to these novel methodological approaches as ‘performative methods’: a participatory form of integrative research aimed at integrating and combining elements from the performing arts into research in a flexible and context-specific manner within larger social and political processes, devised to support individual, community and institutional reflexivity and transformation. Performative methods stand out for promoting:

¹⁶ Legislative theatre was created in the late 80’s by Brazilian theatre director and practitioner Augusto Boal. Boal was the father of the Theatre of the Oppressed, one of the most influencing applied theatre approaches, and through Legislative theatre he developed a variation of Forum Theatre as a tool to engage people in policy making (Boal 1998). In Legislative theatre, the audience is composed of technicians, elected representatives and citizens. From the insights and discussions facilitated by the interactive forum theatre play, the audience makes proposals of action. These proposals are then reformulated in legislative terms by the technicians and discussed and voted during the session, generating policy proposals as an outcome of the session.

- Goal-searching, open-ended, iterative and self-reflective processes of collective exploration and ‘re-search’
- Active participation and inclusion of relevant communities at different stages of the creative and research process
- Meaningful integration of various sources of knowledge and judgement, in combination with emotion-rich expressions and affective communication

And therefore, the transformation of passive ‘knowledge audiences’ and listeners hearing far removed stories of a drama ‘out there’ into active protagonists of knowledge in which the new knowledge actors become able to create their own collective narratives and stories for changing their own stage play.

Performative methods, as creativity-enhancing and flexible tools to engage communities, have been amply used in Participatory Action-Research (PAR)¹⁷ and in particular, in situations where the issues at stake show a high degree of complexity, are difficult to communicate and require the integration of alternative languages of motivation. By combining different languages and channels of perception and expression, as well as emotion and feelings, performative methods may help to open spaces for popular engagement and social reflexivity, enhance social learning and trigger transformative action within a number of contexts¹⁸. By exploring the complex performative dimensions of socially-situated embodied experience, performative methods offer a platform to critically approach sustainability practices (O’Shea 2012), which indeed are crucial to build our way to transformational changes. The potential of the arts, and especially of applied theatre, to convey meaning through their expressive qualities and to encode complex relationships is increasingly acknowledged in the present literature (Dewey 2008, Barone and Eisner 2012). Bringing these various sources of knowledge together in this guise provides a great opportunity to contribute to improving the total system awareness of individuals and communities; an awareness that includes both factual and emotional components of social-ecological dynamics¹⁹. Given that performative methods tend to be focused on the social, cultural and political aspects of transformation, they can therefore play a key role in how societies choose and

¹⁷ PAR involves researchers and participants working together in a cyclic and self-critical research process oriented towards explicit social change and it is aimed at co-producing shared benefits of the research process. PAR processes are generally designed as a participation continuum (Pretty et al. 1995) negotiated by co-researchers and participants during the ‘research’ process. Its action-oriented and locally-committed approach hence creates a more flexible and socially owned process, where a diversity of methods and epistemologies can be put into practice.

¹⁸ At this point a distinction between changing individual behaviour and transformational change should be made. Indeed, individual behaviours may change but this does not mean that such changes will bring about transformational change (e.g adaptive changes without any intention or effect on changing the actual contextual or structural/ system conditions).

¹⁹ In this way, we understand that, in contrast to other more positivist or reductionist approaches to knowledge production and understanding, these alternative forms of experiencing and learning can be more conducive to transformational change. Nevertheless, it is true that transformational change, and even less sustainability transformational change will not be guaranteed *per se*, precisely due to the complexity, open-endedness and the many uncertainties derived from any conscious intervention in the dynamics of social-ecological systems.

pursue visions of sustainability (Miller 2012). Moreover, they can be complementary to other research approaches (e.g. of a positivist stance) as well as other participatory techniques (e.g. focus groups or conference debates). In particular, the role of performative methods' is manifold and can be understood as (Knowles and Cole, 2008):

- A method: feeding the creative inquiry process
- A medium: way or mode of presenting the inquiry and disseminating results
- An aesthetical act: which combines different aesthetical principles which contribute to the appreciation of beauty and the experience of an artistic performance while communicating a process of knowledge creation

Act VI: Potential and limitations of performative methods in sustainability science²⁰

Rather than aiming to produce sustainable citizens, ...it is perhaps the making of sustainable performances which should take centre stage

Horton 2003, in O'Shea 2012

Sustainability science can be seen as the result of one of the latest attempts at integration in global science research (Mauser et al. 2013). In contrast to environmental science, which mostly focuses on improving environmental quality, sustainability science pays special attention to the institutional, cultural and political processes which can redress current pathways of development in ways which may become viable with global ecological dynamics and boundaries in the long term. One of its core aims is to support, design and carry out transition-oriented processes able to link knowledge with action to deal with persistent problems of unsustainability (Jäger 2009).

In this regard, a shift from a focus on systems analysis to transformational change shapes a transformational paradigm within sustainability science that focuses on the decision processes embedded in societal transition processes built upon socially robust knowledge (Wiek et al. 2012). At the same time, a procedural approach frames sustainability as an adaptive and evolving property that emerges from social practices, focusing on the way these practices and narratives are formed through processes of interaction, engagement and interplay between abstract knowledge and local circumstance (O'Shea 2012). Within sustainability science, the need for participatory, highly interactive and deliberative research processes involving different stakeholders and combining different ways of knowing and learning is often emphasized (Kates et al.

²⁰ In the last decades an ecocritical discourse has been slowly permeating different theatrical and performance art practices and theorisations outside the realm of applied theatre (see, for instance, Giannachi and Steward 2005, Kershaw 2007, May 2007, Heddon and Mackey 2012). Due to the scope of the paper, in the following analysis we will focus only in applied theatre's potentials and limitations.

2001, Kasemir et al. 2003, O'Shea 2012). Furthermore, mapping and deliberating values underlying sustainability goals, visions and targets is frequently argued to be fundamental on our way to sustainability transitions (Miller 2013).

Development potential

Performative methods are beginning to prove their value as creative means of integrating knowledge, emotion and action to address (un)sustainability problems. Based on our review of theatrical experiences we have identified five potential functions of performative methods that could support these processes of social and transformational learning within sustainability science:

- 1.** Integrating and embodying different kinds of knowledge, values and perspectives in stakeholder dialogue.
- 2.** Communicating and translating complexity.
- 3.** Fostering social reflexivity, public deliberation and understanding.
- 4.** Building socio-ecological identities and ecological consciousness.
- 5.** Fostering engagement and emotional commitment leading to action.

Table 5: Potential key functions of performative methods within sustainability science and their added values as a methodological proposal.

	Potential functions	Added value
1 Integrating different kinds of knowledge and perspectives in stakeholder dialogue	<ul style="list-style-type: none"> - Combining different sources of knowledge and layers of understanding (experience, rational discourse, emotions, traditional knowledge, stories or myths, etc.) - Facilitating the emergence of generative themes and collective properties Inclusion of social groups - Negotiation of perceptual boundaries - Shared process- shared outcomes - Re-approach to participants/stakeholders involved: equal voice, change in relationships - Embodying knowledge - Creativity and degrees of freedom 	Self-reflective process
2 Communicating complexity	<ul style="list-style-type: none"> - Integrating different languages and forms of complexity representation (oral, visual, sensitive...) - Translating complex concepts - Experiencing complex concepts - Dealing with emotions: fostering emotional stimuli and responses - Stimulating our imagination - Producing theatrical metaphors able to resonate with individual experiences and biographies 	Knowledge emergence
3 Fostering critical reflection and public deliberation	<ul style="list-style-type: none"> - Creativity and degrees of freedom - Dramatic distance - Reflection from different channels (not only rationality): experiential - Raising and bringing to the public delicate issues - Creating a safe space for discussion - Creating a space for diverse opinions and positions 	Empowerment
4 Building socio-ecological identities and consciousness	<ul style="list-style-type: none"> - Fostering social-ecological consciousness - Perception of the environment and our relation/s to/within it - Sense of belonging: community building - Meaning creation - Empowerment - Engagement with new communities of learning 	Opening-up political spaces
5 Fostering engagement and emotional commitments leading to action	<ul style="list-style-type: none"> - Raising critical awareness and reflective enactment - Meaning creation - Empowerment - Developing alternative visions of the future 	
SUSTAINABILITY LEARNING		

1. Integrating and embodying different kinds of knowledge, values and perspectives in stakeholder dialogues: When conceived as participatory processes where both researchers and participants co-create all the acts entailed in the research-action performance, applied theatre offers a solid platform to facilitate stakeholder engagement and dialogue. By connecting people on the emotional level, they can evoke empathy and foster a highly-engaged dialogue (Leavy 2009). The integration of different kinds of knowledge and perspectives within an atmosphere of emotional and embodied engagement can trigger a powerful self-reflective process, which can be collectively shaped and negotiated. The performative act then becomes a site of exchange and experimentation, a *stage* where it is possible both to re-think, re-create and re-present reality, and to re-draw perceptual and cognitive borders within the group and the issues at stake (Kuppers 2007). In Dieleman's words:

‘A theatre play is an almost archetypical space of experimentation and imagination (...). These spaces present ‘situations’, touch upon emotions and feelings and literally invite to reflect in the sense of thinking and rethinking and framing and reframing. Sometimes they also invite to participate, act and co-create, as for in-stance in the ‘Theatre of the Oppressed’

(Dieleman 2012)

In such hybrid places of creative exploration between reality and imagination, where experiences are shared and represented, *generative themes* can emerge²¹ (Freire 1970). In a similar way, O’Shea (2012) conceives embodiment as a ‘generative state -generative of meaning, relationships, and an understanding of self’ (p. 35). She argues that embodiment is the foundation of how we make sense in the world, as knowledge is constituted by our embodied engagement with material and social worlds. Thus, a very unique knowledge, potentially transformative, can be created through the performance, at least to the extent that it is illustrative, embodied and dialectical (Kaptani and Yuval-Davis 2008). In this respect, Nicholson states that 'as a practice, knowledge in drama is embodied, culturally located and socially distributed. This means that knowledge is produced through interaction with others, and that reciprocity between participants creates new forms of social and cultural capital' (Nicholson 2005).

Box 1 exemplifies one application of participatory theatre facilitating stakeholder dialogue.

²¹ Generative themes, or meaningful thematics within the universe of participants (Freire 1970), have the potential to trigger a rich aesthetical dialogue and critical reflection within these spaces of creative exploration, as they unfold into again as many others and express dialectical interactions with their opposites.

Box 1 Applied Drama at ICTA-UAB²²

We carried out an experience of applied theatre at our environmental research institute, at the Autonomous University of Barcelona where 20 junior and senior researchers reflected on and developed improvisations through Image Theatre about our research community and the challenges of interdisciplinarity. Three aspects especially captured our attention: (1) the capacity of the methodology for actively engaging the participants in a creative reflection process; (2) the capacity for breaking with pre-established roles between participants and the creation of new kinds of relationships; and (3) its potential as a research tool, as it opened the ‘black-box’ of the Institute allowing many topics and tensions to emerge and to be discussed. The fun atmosphere, creativity and spontaneity of the process also allowed participants to raise delicate issues in a comfortable way and this helped to capture and handle the complexity of a research institution such as this one. However, this experiment also highlighted that a one-off experience is not enough if the overall goal is to engage a given ‘participant-audience’ in a broader learning process with some transformational impact. Such experiences need to be embedded in larger processes of social learning and change.



Picture 1: A moment from the workshop. Photo: María Heras

²² Institute on Environmental Science and Technology- ICTA (UAB), Barcelona, Spain. The experiment was carried out as part of an event called ‘*Passion and Interdisciplinarity: a dialogue about interdisciplinary dialogue*’, co-organised by Katharine N. Farrell, in February 4th, 2013.

- 2. Communicating and translating complexity:** Provided the right conditions are present, the most common intrinsic value of theatrical performance as an art form is the capacity to evoke an aesthetic experience²³ in the audience. The aesthetic encounter feeds on artistic recourses including metaphor, evocation and resonance, and relates to ‘the engagement of the imaginative powers in order to unite form and matter in a new, meaningful perception’ (van Maanen 2009). Such aesthetic component is a crucial feature for the potential of performative methods in the communication and translation of complexity. The combination of different layers of understanding can contribute to meaning creation, embodying conceptual abstractions (Zammit-Lucia 2012). Metaphors, as features of artistic expression, can contribute to this expressive quality, which in turn is dependent on the system of reference in which it is applied –in our case, audience-participant, allowing multiple meanings to emerge and highlighting the evocative features of theatrical performance as a communicative medium (Goodman 1969). The building of multiple meanings can also contribute to widen the set of collective interpretative references through which the performative relations are created between the ‘players/facilitators’ and the ‘audience/participants’ -who at some point may become the same. This is of particular relevance for sustainability science, characterised by complex social-ecological dynamics, often difficult to communicate and whereby processes of change are often not immediately visible to society. Following Kagan’s concept of *aesthetics of sustainability*, a theatrical approach committed to a transdisciplinary sensibility to address social-ecological dynamics has the potential to heighten our sensibilities to interdependencies within socio-ecosystems (Kagan, 2011). These techniques are able to merge both the various roles of knowledge production and performative action entailed in global environmental change research with personal experiences, perceptions and feelings. This experiencing can ‘contextualize situations and connect with them while integrating different ways of perceiving, thus going beyond a mere analytical ‘diagnose’ of a problem’ (Dieleman 2012).
- 3. Fostering social reflexivity, public deliberation and understanding:** Most of the experiences reviewed so far highlight the effectiveness of theatrical interventions to stimulate social reflexivity and critical thinking in ways that can unveil and support potential transformative changes in power arrangements and dynamics. Performative methods explicitly aim at fostering imagination, creativity and playfulness. This open attitude both of the researchers and of the ‘researched’ may create deliberative spaces with a greater degree of freedom than other more conventional participative methods. By means of performing, of embodied doing and reflecting in action, these techniques may also help participants to switch into an

²³ Following van Maanen (2009), by this we mean the direct effect or experience that comes into being through interaction with the artistic utterance.

explorative mood and a dialectical way of reasoning and being. This is particularly important since, as Dieleman (2012) recalls ‘it is in action that we go from one level of reality and corresponding perception, to the other. It is because of this, that action is so important, as well as thinking in action or reflection in action’.

In the context of social-ecological change, such performativity, creativity and flexibility is essential to overcome narrow frames of thinking and constrained imaginaries. Theatre can then be understood as *utopian performative visioning*: it recreates ‘what if’ situations and most importantly, tries to find a ‘role for me’ as an *actor* in that situation (Dolan 2001; Ravetz 1997). Because of the relative ‘dramatic distance’ created during theatrical performance, it is possible to tackle and bring into the discussion delicate issues and open up political processes about the future, which would not be possible in more ‘formal’ or real settings. This reinforces the potential of performative methods to open-up political processes about the future. For instance, within the ‘*Caravana Cultural*’ project in Mexico (see Table 4), the space created by an artistic festival within indigenous communities, triggered an intergenerational dialogue of various kinds of knowledge and experiences, via a creative forum based on theatrical performance, storytelling, participatory video and painting. Most notably, thanks to the festive character of the festival, it allowed the recovery of public spaces for deliberation within several communities affected by increasing violence and insecurity. Performative methods can thus be co-constructed as sites of negotiation, to re-define identities, values and perspectives through public deliberation in an inclusive, unbounded, creative way.

These participatory and democratic features should not, nevertheless, be taken for granted²⁴. Applied theatre offers a platform for democratic participation, but as in any other participatory space, the degree and qualities of this participation are subjected to the extent participants have the capacity and opportunity to influence and take decisions during the participatory process and determine the nature and uses of its outcomes (Arnstein 1969).

4. Building socio-ecological identities and ecological consciousness: In sustainability science, where there is high uncertainty and multiple interests at stake, social participation and engagement in political processes bridging

²⁴ Indeed, unresolved tensions within the process put at risk the participatory nature of this approach. As a few examples, non-resolved hierarchies within the group may lead to a colonization of interpretations and views, reinforcing an uncritical status-quo (Hamel 2013) and tensions associated to the influence of the facilitator/artist, can result in an intervention of participant’s discourses, imposing a pre-determined ideological agenda (Snyder-Young 2011).

science and action is essential (Kates et al. 2001; Clark 2003; Jäger 2009, Lang et al. 2002). By using an aesthetic, entertaining and empathic language, applied theatre has proven to be an effective means of engaging people in very different situations. Applied theatre, as a way of restoring spaces for communication, community building and active participant citizenship (Nicholson 2005) can be very appealing and enjoyable. In many occasions, we find that what *is needed* in addressing the problems of unsustainability is not just ‘more knowledge’, but a sense of personal belonging, attachment and responsibility to our interconnected world; in other words: what role/s can I play?

For instance, the theatrical project ‘*Two degrees of fear and desire*’ was developed to address the emotional aspects that constrain or enhance core behavioural changes in our relation to climate change (see Table 4). For that, each theatrical session engaged with an audience in deep critical reflections about values, attitudes and assumptions that shape our behaviour regarding lifestyle changes, allowing for a space to share concerns and daily struggles, but also to share specific strategies of action and desires for a better future. Hence theatre may help to reinforce learning processes and reconstruct socio-ecological identities needed to speed up societal transformations towards sustainability.

5. Fostering engagement and emotional commitment leading to action:

Applied theatre can support the generation of alternative visions of future which may constitute the basis for societal transformations towards sustainability (Kates et al. 2001, Wiek and Iwaniec 2014). Performative methods can support envisioning processes through the utopian-performative, role-visioning dynamics and rehearsals for action. Furthermore, these methods enable to unveil and discuss the values and assumptions enacted and projected behind these visions. This has a great potential within transformational sustainability research processes as sustainability can be understood as an ethical challenge (Miller 2013). The creation of ‘fictitious worlds’ offers the potential to ‘challenge the monopoly of established reality’, by opening a window of opportunity to experiences and emotions which may not have a space in present reality, recalling arts’ potential for subversive imagination and freedom (Becker 1994). It is precisely this promotion of disturbance, disruptiveness and disequilibrium fostered by the arts which may allow us to revisit the world in new radical directions, re-experiencing aspects previously unnoticed (Barone and Eisner 2012). As means of participatory research, performative methods can contribute to actual real-world problem-solving, other than solving only abstract research questions (Salas-Zapata, 2012). For instance, the experience of Lehtonen (2012, see Appendix 2) shows a collaborative play-creating process with school students in Finland, where visions of desirable

futures were created and underlying values and beliefs were unveiled and discussed, hence contributing to richer and more conscious ideas of the complexity of the future.

Performative methods can contribute to processes of transformational learning for sustainability as they open up spaces that help seeing things differently; that is, going beyond pre-established frameworks of thought. In this fashion, new options and plausible worlds can be explored adopting systemic, holistic and relational views. As a continuous process of recognizing, questioning and re-approaching our worldviews and interactions, performative methods may be an effective tool to work on the *normative aspects of sustainability*, which are often neglected by other, more positivist approaches.

Limitations and conditions

The potential of applied theatre in sustainability science and practice is largely dependent on how such techniques are used and placed within broader social and political processes, which can also be conducive to transformational change. When theatrical experiences are part of such broader learning and participatory processes, instead of constituting single events, their impacts may be enhanced. In particular:

- In situations where there is a collective process behind the performance creation (participants contribute creating the plot, choosing the roles and setting the stage), these processes are more demanding for the participant audiences and communities, especially in terms of time and commitment. Here, the facilitators' roles play a large part in the creation of a comfortable, secure and motivated atmosphere leading to significant outcomes.
- In one-off performative acts, participation is reduced to a limited moment of performance creation or attendance and discussion. Time and commitment demands are therefore significantly reduced, while possibilities to reach larger audiences are higher. Nevertheless, because of their short duration, their impacts run the risk of being more superficial.

Therefore, there are many limitations and conditions beyond the research team and the actual performative act, which can affect the feasibility, impact and depth of the process (see Table 6). While less intense participatory approaches may be able to reach larger audiences in shorter time, their impact on emotion and individual meaning may only have a limited or superficial character. In applied theatre, the final effect on audiences' behaviour will be highly variable, and depend on many factors, including their audience members' receptivity, background, and how the overall action-research process has been framed and carried out. In all cases, theatrical knowledge and skills are needed within the research team, as researchers' artistry is an important part of Arts-informed inquiry (Knowles and Cole 2008). In this regard, the aesthetic quality of the performance can enhance or constrain the expressive and communicative potentials of

Table 6: Advantages and limitations of using applied theatre, according to participation levels in the theatrical approach and duration of the process

	Advantages	Limitations
Participants create their own play and perform it	<p>Inclusiveness: avoids expert talk, exclusion and excessive formalities</p> <p>Opening up opportunities for the collective exploration of complex issues</p> <p>Fostering potential learning impact</p> <p>Triggering engagement of affected communities all through the process: high levels of participation</p> <p>Flexibility: play content is adapted to communities' knowledge, needs and visions</p> <p>Can provide in-depth information about the given community</p> <p>Close contact between communities and research team if research team is facilitating</p> <p>Suitable for participatory-action research</p>	<p>It may be feasible only with small populations</p> <p>Theatrical and facilitating skills are required</p> <p>The play creation and engagement in the process are very dependent on facilitator's skills</p> <p>Time-consuming for the participants, the audiences, and the research team</p> <p>Both process and outcomes are highly dependent on participants community agenda (similar to other PAR methods)</p> <p>The cost can be high if it depends on a theatrical facilitating team</p>
Performance already created, and then presented to an audience	<p>Can be applied to large populations without being necessarily time consuming for these participant audiences</p> <p>Many different formats are possible (live performance, video, etc.)</p> <p>Aesthetic, entertaining and empathic communication</p> <p>Provides spaces for public discussion in an appealing way</p> <p>Multidisciplinary research process infusing the theatrical creation (science-informed performance)</p>	<p>Often constitute one-shot activity, not necessarily connected to broader learning and community engagement processes</p> <p>High variability of impact, depending on audience receptiveness, motivation and background</p> <p>Limited audience participation, hardly applicable for continued participatory-action research</p> <p>Dependency on an external artistic team, stage-setting and/or adequate support infrastructure</p> <p>Monetary costs associated to performance production can be high</p> <p>Time consuming for the performance facilitators</p>

the performative event. Furthermore, in order to get the most out of the aesthetical experience, the performance created should also take into account facts and information about the broader socio-environmental context and situation. Many of the experiences reviewed here specifically include a research phase in the theatrical creation process, combining first-hand community experience and knowledge with specific expert and scientific knowledge from other sources (like interviews or bibliographic research). Indeed, finding a creative space where different kinds of knowledge meet (e.g. experiential, expert...) and socio-environmental informed-facts are contextualized within the richness of experience, emotions and perceptions is essential. This requires a certain degree of talent and expertise, as well as a conscious design. Failing on this latter point may lead to over-simplifications, caricatures or simply, to misleading processes of knowledge integration, thus limiting or even being detrimental to the art-based research potential of applied theatre.

Indeed, performative methods face many limitations that prevent their application in applied science. Such constraints need to be taken into account in their design and implementation to make sure that the adequate techniques are chosen to achieve the desired research and transformation goals. The increasing spread of Information and Communication Technologies (ICT) could lead to an increasing hybridisation of theatre-based participative methodologies by opening up and implementing new ICT-based inclusive processes of knowledge co-creation²⁵. In this regard, it is important to underline the significant function and character of inclusiveness in participatory theatre to the degree that these techniques promote not only the abstract integration of knowledge and values, but also of real people in their own contexts of action.

Assessment

The assessment of applied theatre within sustainability science demands careful consideration in order to grasp the nuances and specific features of the artistic experience and the outcomes of the research process, as well as to provide an in-depth understanding of the different processes that take place at individual and collective levels and how they are eventually translated –or not- into social transformations.

This assessment of impacts raises a number of open questions for future research. In general, the emergence of arts-based practices has entailed a renegotiation of the qualitative paradigm with respect to fundamental assumptions about scientific standards of evaluation (Leavy 2009). To be useful, arts-based research practices must succeed not only as a research process with specific results, but also in providing an aesthetic experience (Barone and Eisner 2012). Indeed, the value of an artwork can be associated with the way in which this particular work is able to generate aesthetic experiences (van Maanen 2009). The specific features and qualities of the artistic experience within

²⁵ See, for example, the experience of the European Commission with artists, scientists and ICT, available in: http://cordis.europa.eu/fp7/ict/fet-open/docs/ict_and_art/ict-and-art.pdf and <http://www.euclidnetwork.eu/files/artandictreport.pdf>

applied theatre emphasise the need to overcome positivist approaches to evaluation, which often remain ‘the gold standard’ in social sciences (Forrest 2010; Leavy 2009; Barone and Eisner, 2012). Nevertheless, the difficulty to articulate the intrinsic values of the arts often poses too much attention on the evaluation of its instrumental impacts, with the risk of underestimating their aesthetic, communicative and cognitive development roles (Badham 2010). Thus, the assessment of performative methods in science requires acknowledgement of these tensions and finding a place from which the intrinsic values of the artistic experience can be recognised in addition to their educational, social and political impacts.

Different types of research questions and criteria can be considered while doing such assessments (Leavy 2009, Rolling 2010, Barone and Eisner 2012) ²⁶. Concrete expectations and desired features of the artistic experience, like resonance, understanding or the emergence of multiple meanings, can entail a shift on the evaluation questions posed, towards the following (Sinner et al. 2006, Leavy 2009): How does the play make you feel? What does the work evoke or provoke? What does it reveal? What is arts-based research good for?...

On the other hand, behavioural changes and personal or social transformations may take time to materialise and the theatrical creative processes will probably have unexpected impacts which cannot be foreseen at the initial design. This raises questions about how to appreciate the effects –both immediate and delayed- of processes involving applied theatre, or to what extent personal feelings and insightful experiences gone through during the process may affect individual and group’s motivations at a later stage so that they are translated into societal changes²⁷.

A partial answer to these questions could be that, as a participatory integrative approach, the interest is not so much on providing definite answers about causes and effects of the functioning of the natural world, but rather on capturing the richness of people’s perceptions and experiences and how they relate and construct socially these causes and effects (Patton 1987, in Blackstock et al. 2006). This is related to the aforementioned subjective component of the aesthetical experience, in which the value of a work of art exists in ‘its being felt as an experience’ by participants and audiences (van Maanen 2009). Assessments in applied theatre experiences within sustainability science should therefore include the voices of all participants and the feedback from the audiences, fostering spaces of dialogue and learning during all phases of the research. This is a crucial aspect of the performative act, as notions of trustworthiness, credibility and authenticity play a key role in arts-based research practices and such spaces for dialogue are vital for the (re-)negotiation of meanings and the incorporation of multiple perspectives (Leavy 2009, Barone and Eisner 2012). In fact, the actual concept of

²⁶ Barone and Eisner (2012) propose some general criteria as a starting point for judging quality in ABR. These include: incisiveness, concision, coherence, generativity, social significance, evocation and illumination (see reference for further development).

²⁷ The assessment of impacts in applied theatre is still an unchartered field for practitioners. See for instance the special issue ‘*Impact Assessment and Applied Drama*’ Research in Drama Education, Vol. 11, Number 2, June 2006.

validity within arts-based research may in turn affect the notion of validity in science overall and, in particular, within sustainability science²⁸.

4 Conclusion

Theatre is a form of knowledge; it should and can also be a means of transforming society. Theatre can help us build our future, rather than just waiting for it.

Augusto Boal 1992

Thus far, there has been little systematic evaluation of the roles that drama techniques can play as a participatory tool within sustainability science. Our research has attempted to address this challenge by providing a first review and an assessment of their potential impact and limitations to support sustainability learning and transformation. Our review shows that art-based research using applied theatre constitutes a fundamental opportunity for exploring the unexpected, to overcome bounded rationalities, and to create open spaces for free deliberation, collective representation and experience –hence with the potential to trigger transformative action. In particular:

- There is a growing movement for the extended use of applied theatre in many implementation-oriented disciplines and fields, beyond the confines of the art, aimed at addressing practical problems.
- The reasons for this growing acceptance of dramatic techniques may be found in the limitations of traditional scientific methods in engaging people and integrating multiple sources and forms of knowledge with emotion and action, and doing so in a transformative way.
- In contrast to other more conventional participatory methodologies, applied theatre offers ways of experiencing embodied knowledge, in which exploration, imagination, humor and empathic experience play a key role. Hence these techniques are particularly prone to enhance the awareness of knowledge connectedness, increase the degrees of freedom in people's imagination, and to foster new capabilities which may lead to opening up political processes and building common trust. The 'dramatic distance', and the 'safety net' created also help in tackling delicate issues and unveiling power relationships, which can be difficult to question otherwise.

²⁸ For instance, instead of internal and external validity, Rolling (2010) speaks about interpretive and iterative validity. Acknowledging that in the arts it is not plausible to isolate cause from effect, interpretive validity invokes each of the multiple readings within a research study to serve as a criterion for trustworthiness. On the other hand, iterative validity stands in opposition to the predictive character and generalizability of external validity, invoking instead the self-similarity of variations on a concept over time.

Our review has shown a growing trend in the number of theatre-based experiences being used to support social learning processes in environmental and sustainability interventions. As art-based research practices, they can contribute to connect the academic work with the communities in which such knowledge is generated and applied. Meaningful research processes and outcomes can then become more accessible, evocative and provocative (Knowles and Cole 2008). Such engagement can also contribute to moving from conventional cognitive research approaches to embodied ones, which supplement ‘talk and text with experimental practices that amplify other sensory, bodily, and affective registers’ (Whatmore 2006, in O’Shea 2012). Thus, in our judgement, performative methods are likely to be increasingly used and developed in the coming years as an important participatory methodological approach in many areas related to sustainability research. This could be the case of fields in which there is a need for long-term (often emotional) commitment of participants, and where a solid process of trust and community building, aimed at translating the complexities of global environmental change is required. In this regard, a crucial contribution of these methodologies is their inclusive character, allowing not only the integration of knowledge but also of people: applied theatre has the potential to create communities of learning where knowledge is embodied and performed. Participants hence become *knowledge actors*: former passive audiences and spectators of the drama of sustainability can now become protagonists of their own stories and imagine their own futures.

However, a thorough assessment of such potential and limitations should be built upon a much larger array of experiences. The success of these approaches in fostering social engagement and providing an improved understanding of social-ecological systems dynamics and of alternative systems’ development pathways and policy options will very much be dependent on the degree to which these interventions can be linked to meaningful transformations in specific contexts of action. At this point, new questions to guide future research and innovation in this new area may be the following:

- What new kinds of designs in performative methods can strengthen or develop new functions relevant for sustainability science?
- How can we assess the quality and effectiveness of applied theatre in sustainability learning and transformation taking into account the multiple aesthetic and emotional dimensions which go beyond the ordinary scientific analysis and methods?
- How can practical constraints and methodological limitations be overcome in using applied drama in sustainability research and action? And to what extent do these participatory approaches surpass or counterbalance through their advantages the limitations of other conventional research methods?
- How to establish long-term interactions and alliances between academia and artists, and between science and arts, to favour these new kinds of action-research experiences? How to overcome the many resistances to these

participatory methods encountered by the actual research community? What kinds of incentives are needed? What are the biases against these developments?

- What could be the role of ICT, virtual drama interactions and social media in these developments?

In sum, transforming our society towards more sustainable futures requires transforming the role of science in the drama of unsustainability. This entails a radical re-thinking of the epistemological underpinnings, assumptions and worldviews that guide the construction of valid knowledge and action in many domains of human action. The definition of who, when, how and for what we engage stakeholders in the construction of narratives and collective stories about socio-environmental change requires innovative and challenging practices both of scientists and of involved communities to foster social reflexivity towards a continuous praxis. Creativity and imagination will definitively play a major role in this process, but it will only be possible to proceed in this direction if complemented with a visible acknowledgment and a detailed analysis of the multiple experiences of knowledge integration and action now flourishing all over the world – including those of art-based research using applied theatre. The stakes are high, the stage is set and many new actors are ready to play their roles. The show must go on!

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Chapter 3

Conservation Theatre: mirroring experiences and performing stories in community management of natural resources

A moment of rehearsal during the theatrical workshop of Cherán. Element from the image of the community of Cherán, created by the participants.

Chapter 3

Conservation theatre: mirroring experiences and performing stories in community management of natural resources

Abstract

Learning how to boost collective imagination and creativity is a key component in transformative processes supporting Community-based Natural Resource Management (CBNRM). The use of the Arts in such contexts is becoming a prominent methodological approach in strategies aimed at opening new spaces for public dialogue and reflection. The Arts play a decisive role in sense-making and especially in establishing meaningful and emotional connections between individuals and their broader social-ecological systems. This paper explores the contribution of ‘Conservation Theatre’ to sustainability learning and to the integration and mobilization of multiple *knowledge actors* for CBNRM. We focus on an experience in a Mexican community using participatory theatre with young people. Our experience illustrates that Conservation Theatre helped raise awareness of local conservation issues and contributed to opening non-conventional, aesthetically rich spaces for new ways of social interaction, diversity recognition and empathic dialogues. It also showed limitations suggesting the importance of further work.

Keywords

Community-based Natural Resource Management (CBNRM), sustainability learning, participation, performative methods, Arts-based research, forest management

1 Introduction

Challenges and opportunities for Community-based Natural Resource Management (CBNRM) are intrinsically linked to multiple and complex system dynamics and to governance, structural and socio-cultural factors (O’Riordan and Stoll-Kleeman 2002, Porter-Bolland et al. 2013). Long-term collective action aimed at sustainable resource use requires a high level of system awareness by the communities involved, as well as a responsible long-term commitment and a sense of ownership of the decision-making processes (Pretty 2002). This requires developing participative and open processes that foster collective transformative and adaptive capacities in order to cope with changing social-ecological conditions. The creation of inclusive, participatory platforms bringing together various interests, different kinds of knowledge and multiple perspectives into rich and productive dialogues has been regarded as a major component in attempts to foster sustainability learning in the management of natural resources (Tàbara and Pahl-Wostl 2007).

However, such spaces further require people’s motivation and enthusiasm to transform their judgments and worldviews into concrete conservation practices. Imagination is further necessary for the creation of shared visions of desirable futures and for a more robust understanding of alternative development pathways (Robinson 2008). Boosting imaginative competences, enthusiasm and hope, and not simply imposing rational thinking with the usual dumping of gloomy facts, is of paramount importance to trigger collective learning and transformative action. The Arts can support these transformative processes by finding creative and diverse ways of framing the problems at stake – and the possible systemic solutions – and by establishing meaningful and emotional connections between people and their social-ecological contexts (Curtis 2006, Kagan 2012).

Our research focuses on two main questions: 1. How can artistic tools, in particular participatory theatre, contribute to the fostering of creative spaces where collective problems and potential actions can be openly discussed and imagined to support sustainability learning²⁹? 2. How can methodological developments in performative arts, and in particular in ‘Conservation Theatre’, contribute to the integration and mobilization of new *knowledge actors*³⁰ within CBNRM, especially among the younger generations?

To explore these questions, in this paper we present an empirical experience in a Mexican indigenous community, drawing on the use of *performative methods* for

²⁹ In this paper we refer to ‘space’ not only as a particular physical location but also as the more general space in which social interactions take place. Related to the political concept of ‘arena’, such spaces may include interactions and encounters that relate to the mobilization of resources and identity of Cherán’s community.

³⁰ By knowledge actors we understand those holders of different kinds of relevant knowledge which can be mobilized towards an explicit end and become ‘actors’ contributing to community reflexivity and learning.

sustainability (Heras and Tàbara 2014). In this case, an open process was set up to gather personal and collective stories and perform them in an active, creative and inclusive way, so as to promote novel ways of interacting, engaging and learning. As a result, an interactive theatrical play was created with the aim of introducing the views of young people into a broad, intergenerational community dialogue around community forest management and participation. The use of storytelling and performance helped to represent the on-going changes in the use of local natural resources not as an external experience happening ‘out there’, but as part of the personal experiences of the people who contributed to the participatory process.

In the next sections, we first briefly look at approaches dealing with community engagement in CBNRM and review the use of participatory theatre as an innovative method of supporting natural resource management and conservation. Then, we introduce the social-ecological context of the forest community of Cherán and describe the methodological procedure applied. Finally, we summarize the main insights, potentialities, and limitations of the use of participatory theatre as a transformative tool for sustainability learning in CBNRM.

2 Community engagement in natural resource management and conservation

2.1 Sustainability learning within CBNRM

The growing importance of community perspectives in natural resource management and conservation (O’Riordan and Stoll-Kleeman 2002) has driven the development of a range of methodologies emphasizing participation (Lynam et al. 2007), such as participatory mapping and GIS, community-based monitoring or participatory modeling. Though different in focus, purpose and technique, they all share the motivation to generate stronger system awareness, foster collective capacities for institutional change and contribute to sharing the mutual knowledge relevant to the management and conservation of their resources. Also relevant to these approaches is the recognition of the importance of processes of social learning to create common visions, purposes and understandings (Schusler et al. 2003). In the context of CBNRM, social learning can be understood as learning that ‘occurs when people engage one another, sharing diverse perspectives and experiences to develop a common framework of understanding and basis for joint action’ (Schusler et al. 2003). According to this perspective, the notion of sustainability learning was further proposed to provide a general framework to assess the complex interrelationships between social-ecological systems and feedbacks (Tàbara and Pahl-Wostl 2007). Sustainability learning relates to changes derived from conscious actions or feedback adaptations in: 1) Cognitive or moral frames (discovering and reframing), 2) Interactions (transforming relationships),

and/or 3) Norms or institutional arrangements, which constrain or enable social action (transforming institutions) (Tàbara 2013). Consequently, such learning also depends on the ability of participatory processes to include diverse perspectives in the definition of the issues at stake, foster new forms of interaction among stakeholders and implement collective decisions.

There is a continuous need for new tools, methods and skills to improve the opportunities for fruitful stakeholder encounters and enhance inclusive participation (Keen et al. 2005). These should be able to contribute to the creation of new spaces and common platforms where individuals and groups working in the interface of science, policy and community action can collect multiple narratives and contribute to the resolution of potential conflicts, learn collaboratively, and help implement common decisions which improve the community well-being. In such interactive platforms, practices and mechanisms like deliberation, negotiation and integration are crucial (Keen et al. 2005, Muro and Jeffrey 2008).

However, participatory methods within CBNRM often show a trade-off between being analytic tools mostly aimed at accurately and objectively describing and examining contexts, and being methods that allow participants to imagine future alternatives freed from existing ‘realities’, unconstrained by conventional validation procedures. Finding the adequate balance between the descriptive vs. imaginative methods (see Table 7) is necessary for the proper contextualization of the learning processes and to deal with cultural conditions in conservation practices.

Table 7: Common descriptive and imaginative methods applied in CBNRM, according to literature review

DESCRIPTIVE METHODS	←	→	IMAGINATIVE METHODS
Participatory GIS			Guided visioning
Participatory mapping			Drawing
Participatory modelling			Collage
			Future Scenarios
Historical mapping			Role play
			Storytelling
Transect walks			Theatre
Based on: Manejà et al. 2013, Borrini-Feyerabend et al. 2007, Lynam et al. 2007, Joseph 2003, Barraza 1999			

2.2 *Conservation Theatre*: enhancing imagination in social-ecological systems representation

Different techniques are currently being used to foster creativity and imagination to support CBNRM (see Table 7). These include, among others: guided-visioning techniques, through which participants are invited to take an ‘imaginary journey into the future’ (Borrini-Feyerabend et al. 2007); storytelling to foster bidirectional communication among researchers and local people and elicit uninhibited discussions on conservation (De Groot and Zwaal 2007); and drawings and collages used with children and young people to explore different understandings and perceptions (Manejà et al. 2013, Barraza 1999). Among these techniques, Conservation Theatre has already been used in communicating and engaging communities in conservation projects and represents a promising field for methodological innovation in CBNRM (Cornwall 1997, Borrini-Feyerabend 2000).

Conservation Theatre is a form of participatory or community theatre, i.e. theatre in which local community members become protagonists of their own play. Publicly exposed drama is unfolded as a central stage or *agora* to share their feelings, experiences and perspectives, and to generate collective meanings, stimulate dialogue and activate resources for social and political action (Boal 1998, Van Erven 2001, Nicholson 2005).

In contrast to other approaches, in which professional actors are brought to spread a given message (‘message-oriented theatre’, Cornwall 1997), we are interested in those Conservation Theatre experiences that encourage community stakeholders to create their own theatrical plays. Conservation Theatre is then applied as a means of collective inquiry and discussion to help people identify and frame their most pressing concerns in their own terms, as well as how they could be addressed (Pimbert and Pretty 1994, Mavrocordatos 2001). For instance, Mavrocordatos (2001) applied theatre for community monitoring as an on-going cultural feedback system on forestry service. By developing theatrical pieces using local cultural expressions, villagers could express their own opinions and share concerns about the work of the Forestry Department. Their feedback was then used to improve the management program of local forest resources. Other authors have also reported the successful use of folk theatre and street plays with local artists in natural resource co-management as non-discriminatory communication and awareness-raising tools (Joseph 2003, PAWB-DENR 2004, Ikarashi 2014).

All these approaches suggest the effectiveness of theatre in adding ‘tone and color’ to raw data and facts, raise delicate issues in appropriate and non-threatening ways, and facilitate the appropriation of the projects by the local communities. As theatre explores dynamic relations between people and their socio-ecosystem, it can help ‘visualizing why and how changes might be necessary and might come about’ (Cornwall 1997). By combining different sources of knowledge and layers of understanding (e.g. rational, experiential, emotional) and stimulating imagination (Nicholson 2005, Norris 2009), a theatrical approach can stimulate new perceptions and meanings, freeing alternative

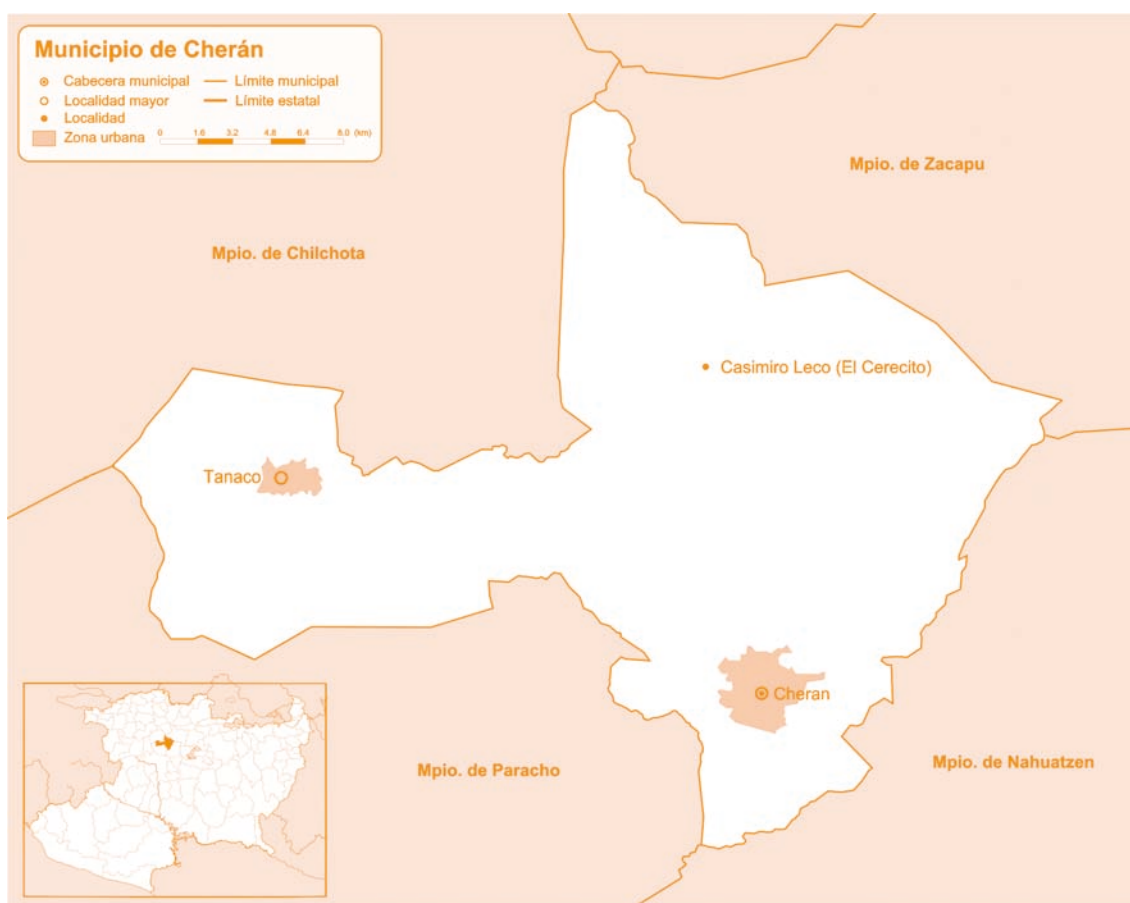
spaces for co-learning in CBNRM in highly empathic, exploratory and inclusive ways. Nevertheless, such experiences show limitations as well, which suggest the importance of further work.

3 Conservation theatre in Cherán, Mexico: performing our community, performing our forest

3.1 Context

Cherán, home of the *Purépecha* indigenous community, is a village of 18,000 inhabitants located in Michoacán, one of the poorest and most troubled states of Mexico. Embedded within a volcanic landscape covered by ancient pine-oak forests, Cherán became a symbol of indigenous resistance and forest protection in 2011 when they rose up against illegal loggers.

Figure 10: Map of Cherán, Michoacán, Mexico. Source: Wikipedia.



From 2008 to 2011, 11,000 hectares of Cherán's ancient forests were lost, accounting for 80% of their total forest area, mainly due to illegal logging linked to organized crime (Velazquez 2013). In 2011, in a context of increased violence and impunity, Cherán rose up against illegal logging in a movement led by women. Different spaces of community participation and deliberation were then opened, leading to a process of community reconstitution, anchored in the defense of their forests and territory. Consequently, Cherán recovered their traditional indigenous system of governance according to their '*usos y costumbres*' (uses and customs), based on community life and different assembly governing councils. Among them was the Common Resources Council (*Consejo de Bienes Comunales*, hereafter CBC), which established the community management of their forest (Velazquez 2013). However, challenges still remain. Although the Reconstitution Movement managed to break the status quo and empower the community, Cherán still faces the pressures of increasing migration, a fluctuating economic situation, socio-economic inequalities, new lifestyles and conflicting views of community development, all of which put strain on the forest and hamper community work (Merino-Pérez 2013, Velázquez 2013). Furthermore, their highly participatory socio-political project and the latent pressure of corruption require constant engagement from community members and sustained institutional involvement to maintain open spaces of participation and the integration of diverse interests. Cherán's story illustrates the relevance as well as the often challenging nature of sustainability learning processes within communities engaged in the conservation of natural resources.

3.2 Methodological approach

Community theatre was used as a case study within broader research exploring the potential and the limitations of 'performative methods' to support awareness raising of resource conservation and community participation. Performative methods are defined as participatory forms of inquiry that integrate elements from the performing arts into research and learning processes, in a flexible and context-specific manner to support individual, community and institutional reflexivity and transformation (Heras and Tàbara 2014). Performative methods belong to the emergent field of Arts-based research (ABR), which provides alternative ways of experiencing reality so as to enhance understandings and meanings otherwise difficult to convey³¹ (Leavy 2009, Barone and Eisner 2012). They can be of value to those approaches in CBNRM that seek to generate common management visions beyond constrained realities, while integrating multiple sensibilities and unveiling the values and worldviews behind such visions.

³¹ Central to ABR is the concept of aesthetics. Acknowledging the complexity of such a concept, in this paper we use an operational definition including both 'aesthetic elements' (Cole and Knowles 2008), the basic principles characterizing an art form (e.g. form and composition, internal consistency, clarity, evocation, resonance), and 'aesthetic experience' (Dewey 2008), the resulting experience of the creation of or interaction with an artwork, potentially conducive to new meanings and perceptions.

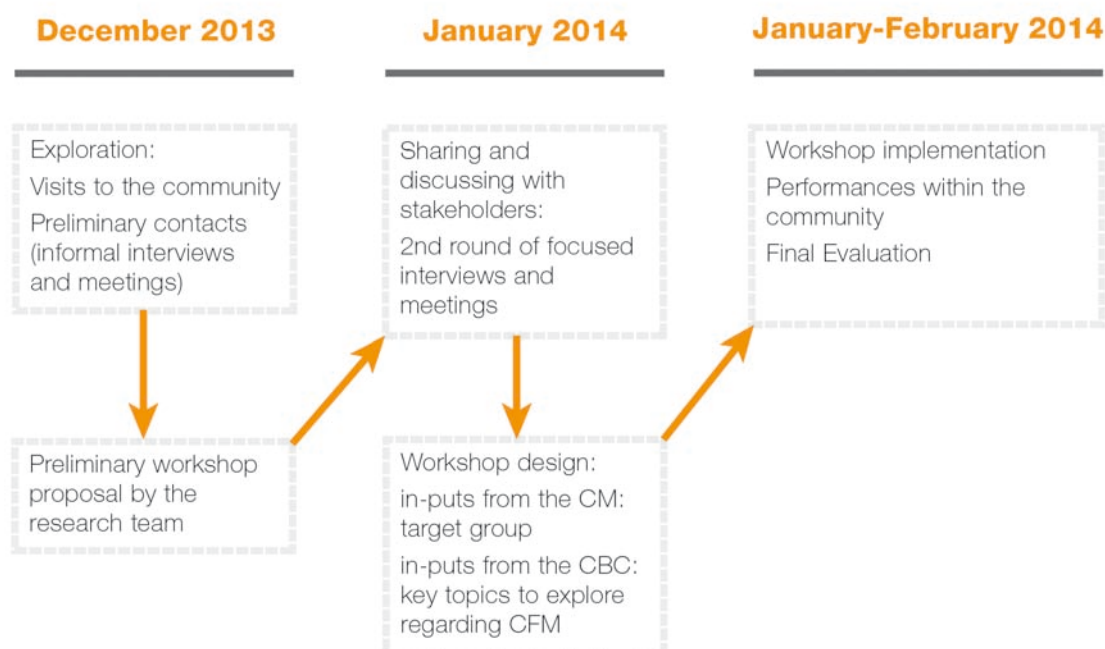
In Cherán, the CBC's need of finding new ways of communication and community mobilization was addressed by theatre, chosen for its ability to integrate locally relevant art forms as storytelling and music in an appealing format that fosters critical consciousness. We therefore designed a performative method based on theatre to facilitate new public spaces that contribute to sustainability learning on community forest management (CFM)³². The performative method comprised: i) a theatrical workshop with young people, as an Arts-based research method combining theatrical techniques with guided discussions and group reflections, and ii) the production of an interactive theatrical play, which expanded dialogue to the rest of the community. Additionally, other research techniques were also integrated into our methodological approach in order to capture and assess the contributions of the performative method (see 3.4. Evaluation).

3.3 Process design and implementation

Research design and implementation were developed in several stages over four months, from December 2013 to March 2014 (Figure 11). In the first month, the workshop team visited the community various times and met with local stakeholders to develop a preliminary design of the workshop and research process. The design was then discussed in a second round of focused interviews and meetings with the main governance council (the *Consejo Mayor*) and the CBC, in order to better address the needs of the community. As a result, high-school students were selected as the target group, and the following objectives were agreed: i) To explore young people's perceptions, understandings and attitudes regarding CFM and local governance issues; ii) To contribute to the inclusion of youth voices in the process of CFM and local governance; and iii) To create an interactive platform for community dialogue and participation around CFM and local governance issues.

³² The process was supported by two researchers from the Mexican environmental NGO ECA (<http://www.eca.org.mx/>) alongside a team of five volunteers from in and outside the community.

Figure 11 Research-implementation process. Research design was developed in several phases, adapting the action-research to the needs of the target community and to fieldwork conditions.



CM = *Consejo Mayor*, CBC = Common Resources Council, CFM = Community Forest Management

The performative process included first a theatre workshop, complemented by a storytelling workshop whose stories were integrated in the final theatrical play³³. Both workshops were attended by twenty-five students aged from 16 to 18, who worked together during the first phase of the workshops. Then, the group split into two subgroups: theatre and storytelling (14 and 11 participants respectively), and worked in parallel until the final performance.

The theatre workshop was organized in three phases in which theatrical techniques were combined with different inputs (i.e. researchers' guiding questions, participants' personal experiences and concepts from the CBC) to generate guided discussions and group reflections, and collect data from participants (see Appendix 3.1):

- The first phase explored the group members' conditions as young people within the community. Guiding questions were based on a list of key topics from the

³³ Nevertheless, the findings of this paper focus only on the theatrical process, since each workshop had independent research objectives and evaluation approaches.

CBC in order to generate insights to complement the expert discussion within the council with the visions of the young participants.

- In the second phase, participants shared and explored their own stories related to the forest and community participation in sub-groups, developing improvised theatrical sketches. Those sketches were shared within the group, generating discussion.
- In the third phase, improvisations were jointly selected, refined and completed with detailed CFM information from the CBC. Stories from the storytelling workshop were also integrated, narrated by their authors. As a result, a four-act play was collaboratively created integrating multiple sources of knowledge: youth perceptions and experiences, management information, and collective *Purepechan* imaginary in the incorporated stories.

In the second stage of the performative process, the play was performed in the main village square as part of the cultural events of the *Purépecha* New Year's celebration, one of the most important local festivities. Over the following two months, it was performed three times in secondary and high-schools, reaching approximately 900 people. Audiences were composed of students, teachers, community members and members from the different governance councils of Cherán. Dissemination also included the facilitating team's appearance on the popular community radio station.

All content and insights emerging from the theatrical exploration and dialogues facilitated by the performative method were later systematized and analyzed, in order to:

- Create a researchers report for the CBC on participants' perceptions, understandings and attitudes regarding CFM and local governance issues.
- Explore the process's contribution to sustainability learning.

In this process, researchers' notes were supported by audio and video-recordings of the workshop and the interactive performances. Different procedures were additionally devised to capture the contributions of the theatrical process developed, as described below.

3.3.4 Evaluation

As an Arts-based approach, the intervention was expected to provide participants and audiences with an insightful experience (Leavy 2009). For that reason, an ethnographic stance was adopted in the evaluation (Hammersley and Atkinson 2007) focusing on participants' self-perception and appreciation of the process, contextualized by researchers' observations. The following tools were developed:

- Pre-performance: a 5-point Likert scale (n=19), with 29 items on participants' attitudes and perceptions towards the community and CFM, to have information on the group to contextualize and complement insights from the performative process.
- Post-performance³⁴:
 - a. An individual open-ended questionnaire (n= 9) on participants' experience of the workshop, to explore individual reflections about motivations to participate, personal experience, workshop value, and best and worst aspects.
 - b. An evaluation dartboard³⁵ (n= 9) in which participants graded technical aspects of the process, including facilitation, theatrical activities, topics addressed, length and participants' attendance.

These tools were applied to complement insights from the performative method and support the discussion on sustainability learning. Due to the particularities of the specific context of action, this experience is expected to be illustrative of the potential of Conservation theatre rather than prescriptive.

4 Results: bringing youth to the stage

—*This tree is too young to be cut, sir.*

—*What could you know, young girl? I have years of experience.*

Excerpt from the play

We can distinguish two kinds of results derived from our intervention: i) *Process results* related to the collaborative play creation through the theatrical workshop – connected to objectives 1 and 2; and ii) *Performance outcomes*, related to the interactive theatre play and emergent dialogue platforms –mainly connected to objectives 2 and 3.

4.1 Process results: collective exploration

The process-oriented approach of performative methods means that the creative process itself is as important as any other material outcome that may result from it. In this case, it refers to more than 25 hours of social interactions, collective exploration and creation with the young participants. Through image theatre, improvisations and theatrical

³⁴ Targeted at participants of the whole performative process (theatrical workshop and performances), to guaranty a complete vision of the process.

³⁵ See for instance: Evaluation Toolbox

(http://evaluationtoolbox.net.au/index.php?option=com_content&view=article&id=38:dartboard&catid=19:formative-evaluation-tools&Itemid=145)

sketches, we created still images and stories about the participants' condition as young people, their role within the community, their bond with the forest, and their perceived challenges related to CFM and the future of their forests.

The use of the theatrical approach for this research process created a safe space in which participants could cultivate different social skills and develop a sense of group and connection. Crucial to this was the playful, cooperative and affective character of the approach (see Discussion).

Thanks to this new space we were able to explore youth perceptions regarding the community participatory process and their own role, as well as their knowledge and attitudes about CFM and the work of the CBC (objective 1). Such insights were firstly given to the CBC by the students through the performance of the interactive play in front of an audience of council members (fourth show). Afterwards, and in line with Arts-based research methods, a content analysis was made of the materials collected from theatrical exercises, improvisations and group reflections, supported by data from the pre-performance questionnaire. Three main topics were identified: the young people's clash with some community traditions and their search for a role within the community, the relevance of reforestation in their views of a sustainable community, and their concern about how to make a living in a fragile economic context.

These insights were transferred by the researchers to the CBC in the form of a research report in order to identify lines of communication and education that could be strategically addressed, as well as serving as an input for discussions on CFM within the CBC. That way, the voice of youth reached the CBC (objective 2) via two channels: the interactive play and the researchers' report. The insights are now also available for the design process of an autonomous educative program in Cherán, based on the sustainability of their forests, which the CBC is currently supporting.

4.2 Performance results: non-conventional platforms for community dialogue and participation

The most visible outcome of the workshop was the production of an interactive theatre play, aiming to bring the voice of youth into community dialogue, allow for alternative ways of collective expression and expressiveness, and open a public space of discussion about CFM (meeting objective 3).

The performance of the play, which reached 900 people from inside and outside the community, generated different dialogues. The play itself was the result of a first reflexive dialogue among participants through collective creation, which was then opened to the community, generating a broader dialogue based on that aesthetically-rich medium. The open-ended final scene and the enactment of different points of view was an invitation to engage audiences into sharing and discussion. Audience participation took place at different moments of the play through open interventions after each scene.

Box 2: The image of Cherán

The theatrical play portrayed the collective image of the community of Cherán, integrating three elements considered key by our participants: the family, the defense of their forests and the forest as livelihood. Each element unfolded a theatrical scene and a dialogue with the audience.

The first scene showed a family through the eyes of a child, missing his father who migrated to the US for work. It portrayed the importance of family bonds and the suffering of migration, but also how this situation can be transformed by the younger generations.

The second scene represented how the students lived the first day of the community uprising, when their last school-day was interrupted by gun-shots and fires outside. The scene portrays their emotional experience as they had to go back home. Feelings of fear and anxiety were mixed with a strong perception of solidarity and mutual support.

The last scene characterized participant's concerns on how to combine their livelihoods with a sustainable use of the forest. It showed contrasting views on forest exploitation through the confrontation between a group of teenagers and a young man engaged in small-scale illegal logging. After having been reported to the Common Resources Council, the young man loses his source of income and is consequently forced to leave the community. A dialogue between the young man and his wife closes the scene:

-How are we going to pay the bills and take care of our son, dear?

-I will find ways of going back to the 'cerro'* , I promise.

-We cannot afford another sanction [by the Council], this is not working (...). Look, my uncle already offered you a job in the US, why don't you try it?

-I don't want to leave you (...). But... what else can I do?

This uneasy ending was an invitation for the public to share their feelings and to discuss possible alternative developments of the story. *What could the different characters do to transform the current situation? What kinds of resources do they have? What kinds of alliances could be formed?*

* Mountains nearby , as called by villagers



Picture 2: Participants representing community union (front) and the defense of the forests (back), as core elements of the image of Cherán. Photo: Graciela Martínez González

In short, the views of the young people regarding community participation and forest management were discussed in the public arena for the first time. Introducing such views into collective dialogue through theatre allowed the audience to see their community from a different angle, potentially increasing their awareness of a crucial future actor: the youth. What these outcomes can mean for CBNRM and learning is further discussed in the next section.

5 Discussion: participants' reflections on the performative process

Our case study illustrates some of the potential and the limitations of performative methods to produce interactive platforms for community participation in resource conservation. The following discussion links specific features of our Conservation Theatre experience to methodological advancements in sustainability learning within CBNRM. For that purpose, we present the analysis of results according to the main components of sustainability learning previously identified: changes in cognitive and moral frames (discovering and reframing), changes in interactions (transforming interactions) and changes in institutions (transforming institutions). This analysis is based on written and oral feedback from the participants of the workshop, field notes, and recorded data of audience interventions during the interactive plays.

Discovering and reframing

Both the workshop and the interactive performance facilitated a learning process and a platform for stakeholder dialogue shaped by the particular characteristics of participatory theatre.

Through the theatrical workshop, the young participants explored, shared and discussed community and forest challenges. The act of creating scenes represented a new way of framing the community's situation, in their own terms, and reflecting about it, so raising local people's awareness of themselves as a community:

'Theatre helped me become aware of the union of Cherán.' Mike³⁶.

'[theatre enabled us] to gain awareness about how the conflict [with the forest] happened, about uncertainty and about the importance of acting together to achieve great things.' Itzel.

Similar to other findings in literature (McNaughton 2004, Norris 2009), such collective reflection was a strongly engaging one, thanks to: i) the provision of an appealing and meaningful creative context, through the recreation of participants' own stories and concerns; and ii) the active involvement of working collaboratively around a common play. As put by one of our participants:

'[theatre] helped me reflect in a different way about matters that concern me and to be able to transmit this reflection in a fun way. What's more, it also taught us to reflect collectively' Miriam.

Contributing to such engagement was the imaginative and unrestrained character of theatrical improvisations, which allowed participants to move beyond their own perspectives, experiencing different roles and exploring possibilities of action from diverse standpoints:

'I loved this way of working (...), being able to play our role as actors and put ourselves into the skin of different characters, expressing their words just as if we were them...' Yuli

Indeed, several sketches approached the issue of illegal logging and land-use changes. Different characters such as the illegal loggers or the avocado workers provided the opportunity to explore drivers and needs behind deforestation, through the very specific view of the character's personal struggles. Thanks to this, we generated an engaging, deep discussion, overcoming common dichotomies such as 'good and bad' or 'us and them'.

After the workshop, the interactive performance and subsequent dialogues allowed audiences to reframe together the issues presented. The play was the first one in the community to represent their reconstitution movement through the lenses of the young

³⁶ Quotes from workshop participants are referred by their name, while for audience members we use a number preceded by the letter A.

people and with them and their forest as protagonists. Performed narratives mirrored their experience of collective action, seeing themselves and their interactions from a distance, thus enhancing the play's potential to stimulate reflection (Turner, 1986). Such reflective potential was largely shaped by the following qualities of the theatrical medium.

Firstly, the theatrical setting (stage, music, *attrezzo*) and the recreation of specific places and stories captured participants' attention and grounded the topics of discussion in known realities, facilitating communication and participation. This was clearly visible in the performances in school settings in which students followed both the play and discussion with remarkable attention and interest.

Secondly, image theatre was integrated into the play to create metaphors and symbols able to embody conceptual abstractions, such as community union, and evoke multiple meanings and emotions in the audience. Similarly, stories from the storytelling workshop contributed to improve the aesthetical quality of the play, by appealing to the imaginary and common identity of the community. Audiences showed emotional reactions including happiness, sadness or pride, making comments, laughing, or even crying. Such emotional connections, mediated by the representation of stories in an aesthetic way, contributed to an appreciation of the community's unique situation, potentially raising critical awareness:

'It was very beautiful to see how you expressed your feelings and emotions through the play. It was beautiful to see the courage of our community in defending our forests, even with our lives. Our community is very special, people support each other and that's what we need' A8.

'We have really felt the story that our young people narrated (...), because there was a time in which we were terrified and we all experienced that. Now it is the time for us, 'comuneros' and 'comuneras', to raise up and have the vision to transcend our situation (...). We are going to look for what works: there is no need to cut trees anymore' A4.

Third, the open-ended and interactive character of the play contributed to deepening the exploration of the insights gained during the theatrical workshop with the young people. In the performances at schools, students' views emerged within a comfortable and playful dialogue atmosphere, facilitating knowledge sharing and critical reflection. Similarly to the workshop, students' interventions reflected knowledge gaps about the CBC and its projects. Nevertheless, as students actively reacted to the questions posed by facilitators, their interventions became increasingly complex and reflective: moving from calling illegal loggers 'immature' to raising notions of interdependency, needs and care, or highlighting the need for youth empowerment. Moreover, some students' knowledge gaps could be covered by other stakeholders participating in the dialogue, such as a young woman who shared examples of community initiatives to counteract the over-exploitation of forests (A6).

In summary, the performative method offered a non-conventional platform to collectively frame, make visible and discuss common values and purposes, with the distinct qualities of the theatrical medium. By integrating a diversity of views, and connecting them to individual emotions and motives, such discussions showed great potential to shape management initiatives committed to people.

Transforming interactions

Trust is essential for social learning platforms within CBNRM (Schusler et al.2003). The performative method managed to create temporary spaces where interactions among participants could flow in non-conventional ways and create trusting relationships. Evaluation results suggest that the playful, affective and cooperative character of the workshop helped develop a sense of group, inclusivity and trust towards others. Through collective creation, participants' interactions changed from initially keeping a certain distance between them to increasingly cooperating towards a common goal. As the process progressed, participants could get to know each other better, appearing more open, confident and expressive, and appreciating and recognizing each others' points of view:

‘I felt very comfortable both participating [in the process] and with the [rest of the] group in general. At the beginning I was very shy, but then I got over it.’
Anna.

‘At a group level, I learnt to live with the others and express my feelings more easily, to feel accepted and to get to know people I didn't know before.’
Marcelino.

‘Theatre mainly taught us to listen to each other, that we all have something different to say on the same topic and it is important to express our points of view.’ Miriam.

Indeed, working together with ‘everyone able to give their grain of sand’ were highlighted in the evaluation as valuable aspects of the theatrical approach. Engaging young people into such participatory and collaborative processes provides opportunities to engage in multi-stakeholder interactions and train capacities for social learning (including interpersonal skills and reflexivity), which is a first step towards building capacity for CBNRM (Borowski 2010).

This affective atmosphere was reproduced as well during the performance, providing a temporary public space of non-conventional interactions. In such a space, empathic dialogues emerged, that is, dialogues based on respectful listening and mutual understanding, where multiple voices could openly interact and participants' stories merged, comfortably sharing personal experiences. The atmosphere also fostered the inclusion of women and young people, who are frequently marginalized groups in

decision-making within CBNRM³⁷. Self-reporting suggest that this had an empowering effect, through their recognition as legitimate and talented ‘representatives’ of the community voices, willing to engage in collective action. This was also brought about by the audiences’ support for their views as well as by their own perspectives expressed in the subsequent dialogues.

The empathic atmosphere and dramatic distance (i.e. focusing on enacted stories) also facilitated the sharing of critical positions during the performances, indicating the creation of a safe environment for stakeholder discussion. For instance, during the first performance, a woman criticized the current community management in front of the main governance council. Thanks to the affective atmosphere created, her critics were received without confrontation and were integrated into discussion as constructive elements for collective monitoring and improvement actions. Such safe environments are considered key for allowing open discussions needed for social learning, sometimes not guaranteed within formal interactions (Borowski 2010).

Summing up, by integrating different kinds of knowledge (e.g. cognitive/factual, experiential, affective) and connecting emotionally with the audiences, the play facilitated different dialogue modes and interpersonal interactions beyond formal conventions or constrained agendas, a need previously highlighted in CBNRM (Keen and Mahanty 2006). However, for these changes to be translated into broader institutional changes within CBNRM, they should be embedded in broader and long-term transformation processes (Measham 2013). As is reflected on below, our intervention was limited in this respect.

Transforming institutions

By introducing the perspectives of the participants and opening up a new space of community dialogue focused on the youth, the theatrical intervention helped include the voice of young people in CFM. Nevertheless, an intervention of this type alone cannot produce specific changes in institutional arrangements and practices in CFM, such as the long-term integration of new *knowledge actors*. While acknowledging that institutional change is imperative for supporting effective co-management (Muro and Jeffrey 2008), our intervention was mainly focused on the communicative and learning dimensions of CFM and on understanding the requirements for future developments of Conservation Theatre. These dimensions may play a role in institutional change but need longer time frames and a deeper connection to management goals. Therefore at present it is not possible to fully evaluate the effects of the short-lived intervention in strengthening institutional capacities within CFM.

³⁷ For instance, state legal definitions of community membership often only recognize the head of the family’s participatory rights. This situation is slowly changing in Cherán thanks to their assembly governance system.

Limitations of the approach

First, we found implementation limitations mainly related to time commitments and to the challenges of the necessarily transdisciplinary research team. Developing a play with community members as actors stressed the notion of interdependency among participants: collective creation requires a notable time commitment and perseverance. In our case, a core group of 9 participants participated through the whole process, while 5 quit before the final play. Reported reasons for leaving were: lack of motivation (not all participants were participating voluntarily) and lack of time (some students were also working). Although the flexibility of the theatrical approach allowed us to readapt the creative process to participants' absence, participants highlighted this aspect as the most negative one in the final evaluation (both individually in the questionnaire and collectively in the dartboard getting the lowest score). Motivation of the target group, and careful adaption to participants' expectations and time and resource availability through a commonly agreed agenda is therefore crucial in drama-based proposals.

Second, as a highly flexible participatory method, the impact of the theatrical approaches depends on how they are applied and on their objectives. The further we include participation and dialogue in the creative process and integrate their insights into broader community learning processes and management structures, the more we may impact upon the different dimensions of sustainability learning and support conservation processes. In our research we faced difficulties in integrating the collected knowledge and perspectives into community decision-making structures and so in effectively integrating new knowledge actors. In this regard, our experience was mainly focused on methodological aspects and on assessing the participants' learning process and its potential for CBNRM. According to the evaluation results from participants and audience, it is likely that such potential remains in the realm of personal transformations and motives, which is ultimately what constitutes the basis for broader systemic changes (Poncelet 2001).

6 Conclusion

A complexity perspective of social-ecological systems suggests that for every problem there are likely to be many perspectives and processes to develop different possible solutions. In the context of CBNRM, this emphasizes the need to support social networks and partnerships for collaboration and learning through participatory methods able to consider a plurality of perspectives, worldviews and knowledge integration procedures.

In this paper we have argued that Conservation Theatre can significantly contribute to such methodological developments by bridging analytical and imaginative methods into performative platforms for stakeholder engagement and dialogue. A theatrical

experience carried out in the community of Cherán allowed us to explore the potential and the constraints of Conservation Theatre as a transformative tool for sustainability learning in CBNRM. Our analysis suggests that Conservation Theatre had most impact on the communicative and learning dimensions of community forest management, first as an explorative medium with the young participants and second as an interactive dialogue platform within the community. Theatre's potential to include attributes relevant to participatory methods and sustainability learning platforms within CBNRM were shown by some key characteristics:

- Theatre's immediacy and its informal and appealing format helped capture audiences' attention and encouraged open participation.
- The theatrical representation of specific stories and places grounded discussions in known realities, facilitating communication.
- The evocative character of the play and the integration of different kinds of knowledge (e.g. rational, experiential, affective) facilitated participants' emotional connection with the topics of discussion, allowing the emergence of emphatic and engaging dialogues.

However, our experience alone could not ensure the later integration of youth views into CFM institutional arrangements. While this is an area that clearly needs improvement, it also illustrates the need to build stronger alliances among future Conservation Theatre experiences and local institutions in order to root these interventions into long-term community transformative processes. Despite its limitations and the need for further research, our experience provided empirical support for performative methods in the context of CBNRM, in which such kinds of methods still lack development and systematic assessment.

Young people are still demanding a role to play in Cherán's community transformation processes. Like them, many people and marginalized groups living in forest areas are willing to raise their voices, express their concerns and collectively explore their own solutions. Conservation Theatre and performative methods offer an interactive platform for engaging such communities in creating their own scenarios and empower them to contribute to highly creative processes of sustainability learning. From this perspective, our research focus moves from integrating *knowledge objects* to integrating *knowledge actors* towards the sustainability of social-ecological systems. Systems in which not only multiple stakeholders' motives merge, but, also, where multiple imaginations and sensitivities are allowed to constellate.

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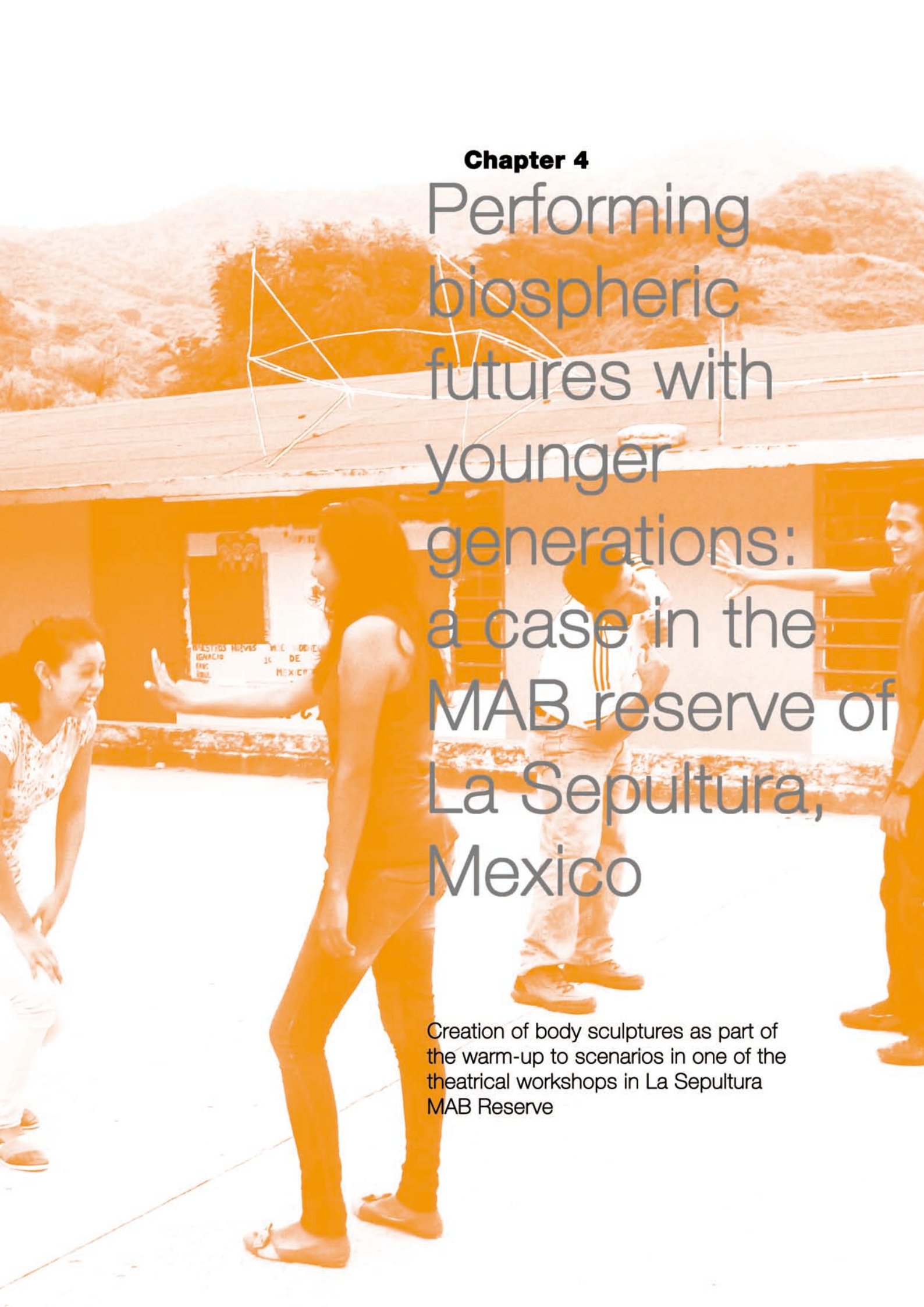
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Chapter 4

Performing biospheric futures with younger generations: a case in the MAB reserve of La Sepultura, Mexico

Creation of body sculptures as part of the warm-up to scenarios in one of the theatrical workshops in La Sepultura MAB Reserve



Chapter 4

Performing biospheric futures with younger generations: a case in the MAB reserve of La Sepultura, Mexico

Abstract

Providing opportunities for younger generations to voice out their views in the building of our common futures within the biosphere is a central component in sustainability learning. To this aim, a novel methodological approach using participatory theatre was implemented to explore future scenarios with young people in the Man and Biosphere Reserve of La Sepultura, Mexico. Three workshops were carried out as part of a broader environmental education process, aimed at enhancing critical awareness and ownership of their own futures. Through the reflective enactment of scenarios linked to personal actions and resources, alternative ways of thinking through the interconnections and the affective bonds between participants and their natural heritage were collectively represented and explored. Our process helped identify different plausible futures and potential barriers to them, but also to realise positive roles that young people could play to overcome such barriers and engage with their desired futures.

Keywords

Learning for sustainability; Applied Theatre; visioning; participatory scenarios; performative methods; Art-science interface.

1 Introduction

Recognizing youth as key actors in the construction of sustainability narratives entails the need to create opportunities by which their ideals and ambitions can be expressed and heard. Young people require learning spaces where they can speak out –and be properly recognized, so they can articulate and materialize their hopes and desires about the future (Hicks 1996, Krasny et al. 2009). To a large extent, the current social-ecological crisis is a crisis of meaning, perceptions and values largely still based on false dualisms between the mind and the body, the present and the future as well as ‘me’ and ‘the other’. Our present situation unveils the limitations of dominant worldviews, mostly uncoupled from biophysical changes and unable to react accordingly to them (Tàbara and Chabay, 2013). More *know-why*, i.e., an improved understanding of the complex dynamics of motives and motivation, is needed to consciously envision and engage people in the building of sustainable futures (Orr 1992).

In order to mobilize people in sustainability we need transformative visions, which can be collectively co-constructed and linked to action. As noted by Meadows et al. (1992), vision without action is useless, but action without vision ‘does not know where to go or why to go there’. Visioning plays, thus, a crucial role in building the future and when merged with critical thinking, it has the potential to connect with people’s motives and aspirations and be conducive to informed purposive action (Tildbury and Wortman 2004, Waymar 2009).

The Arts have a promising potential in the development of visions about the future while offering intuitive, experiential and less inhibited ways to explore and represent systems dynamics and people’s positions in it from different perspectives (Curtis 2009, 2012, Wiek and Iwaniec 2014, Scheffer et al. 2015). Furthermore, the Arts can help strengthen emotional bonds between places and people, which lie at the base of personal motives for caring and acting (Kagan 2008, Inwood 2008, Selman et al. 2010). Arts’ appeal to open our senses to diverse ways of understanding the world beyond rationality is especially relevant when working in educational programs among young people, because of their capacity to foster different approaches to learning in highly explorative and motivating ways (McNaughton 2004, Flowers et al. 2014, Scheffer et al. 2015).

While the Arts provide endless possibilities for methodological innovation, Man and Biosphere Reserves (hereinafter MABs) are especially fit for the purpose of exploring interactions within social-ecological systems and support transformative learning. These UNESCO sites were originally set up to reconcile biodiversity conservation and the maintenance of cultural heritage with the sustainable use of natural resources (UNESCO 2014). However, MABs have moved their program implementation from a science-driven agenda to a social learning one, which emphasizes local participation and learning processes (Reed and Massie 2013). In this fashion, they constitute, highly relevant laboratories for sustainability learning and experimentation (Schultz and Lundhom 2010).

Building on the notion of performative methods for sustainability (Heras and Tàbara 2014), in this paper we further explore the learning potential and limitations of integrating applied theatre in the development of futures thinking with young people. In particular, the objective of our research is twofold: i) To identify the main methodological features in which the design of performative future exercises can be implemented successfully in educational programs, and ii) to assess to which extent these novel methodological designs can contribute effectively to sustainability learning in contexts such as the MABs.

For that purpose, we first briefly review the role of visions and visioning in learning processes aimed at supporting sustainability transformations and identify different experiences infusing theatrical techniques into futures thinking. We then describe the context of La Sepultura MAB Reserve, in Chiapas, Mexico and the design of our methodological process, based on three futures workshops. This is followed by the presentation of its main results. Finally, the discussion and conclusion address the main key requirements of applied theatre for adding value to futures thinking, and summarize the main potentialities and limitations of such novel approaches to support sustainability learning in educational programs with young people.

2 Learning from the future: on visions, scenarios and plays

The future can't be predicted, but it can be envisioned and brought lovingly into being
Meadows 2001

2.1 Visioning the future, navigating sustainability

Sustainability transformations are in their broadest sense processes of social learning (Pahl-Wostl et al. 2007, Barth and Michelsen 2013, Tàbara 2013). Acknowledging the cultural and political dimension of sustainability implies cultural transformations affecting our ways of knowing, learning, valuing and acting together (Kagan 2008). Visioning, i.e. the articulation of visions about possible and preferable futures³⁸, is a crucial element in designing such transformations, as visions are essential to guide and motivate action (Meadows et al. 1992). By connecting with people's aspirations and motives, imagining the future can offer direction and boost social energy, providing impetus for transforming the present (Tildbury and Wortman 2004). Creating a sense of

³⁸ Although the term visioning is most widely applied to visions of preferable futures ('where we want to go'), we broaden the scope in this paper to possible and preferable futures, as other authors do (Dator 1993, Wayman 2009).

ownership about the future ('the future is also mine') is a decisive component in the articulation of collective action based on personal engagement and purpose.

In this regard, the need to build capacities and competences to envision and contribute to futures thinking has been widely acknowledged (Hicks 1996, Meadows 2001, Robinson 2003, Miller 2007). Futures thinking requires social imagination, critical understanding, reflexive dialogue and collaborative action (Miller 2006, Wayman 2009, Lehtonen 2012). Entering into the exploration of the future in the most unconstrained way possible can help extend the range of possibilities about what can be done in the present and our different roles to play, hence helping to develop a sense of agency (Inayatullah 2002, in Wayman 2009). Moreover, futures thinking can provide 'navigational tools' to inform decision-making both at collective and individual levels (Miller 2006). By participating in the creation of futures, people can gain diverse skills and competences, which can be identified as: (i) *Intellectual*, e.g., imagining and reflecting about the future (ii) *Social*, e.g., collaborative work, group deliberation (iii) *Normative*, e.g., uncovering values, beliefs and assumptions underlying visions and choices, and (iv) *Affective*, e.g., managing emotional dilemmas (Tildbury and Wortman 2004, Head 2011, Wiek and Iwaniec 2014).

2.2 Performing futures, learning opportunities

The competence perspective emphasized in futures thinking is especially relevant for educational approaches and programs aimed at supporting sustainability learning. A growing awareness of the complex, dynamic and normative character of sustainability has broadened the scope of educational approaches, from the cognitive dimension to include also the affective, normative and competence aspects of learning (DeHaan 2006, Wiek et al. 2011, Frisk and Larson 2011). Such holistic approaches often emphasize the relevance of experiential learning when approaching highly dynamic systems and the need to combine different ways of learning, knowing and valuing reality (Sterling 2003, Dieleman and Huising 2006, Sipos et al. 2008). This perspective is particularly important when dealing with the many uncertainties about the future. Experiential learning involves direct and active personal hands-on exploration and testing combined with reflection and the integration of feedback in order to develop not only 'more' knowledge, skills and attitudes (Kolb 1984, UNESCO 2007), but mostly of a different kind. Feeling and sensing (the 'Aha!' emotion), and not only understanding sustainability as an abstract and distant concept, become crucial in sense-making and in engaging oneself in the sustainability journey.

Applied theatre can provide significant opportunities for experiential learning in sustainability education, both in formal and informal contexts (Nicholson 2005). It refers to a wide range of dramaturgic activities, primarily carried out outside ordinary theatre settings, specifically intended to benefit individuals, communities and societies who perform them (Nicholson 2005). Applied theatre has a long tradition in learning

and educative contexts, through approaches such as *Theatre in Education* (TiE, see for instance Waters et al. 2012) and Educational Drama (see Schonmann 2011 for an overview of the concept). Through theatrical exercises and plays, participants can share, recreate and reflect upon personal stories, stimulating dialogue and potentially generating new collective meanings (Van-Erven 2001, Sloman 2011, Greenwood 2011). The rehearsal for action involved in improvisations can also encourage participants to engage into immediate action and active experimentation (Boal 1992). Such a rehearsal supports the practice of social and decision-making skills (Waters et al. 2012), often with a potential empowering effect to participants, by identifying and performing issues and decisions which are of their own concern (Boal 2009, Sloman 2011). In this sense, applied theatre within educational processes can activate resources for social and political action (Van-Erven 2001, Conrad 2004, Nicholson 2005) and stimulate a sense of ownership of the future.

In this regard, some of the most promising methodological innovations using applied theatre in performative methods for sustainability are occurring in the development of tools for futures thinking (Head 2010, 2011, 2012, Lehtonen 2012). Head (2010) for instance, highlights theatre's capacity to bring scenarios to life and make future possibilities more real, with the potential of stimulating present-day responses. She specifically introduces Forward Theatre as a modality of theatre that enacts different future scenarios on stage to explore social, technological and environmental impacts on characters, and the agency of such characters to influence change. This way, Forward Theatre uses future visioning tools in combination with drama techniques to support the communication and interpretation of alternative futures from multiple viewpoints, provoking thought and conversations about these futures (Head 2011). Similarly, Lehtonen (2012) developed a collaborative play-creating project with primary school students as an integrative method for education for a sustainable future. Theatre was applied to reflect prevailing cultural and individual future thinking and to collaboratively create transformative images of the future, leading to group reflections and critical thinking on the topic (Lehtonen 2012). Both experiences emphasize the potential of applied theatre to engage participants into creative and active learning experiences about the future.

Following this strand of action-research, we now share an original experience aimed at exploring the potential of futures learning through applied theatre in the specific context of a MAB Reserve.

3 Performing biospheric futures in the MAB reserve of La Sepultura

3.1 Implementation context

La Sepultura is a UNESCO's MAB Reserve (hereinafter MAB) located at the west of Chiapas, Mexico, covering an area of 167.309 ha of high biodiversity and endemic species. La Sepultura is mainly composed by a big buffer zone where farming and agriculture are allowed under some restrictions and a small core-zone (less than 10%) where human activities are totally prohibited (Speelmann et al. 2014).

Figure 12: Location of La Sepultura Man and Biosphere Reserve, Chiapas, Mexico. Source: Google Maps



Our research took place in Los Angeles, a farming community of 1000 inhabitants, located within La Sepultura since 1960 (Sanfiorenzo-Barnhard et al. 2009). From the 70's onwards, the expansion of commercial corn production in the area resulted in deforestation and severe erosion (Trujillo 2010). The establishment of the MAB Reserve in 1995 changed that trend and current land-use types include staple food production for home consumption, pasture-based livestock production and cash crops, like organic shade-coffee and palm oil plantations (Speelmann et al. 2014). However, the lack of enough soil cover in many farmlands and the implementation of uncontrolled

and inappropriate farming programs and practices are still causing further erosion, landslides and deforestation (García-Barrios et al. 2006, Trujillo 2010).

Within this social-ecological context, a participatory and innovative environmental education project was developed between summer 2014 and winter 2015 addressed to young people. Under the title '*What motivates young people from La Sepultura to preserve or degrade their environment?*' the project designed and assessed sustainability education tools (Meza 2015). This educational project represented the third one carried out in La Sepultura and was the continuation of two pilot environmental education initiatives introduced in 2012 (Díaz and Pulido 2012, Meza 2012).

A participatory process was generated with three groups of young students from 13 to 18 years old in order to explore their actions, motivations and perceptions about their relationship to the MAB. Among the various tools used, three table games were played by participants, based on resource management strategies with varying degrees of difficulty and social interaction (individual, in pairs and in teams). During the games, three types of behaviors combined with strategies of dominance and equity were identified: conservation, intensification and diversification. Individual interviews using Q method were also conducted at the end of the process to support the exploration of participants' perspectives. The first author was invited to join the process and design a theatrical workshop after the games.

This way, applied theatre was used during three consecutive workshops held between September and October 2014. The different resource-use strategies emerging from the games were then connected with different community future alternatives for the MAB. By theatrically exploring participants' visions of La Sepultura in 2030 and bringing them to the present, the intervention expected to provide links between participants' perceived challenges, desires and motivations, so as to support critical awareness and engagement in collective action.

3.2 Methodological approach and research process

Our methodological approach integrated several theatrical techniques from Brazilian dramaturge Augusto Boal into an educational drama approach, to facilitate a learner-centred process. Table 8 summarises the various techniques applied.

Table 8: Main techniques of Applied Theatre used in our performative approach. Based on Boal's theatre techniques (Boal 1992)

Theatrical games:

Exercises and aesthetic games that activate different senses and body expressiveness, provide experiences of abstract concepts and help create self and group awareness.

Image Theatre:

The creation of body sculptures to compose theatrical images through which participants can explore symbolic language and mental representations about the topics explored. Image Theatre works with collective images that connect individual with social visions.

Forum Theatre:

The creation of a theatrical play based on participants' experiences in which spectators can enter into scene and change the course of events, in search of alternative developments. Through a Forum Theatre piece participants can: i) identify a conflictive situation, its actors, relationships and interests; ii) analyse the situation and recognise different possibilities of action; iii) activate themselves and experiment with such possibilities by performing them on scene; and iv) collectively reflect and discuss about the outcomes of the rehearsed action.

The theatrical sessions

The theatrical workshops were composed of three sessions of 3 hours each, developed in three consecutive days. Activities were scheduled at school time in order to ensure participants' availability. Consequently, participation was extended to the whole school grade (n= 90). Each workshop involved between 24 and 30 participants of different age groups between 12 and 18.

The sessions were designed with a common structure, consisting of: i) a first block of theatrical games and exercises, used as a warm-up and introduction to the theatrical language; ii) the main performative activity, involving collective discussion and creation in subgroups and performing to the whole group; and iii) a group debriefing, in which participants and facilitators shared appreciations, insights and reflections about their performances, felt experiences and topics emerged. This sequence was designed so as to facilitate different forms of experiential learning (Kolb 1984): i) *Experiencing or apprehension*, based on the experiences felt while performing; and ii) *Understanding or comprehension*, based on the later debriefing or reflection *on* action, connecting experiential insights to wider systems and critical thinking. An overview of the workshops' structure is provided in Appendix 3.2.

Session 1: Picturing our community

The first session was focused on creating a comfortable and creative atmosphere and generating a shared picture of the community to help ground discussions in the next

days. Through the session's performative activity, participants explored and reflected on their mental representations of their community, their main actors and social-ecological interactions involved. Two groups were created and participants were asked to react to several guiding questions and create a collective still image of the community of Los Angeles (subgroup 1) and of the youth in the community (subgroup 2). Under the motto *'Three, two, one... Action!'* these images were then 'activated' and further explored by adding sound, dialogue and movement. Each subgroup was invited to react to the images created by the others, so that participants could change or add elements in scene to create a final integrated and agreed image. During the debriefing, participants shared reflections and feelings about these images, on 'who we are' as a community and what is our role as young people (see Appendix 3.2).



Picture 3: Warming-up at the workshop in La Sepultura. Photo: Amayrani Meza.

Session 2: Visioning our futures

During the second session, participants began to explore visions of the future through the theatrical creation of alternative future scenes for the MAB. The group was divided into four subgroups. Three of them represented their expected futures, each based on a land-use strategy previously identified in the games: conservation scenario (e1), diversified scenario (e2) and intensive scenario (e3). The last group performed their ideal vision of future, without any constraints (e4, desired scenario). Exceptionally, in Group 1 (G1) we only developed three scenarios (e1-e3), due to time constraints.

Prior to creation, facilitators introduced to each group a land-use strategy and provided them with a set of question-cards addressing six critical dimensions as main input for discussion (see Appendix 3.2). With these inputs, each subgroup built a

theatrical image using the resources at hand (their bodies, classroom and outdoor materials). The images, different pictures from alternative futures, were then performed to the whole group in an improvised scenario and the different characters were ‘activated’. This way, small dialogues and improvised scenes could further unfold the symbolic language of the images.

A guided debriefing was facilitated so both the audience and the actors could react to each image. In this way, observations about the different elements and the various relationships performed were collectively and openly shared, and participants could express their felt experiences and perceived social-ecological connections within the MAB. For each future, a list of positive and negative aspects was identified and discussed. Comparisons among futures were made in order to identify those preferable futures as well as the main components of them.

Session 3: Rehearsing present transformations

During the third session, and inspired by back-casting techniques (Robinson 2003), we applied Forum Theatre (Boal 2009) to explore different actions supporting change towards the desirable futures, constituting a sort of ‘dramatized back-casting’. The various futures were brought into the present with the help of different aspects identified in the performed scenarios the previous day. Participants were first asked to individually identify one or two situations in their daily life that they would like to change, related to any of the negative aspects previously identified. Then, in subgroups of 5-6 people, they were asked to share these stories and create a theatrical scene based on them. While creating these scenes, participants had to explore and recreate their main characters, their relationships, conflicts and possible endings.

Following the technique of Forum Theatre, each sub-group presented their scenes – now turned into scenarios linked to action- to the audience, who was then encouraged to engage in a dialogue about the sustainability of the MAB and the different opportunities for transformation. Participants were invited to jump into these scenes and further elaborate on the actions proposed in order to test their validity and robustness through the theatrical rehearsal³⁹. This way, different action proposals focused on the youth emerged from each scene, facilitating different reflections on the performed actions.

Data collection and analysis

Research data were gathered both through participant observation during the performative workshop and through various evaluation tools applied at different moments. Research data consisted mostly of:

1. Researchers-facilitators notes and audiovisual recordings of theatrical improvisations and group reflections, including outcomes of group discussions; and

³⁹ Except for G1, in which the dialogue was spoken due to time constraints.

2. Participants' individual reflections and perceptions. These were gathered through the following evaluation tools:

- A qualitative evaluation, based on a final open questionnaire (n= 80) and reflection cards after the first two sessions (n= 111);
- A 5-point Likert scale (n= 90), handed in before and after the workshop to track changes in participants' perceptions and attitudes; and
- A feedback questionnaire (n=56), handed in four months later in order to assess the workshop's effectiveness (see Table 9 and Appendix 4.2 for more details on these evaluation tools).

Two main analysis strategies were used: a qualitative content analysis of researchers' notes and the open evaluation, and an inferential and descriptive statistical analysis of pre- and post-workshop questionnaires.

A first qualitative content analysis of theatrical improvisations and group debriefings – supported by the audiovisual recordings, was carried out to track emerging thematic contents and discussion insights. Furthermore, the analysis of researchers' notes also focused on group processes and dynamics and on participants' reactions to the methods proposed (Table A6 in Appendix 4 contains general analysis guiding questions). Secondly, materials from the qualitative evaluation were analysed using Atlas.ti 6.2 (Muñoz and Sahagún 2011) to explore participants' learning experiences. Participants' answers were analysed creating 120 emergent codes, which were then compared and clustered into three broader learning categories: (i) Awareness, knowledge and understanding (ii) Attitudes and values and (iii) Social skills and competences. Each group was firstly analysed separately, allowing for comparisons among the three groups.

Regarding the pre- and post-workshop questionnaires, a Wilcoxon Test for non-parametrical two related samples was applied together with descriptive statistics, using the software Stata 13 (Sprent and Smeeton 2001). 73 questionnaires out of 90 were selected for analysis, corresponding to those participants answering both pre- and post-workshop questionnaires. The return questionnaire was analysed using descriptive statistics.

Table 9: Evaluation tools applied before, during and after the workshop. Q = question/item.

Moment	Evaluation tool
Before the workshop	<p><i>Perception and attitudes questionnaire</i> n= 73 [G1= 28, G2= 24, G3= 21] Five-point Likert Scale, 11 items</p> <p>Participants were asked to self-rate their perceptions and attitudes towards:</p> <ul style="list-style-type: none"> - Their creativity and self-expression capacity (Q1, Q2) - Their community and their environmental situation (Q3, Q4, Q5, Q7, Q9) - Their motivation to act and their role as young people (Q6, Q8, Q10, Q11)
During the workshop, at the end of session 1 and 2	<p><i>Individual reflection cards</i> n= 111 [G1= 12, G2= 58, G3= 41]⁴⁰ 2 open-ended questions</p> <p>Participants were asked to individually reflect on and share:</p> <ul style="list-style-type: none"> - The activity or workshop moment they liked the most and why (Q1) - Something they found out or learned that day (Q2)
At the end of the workshop	<p><i>Open evaluation</i> n= 80 [G1= 29 , G2= 27 , G3= 24] 6 open-ended questions</p> <p>Participants were asked to share their individual appreciations of the experience and their reflections on the performative process regarding:</p> <ul style="list-style-type: none"> - Their felt experience (Q1) and perceived value of the workshop (Q2) - What they learned about their social-ecological system (Q3) - Contributions of the theatrical tool to dialogue (Q4) and best and worse workshop features (Q5) - Intentions of change after the workshop (Q6) <p><i>Perception and attitudes questionnaire</i> (see above)</p>
Four months after the workshop	<p><i>Return questionnaire</i> n= 56 [G1= 14, G2= 26, G3= 26]⁴¹ Five-point Likert Scale questionnaire, 8 items and 5 open questions</p> <p>Participants were asked to indicate to what extent the workshop helped them⁴²:</p> <ul style="list-style-type: none"> - Connect with the group (Q1) and train their expressive skills (Q2) - Reflect on their community and relevant actors (Q3) - Envision and reflect on different community futures (Q4, Q5) - Identify social-ecological challenges and proposals of action (Q6, Q7) - Share personal experiences, views and attitudes (Q8)

⁴⁰ In the case of G1 reflection cards were handed in only after the first session, due to time constraints.

⁴¹ Researchers' access to the field during a high-school vacation period hindered access to participants from G1.

⁴² For items 4 to 7 participants were asked to provide specific examples.

4 Results

Two kinds of results were identified from our experience: (1) those related to the specific material outputs of the performative future scenarios, i.e. different future narratives and action proposals; and (2) those related to participants' personal learning experiences.

4.1 Scenario outputs: participants' futures and proposals for action

Exploring futures: fears and desires

During the second session, each group performed 3 *possible* futures, according to different land-use trends and a *preferable* one, according to desired visions of future (see Box 3). Through these scenarios participants could imagine, embody and discuss different futures and identify desirable and undesirable aspects within.

The scenarios revealed future imaginaries and present concerns, in which pieces of information and facts about the MAB were combined with normative aspects and broader views. After each representation, both desirable and undesirable aspects in their enacted futures were identified (see Appendix 5). Desirable aspects emphasized social transformations and often related to enhanced mutual support, communication, collective action and communion with nature. The wish for more services and economic activities in the community reflected in their performed scenes made visible some tensions and narrative inconsistencies. For instance, on the one hand, the ideal of an almost pristine future of total conservation, with very little economic activity or human presence in the MAB, conflicted with the desire for more economic and urban development in their community. On the other hand, while participants acknowledged the negative social-ecological impacts of some of the agrarian practices currently being practiced in the MAB, there was a general difficulty in thinking of alternative ways of doing things.



Picture 4: Building the conservation scenario in La Sepultura. Photo: María Heras.

Box 3: Summary of the different scenarios performed.

Conservation scenarios (G1, G2, G3)

Generally, the conservation scenarios reflected the concept of conservation as an environmental ideal. Deep values, such as love, tolerance, responsibility, and care lead to environmental awareness and bounding. The three scenarios represented happy people planting trees and taking care of the forest and, eventually, animals. Their economic activities are: payments for ecosystem services (G1 and G2), resin extraction (G2) and, to a lesser extent, extensive livestock (G2) and subsidiary commerce (G3). Interestingly, people appeared in the scene only in relation/service to nature and other social and economic relations or activities were rare. They were conflict-free scenarios.

Diversified scenarios (G1, G2, G3)

Diversified scenarios represented a wide range of economic activities: agriculture, livestock, fishing, forestry and commerce. Nevertheless, while G2 and G3 characterised these activities as extensive, respecting nature cycles and sustaining an ecological balance, G1 characterised them as deeply resource-intensive and associated to high social conflict (e.g. violence, mistrust, migration). In that case, diversification was a strategy following values of maximum profit, competitiveness and human supremacy, in contrast to the other groups, which were driven by respect and care towards nature.

Intensive scenarios (G1, G2, G3)

Intensive scenarios represented a diversity of productive activities (like in e2), but pushed to the extreme. Consequently, different social-ecological problems arise, such as deforestation, land, water and air pollution and degradation, increasing temperatures, social inequality, violence or mistrust. Interestingly, in G2 technocrats (e.g. researchers, agricultural engineers, veterinarians, government members) rule the scenario; and G1 also highlights government members as providers of agrochemical inputs. Environmental detachment, egoism, irresponsibility, aggressive competition and a lack of concern about future generations are people's main motives behind these scenarios.

Desired scenarios (G2, G3)

Desired scenarios showed particularities for each group. In G2, the desired scenario was characterised by an urban development respectful with the socio-ecosystem. The image represented more services and technology in the community (e.g. better access to electricity and internet, more schools and health centres), the maintenance of extensive livestock farming and more engagement from politicians.

G3 showed a unified community where coordination, mutual support and communication helped people keep clean their village, river and surroundings, recover forest areas and reduce land pollution. In this future, the youth was leading the social transformations. Both groups expressed the desire for more employment and a preference for extensive livestock farming as economic activity.

Back from the future: current concerns and proposals for change

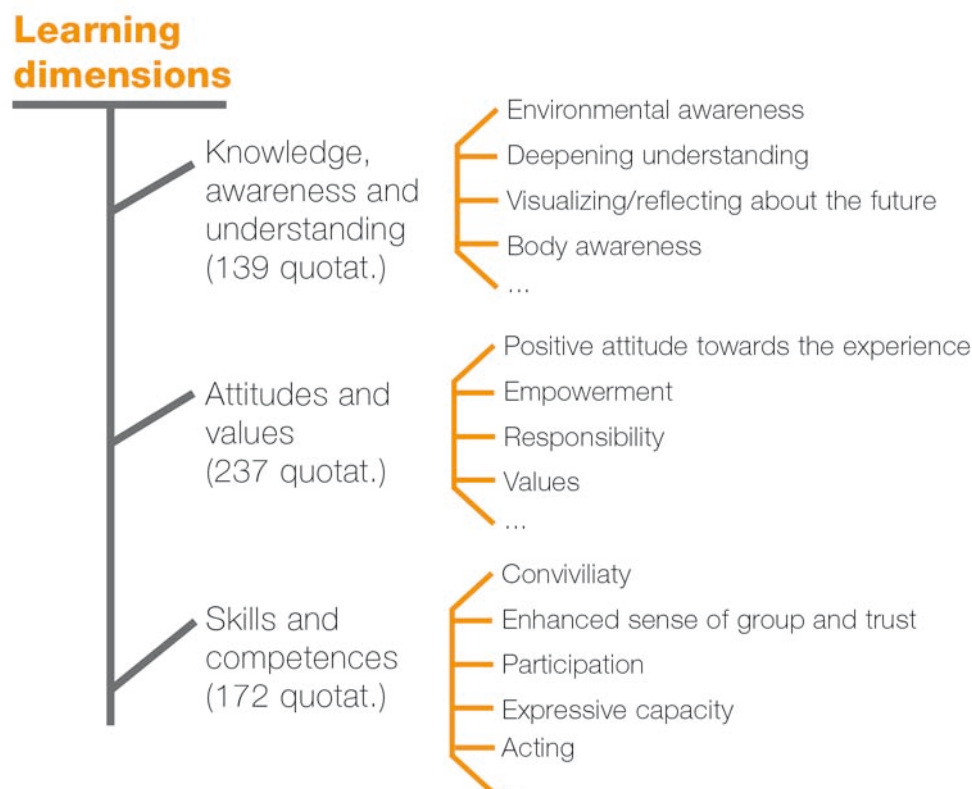
During the third session, future dimensions were brought back to the present, by encouraging improvisations of everyday situations related to social-ecological challenges and by the rehearsal of action proposals through Forum Theatre and consecutive discussions. Participants' scenes showed their perceived main problems concerning sustainability, which included: i) environmental pollution, waste management and their impacts to people, ii) the loss of forests due to commercial logging and agrarian activities, and iii) social conflicts, partly rising from high competitive attitudes within the productive system, people's indifference towards some social problems and politicians' abuse of power.

These *represented situations* constituted a starting point from which different 'futures-in-the-present' could be activated so that young people could reflect on their possible actions at hand. Through their oral (Group G1) and performed (Groups G2, G3) interventions, different proposals of action were identified (see Appendix 5). Most of these proposals implied: (i) *individual actions* in the short term, both proactive and reactive -which could be partly explained by the immediacy of the theatrical setting and guidelines; and (ii) *collective actions*, some of them relating to a medium/long term, such as starting up a community organic garden at the high-school (G1), generating a process of community traditional knowledge recovery (G1), or involving the whole community (children, youth, adults, elderly) into coordinated actions to take care of their environment (G3).

4.2 Process outcomes: participants' learning experiences

In this subsection we review results from the qualitative evaluation and the pre- and post-workshop questionnaires, supported by researchers' observations, in order to explore the less tangible but fundamental learning outcomes facilitated by the theatrical experience. The qualitative analysis of the final open questionnaire and the reflection cards helped categorize three broad learning dimensions: (i) Awareness, knowledge and understanding, (ii) Attitudes and values, and (iii) Social skills and competences (see Figure 13). We then triangulated such analysis with the results from the pre- and post-workshop questionnaires.

Figure 13: Open evaluation analysis with Atlas.ti 6.2: Learning dimensions, total number of associated quotations and most cited emerging codes.



In general, participants often identified the theatrical workshop and the methodology applied as a ‘different way of learning’ about their own social-ecological realities in a highly cooperative and playful mode. ‘How we learn’ became a shared subject of participants’ reflections, which emphasized specific features of the performative approach, such as being inspiring, allowing for different forms of expression, enhancing freedom or learning outdoors. The following quotes provide some examples:

‘[The workshop] has a lot of value because it teaches us different ways of thinking and creating’. G25

‘I liked this activity because I felt free’ G23.

‘Today I found out that learning about nature is just beautiful’. G213

We now introduce in the next subsections specific reflections and excerpts from the three analysis categories.

Awareness, knowledge and understanding

Most of the answers stated by participants expressed that the workshop helped them better understand their community and the problems affecting the MAB. Such answers included topics and discussions addressed through the scenes and forum improvisations, such as forest depletion, agriculture and the use of genetically modified crops,

environmental health or the rise of social conflicts. Participants' reflections on learning were often associated to the possibility of imagining themselves in different and future situations, but also to increased awareness about these problems, their complex and interconnected dynamics, and the need to take care of them:

'[The workshop] helped me think about things like: how could my community be? How could young people be in different situations? I think the value of it lies in helping to become aware of what's happening in our community'. G316

'Today I understood that there are trade-offs between everything'. G218

'I realised that cutting down the trees provokes landslides and not only that, it also provokes changes in temperatures'. G23

'This workshop has a value in getting to know the consequences of our acts and how they are going to affect us in the future. The environment also needs care to be taken'. G122

Furthermore, such strengthened awareness also included a physical and relational component operating at a very personal level. In particular, some participants' statements also suggest becoming aware of themselves in relation to the group, of their body expressivity and of the capacity to communicate in other ways than the spoken word:

'Through our bodies we can represent things and what we do in our community'. G224

This embodiment of scenes and narratives allowed for the emergence of different ways of knowing not only oriented to assimilate and process information, but also to connect oneself with the group and the body, our main sensorial means for understanding and relating to the outer world. Such diversity of learning resources seemed to help reinforce attitudes and perceptions regarding sustainability challenges in the MAB.

Attitudes and values

Similarly to the awareness manifested, participants' answers expressed their concerns about the future of their community and the MAB-Reserve. However, beyond that, they also showed a sense of responsibility and ownership about their future:

'[The workshop] helped me know that there can actually be other solutions to the problems we are facing and that we could help more our environment'. G122

'I've learnt from the futures activity that we all have the freedom to choose what we want to do and the kind of relationship that we want to have with our environment'. G26

‘The value of this workshop was to get to know my own responsibilities, things I hadn’t thought about before... Now we know how to take care of them’. G317

Likewise, almost all participants identified specific actions of change and a number of them also formulated motives behind such actions, showing proactive attitudes (e.g. ‘*it’s time to... otherwise...’*; ‘*because of that, we should...*’). Normative statements were also recurrent in such formulations (e.g. ‘*we must...*’; ‘*we should not...*’). Similarly, a number of statements reflected an appreciation and empathy towards nature within the MAB reserve. Many participants used plural pronouns (‘we’, ‘us’) and moral judgements were commonly associated to feelings of appreciation, bonding and empathy, as well as values such as tolerance, respect and love:

‘We should not exploit our environment or feel like their masters... we should feel part of it’. G129

‘I learnt to appreciate what nature means in our day-to-day lives’. G16

‘[I understood] that we are all people and we can all understand... and that the environment is the most beautiful thing, it gives us life’. G111

Comparing the pre- and post-workshop questionnaires, our analysis suggests that, with a few exceptions, these possible attitudes were reinforced, rather than significantly modified, as a result of the workshop⁴³ (see Table A7 for further details). However, two items did show significant response changes among several groups: the motivation to do things for the community (Q6) and the importance of the role of the youth (Q8). Both items significantly increased in G2 and G3 (motivation), and in G1 and G2 (important role of the youth). In the cases in which Q6 and Q8 did not change significantly (G1 and G3 respectively), their mean values were already high before the workshop and remained high (value means over 4,14). This is of special relevance as such items correspond to two crucial dimensions of the workshop: the focus on motivations to act and on the activation of the youth.

Social and expressive skills

A number of answers indicated that the theatrical activities helped participants develop and practice different social and expressive skills. These include acting, reflecting, sharing ideas and taking joint decisions. Conviviality was specially highlighted by a significant number of answers as the main value of the workshop. These answers suggest that relaxed participation and cooperative group work provided opportunities to better know each other, share personal experiences, engage in fruitful dialogues and organize themselves so as to create theatrical scenes together:

‘(...) At the beginning, I was shy and afraid of being mocked, but it was

⁴³ The ratio of questions showing significant difference between pre and post workshop questionnaires is: 4/10 in G1, 3/11 in G2 and 2/11 in G3.

not that way: we all participated and there were no bad words from other classmates. I loved it, we could all give our opinions and they were all respected'. G111

'I realized that even though we may not be close friends, we can get on well and [engage in a] dialogue together'. G122

'I could contribute with my time, my imagination and my ideas' G222

'I realized that if we manage to agree we can make shapes with our bodies and [integrate] the abilities of each one of us'. G314

Participants' answers also suggested applied theatre's potential to create spaces of empathic communication and mutual understanding. This in turn seemed to have a positive effect on the actual configuration of the group and the perception of participants towards the others, e.g. through recognition of other participants' qualities:

'The main value of the workshop was communication, respect, tolerance and mutual understanding'. G16

'There were classmates with which I did not get on well. However, during the workshop we managed to become friends in just three days, when I thought it would take much longer'. G115

'I loved the workshop because we could all equally participate'. G311

A number of participants mentioned to have experimented changes in their social skills as a consequence of their participation⁴⁴, like improving their confidence and abilities to communicate and interact in a more tolerant and cooperative mode with the rest of the group, or better expressing themselves:

'I found out that I can share my opinions and I should lose the fear to do that'. G2

'[Now I feel that I'm] able to give a speech in front of the public without feeling nervous or anxiety because of talking'. G118

'[Now I'm going to be] nicer with my colleagues and share more often my opinion on the topics we addressed'. G115

However, analyzing deeper changes in self-perceptions may require longer time spans and research designs, as results from the Likert scales suggest. According to the pre- and post-workshop questionnaires, participants' perceived creativity did not change significantly in any of the groups and their immediate perceptions of their communicative capacities significantly increased only in G1⁴⁵. These tempered data

⁴⁴ In G3, in which more participants initially expressed their timidity, the proportion of this kind of statements was higher.

⁴⁵ Participants' perceived creativity increased in G1 and G2 and remained the same in G3; while perceptions of their communicative capacities significantly increased in G1, but remained low in G2 and G3.

seem coherent when contextualized with the other evaluation tools, as Likert scales addressed changes in absolute perceptions –which may be stronger, while statements from the feedback questionnaire were comparative or relative (see below) and the open evaluation allowed participants to express nuances.

4.3 Feedback questionnaire

Results from the feedback questionnaire carried out four months later showed strong participants' agreement with the accomplishment of workshop goals (see Table 10). Participants along the three groups specially acknowledged the workshops' capacity to foster conviviality among the group and enhance their expressive skills. Such experience also helped them reflect on the current socio-ecological dilemmas (G2, G3) and share their views and experiences within the group (G1, which got the next highest scores).

Table 10: Evaluation of workshop effectiveness perceived by participants

Perceived workshop effectiveness⁴⁶	G1	G2	G3
Sense of group	97,1	86,7	92,3
Expressive skills	92,9	85,9	85,4
Reflections about their community and relevant actors	88,6	82,2	83,8
Visions of different community futures	85,7	82,2	88,5
Positive and negative aspects in their futures	87,1	81,5	86,9
Social-ecological challenges in the MAB Reserve	88,6	84,4	93,1
Exploration of proposals of action	81,4	83,0	86,2
Sharing of personal experiences, views and attitudes	90,0	79,3	83,1
n G1=14; n G2= 27; n G3= 26			

⁴⁶ Percentage obtained from the actual sum of scores for a given item divided between the potential maximum total sum.

5 Discussion

I learnt today that each one of us can create the future

G21

In this section we first discuss several methodological requirements of applied theatre that can provide an added value in the design of performative future exercises within sustainability education programmes. We then explore to what extent these methodological innovations can contribute effectively to sustainability learning in contexts such as the MAB reserves so that the lessons learnt can also be applied elsewhere. Finally, we discuss some of the limitations of these approaches and specifically the ones encountered in our case at La Sepultura.

5.1 Facilitating participation for futures thinking: key methodological features of Applied Theatre

Our results allow us to identify at least three interconnected methodological features of applied theatre that when properly integrated into the design of performative scenarios have the potential to generate significant added value in participatory futures thinking. In particular, such added value is emphasised whenever the process: i) follows a participant-centered design and implementation, ii) supports playfulness and mutual cooperation, and iii) encourages embodied systems experimentation.

Participant-centered

(Through theatre) we can represent what is really happening here to our natural resources.

G23

Participants' personal experiences and perceptions of the community and its futures were a starting point in our process to engage with participants' imaginations. By entering into participants' worlds, theatrical exercises were able not only to represent social-ecological interactions within the community, but also participants' meanings, emotions and motives behind them, which were expressed organically through embodied dramatic action. Such situated actions, and very important, under their own terms, provided relevant narratives to participants, enhancing their interest and connection to the stories. But this relevance also contributed to create future scenes in which 'real' people, with specific roles, responsibilities, motives and intentions were also portrayed. Thus, there is a potential to contribute to salient visions. These are, in turn, key in sustainability transformations, since to be relevant, visions 'ought to matter to the people for whom they imagine a desirable future' (Wiek and Iwaniec 2014).

Playful and cooperative

(...) I liked that game because we could have fun, leave our laziness behind and activate ourselves.

G221

As some difficulties to participate fluently were observed at the beginning, time was allocated in every session to play group games to activate participants, lose inhibitions, create a sense of mutual support and enhance concentration. These games were key to connect with participants, create a relaxed atmosphere and foster affective connections and responses. Although some students had more difficulties than others, positive changes in participation could be generally observed even during a single session. Games also allowed for a progressive adaptation to the theatrical methodology and constituted a way to approach the initial shyness, lack of self-confidence and, sometimes, apathy.

During the theatrical exercises, the performative approach showed its potential to stimulate participants' engagement and social skills through its playful, cooperative and active character. On the one hand, the creation of scenes and sketches in small groups, in which everyone played a role, extended participation beyond those who frequently used to lead or dominate the discussions. Fiction and the 'urgency of action' inherent to improvisations (i.e. everyone on stage needs to do something) helped students participate in non-threatening ways. Indeed, playful, fictional and dramatic action can provide the distance to 'reflect more securely upon issues which have significant effects upon our lives' (Turner 1987, McNaughton 2004). On the other hand, the creation of scenes required a great deal of imagination and a committed group working together, among other tasks, on sharing experiences, collectively reflecting ideas, distributing tasks, creating and negotiating scenes and performing together. Such a creative atmosphere may, in turn, inspire participants' visions of the future. Furthermore, by acknowledging different positions and negotiating and integrating them in collective creation, the theatrical exercises represented a way of mapping out and managing diversity, a critical step towards shared visions of future (van der Kerkhof 2006).

Embodied systems experimentation

We were not just answering... we were acting and moving around.

G224

Drama exists in physical action. By acting and reflecting upon action, the theatrical approach stimulated active contributions to the topics addressed, which were not only rationalized or analyzed as abstract concepts but also felt and sensed. The representation of concrete characters and situations helped ground the discussions to known realities; whereas felt experience while playing provided bridges to more abstract concepts. For instance, while discussing the scenario cards, participants often showed difficulties to identify scenario-related values (the concept of 'value' was difficult per se). Performing

scenes helped visualize such values and facilitated in some cases the identification and understanding of more specific social-ecological values (e.g. intergenerational justice and social equity). In this fashion, the dynamic quality of theatre allowed the reflections to move back and forth among different dimensions, e.g. from the concrete enacted situations, to abstract associated values and beliefs; from the local to the global; and from personal to societal. By contrasting and connecting different dimensions, these movements could contribute to reinforce the systemic approach and coherence of the visions and futures created, acknowledging and addressing inherent tensions. Such embodied experimenting of systems knowledge constituted the basis for an alternative mode of experiential learning which opened up new creative spaces, where the range of possibilities were pushed by the imagination of the participants.

5.2 Learning implications of applied theatre's features and relevance within educational contexts

Results from our experience suggest that, at their best, the above features can facilitate the integration of different learning dimensions (awareness and understanding, attitudes and values, social and cooperative skills) in a highly engaging and participatory space. Integrating different learning dimensions is crucial in those educational programmes that want to stimulate students' critical engagement into action *for* sustainability, beyond learning *about* sustainability as a concept (Sauve 2005, Krasny et al. 2009, Frisk and Larson 2011).

While workshop interventions showed that participants had multiple 'pieces' of relevant knowledge about the MAB social-ecological context, such knowledge often lacked a critical framework connecting it to their own experiences, values and visions, so as to ultimately link their insights to particular actions. In this regard, the main value of our proposal may not lay on the generation of 'new knowledge' (as contents were mainly defined by participants), but above all, in its socialization and the articulation of meanings and purposes around it. This resulted in a strengthened social-ecological awareness, which included as well relational and embodied dimensions.

Such awareness was also fostered through theatre's experiential character, which helped participants experience their community and the MAB Reserve as a complex system. In line with other experiences (Dieleman and Huising 2006, Booth-Sweeney and Meadows 2011), games and performance played an essential role in approaching systems' complexity, firstly by providing accessible metaphors and lively experiences to participants and secondly through debriefing moments in which they could critically process, reflect upon and articulate those insights. In this way, participants could potentially feel that complexity beyond cognitive analysis.

Performing the different roles allowed participants to go 'give life' to their own stories and actors. Such systems embodiment and felt experiences emphasized their

emotional connections to both imagined and existing realities and also helped expose their feelings about the uncertainties related to the MAB Reserve future. In this way, the workshop provided a space to share and acknowledge the vital affective dimension involved in thinking about the future (Dator 2002, Hicks and Holden 2007). As workshop and evaluation data suggest, the affective and emotional approach helped reinforce appreciative and emphatic attitudes towards nature. This capacity for empathy, for a sort of ‘we feeling’ is a key element in sustainability learning processes that expect to transform values and visions and provoke changes in the ways we relate to the world (Orr 1992, DeHaan 2006). If MAB reserves are also aimed at supporting a sense of place and an emotional connection with nature (Schultz and Lundhom 2010), then providing supportive contexts and spaces for participants’ disclosure, where young people can start sharing desires and concerns and processing the worldviews behind them (and not just processing more information), seems essential. Indeed, people’s worldviews and mental models are seen as underlying variables ultimately affecting a system’s social-ecological resilience (Berkes and Folke 1998, Schultz and Lundhom 2010).

However, approaching and experiencing the future might be of little value if no connection to agency is made (Hicks and Holden 2007). In this regard, the workshop also explored participants’ motivations to act and unfolded social and cooperative skills needed for collective action. Forum Theatre provided a rehearsal arena where different skills and conditions enabling community action could be scrutinized. Through their participation in fictional contexts, students used and tested real knowledge and real skills (McNaughton 2004), which are important in the building of strategic competences (i.e. identifying and mobilizing resources, building cooperative networks, acknowledging uncertainties), highlighted in sustainability education approaches (de Haan 2006, Wiek et al. 2011). Evaluation results also showed that participants’ motivations to act and their perception of the important role of the youth significantly increased after the workshop. Addressing strategic capacities and fostering participants’ motivation is crucial since feeling disempowered could deepen young people’s disillusionment about the future (Eckersley 1999).

In this regard, there is a pending opportunity for the integration of young people into mutual learning processes currently going on in MAB reserves. As different studies show (Schultz and Lundhom 2010, Reed and Massie 2013), young people normally remain aside of such processes within MAB reserves, being involved mostly in unidirectional educational programs. The theatrical approach could, thus, provide an engaging way of connecting and communicating the visions of young people to bridging organizations and other stakeholders already engaged in mutual learning processes around MAB’s management. Furthermore, if the creative process were directly fuelled by MAB’s research and monitoring data, it could also represent a way of connecting the students with current real practices and innovations. This would surely afford a communicative role but also could provide participants with hope, since

MABs are devised as highly innovative social learning spaces and, therefore, opportunities for action should be greater than in other places.

5.3 Limitations

Implementation limitations were mostly due to having extended the original group size to the whole school grade. While participants' availability and access were ensured, some activities required more time, hence tightening the agenda, and facilitation was sometimes limited. As a result, less time was available for debriefing, and emotional disclosure within the group was sometimes harder to achieve. We also observed other implementation factors constraining discussion (which could be easily improved in other situations) such as: i) The sessions particular timing, as the moments of most intense discussion coincided with the end of the session, when many participants were already tired or hungry, and ii) The space, sometimes too noisy (G2 and G3, indoors) or too hot (G1, outdoors). In addition, the theatrical methodology implies a progressive adaptation of participants to the theatrical language and the creation of an atmosphere conducive to emotional disclosure. This is quite time demanding and an inherent limitation of the method, but once such momentum is created, it represents one of its main potentials. It constitutes, therefore, a trade-off, which can be overcome taking into account appropriate time requirements in the sessions' design phase.

On the other hand, the interconnected nature of social-ecological problems makes the rehearsal of potential actions and solutions particularly challenging. In forum performances, participants rehearse immediate actions that can potentially change the course of events in a given situation. This brings up the question of how such action rehearsals can approach the complexity of unsustainability problems, in which local contexts are the result of multiple interactions among actors and social-ecological dynamics at multiple levels. In this regard, the proposal could greatly benefit from bringing other stakeholders into stage and making stronger connections between young people and community articulation processes, as well as from dedicating more time to deepening and refining initial action proposals emerging from the forum. This said, it is also important to bear in mind that these theatrical techniques were not created to *find a* solution, but rather to activate people in the *search for* solutions (Boal 2009).

Regarding the efficiency of the approach in provoking changes, while observational data and answers to the open evaluation and the return questionnaire strongly suggested changes in participants' expressive skills, their self-perception of their expressivity remained low for G2 and G3 in the Likert scales. Similarly, Likert scales also suggested for these two groups an enhanced perception of the youth as change actors, while at the same time, their perceived self-efficacy (actual capacity to act) remained low. These results indicate a mismatch in the younger two groups, which the workshop could not address in its short implementation. Deeper changes in self-perceptions probably require

longer time frames and processes, as well as further exploration of participants' agency and its connection to broader articulation processes.

6 Conclusion: Who owns the future? How can I be part of it?

In this paper we have explored the potential and the limitations of applied theatre for futures thinking in sustainability education. Through an empirical experience in a Man and Biosphere Reserve, we have illustrated how performative scenario making can help connect visions about the future with meaning and embodied action among young people. Individual desires and concerns were linked to community challenges, fostering participants' awareness about their role to become active part of their own futures.

Through our dramatized scenes possible and desired futures were explored, but most importantly, together with the actions needed to achieve them. In this way we moved away from the conventional understanding of scenario-making by addressing the question of 'what role can I play in this future'. In this sort of 'dramatized back-casting', special emphasis was put on generating critical reflectivity about the complexity of community challenges but also not to become overwhelmed by them as to inhibit action. Focusing on understanding motives and fostering motivation allowed developing concrete proposals and linking them with their own contexts of action and available resources at hand. The participant-centered, playful and embodied character of the performative approach provided a significant added value to futures thinking from a systems perspective. Learning about the complexity of social-ecological systems not only as something out there, but also as an emotional, personal and lived experience was crucial to stimulate reflections on action.

However, this process was not without limitations, mostly related to the time framework and the resources available to implement the original design. Deeper changes in self-perceptions and participants' agency require longer processes and their articulation within broader community action. Moreover, the interconnected and dynamic nature of sustainability problems and solutions requires rehearsals of action where multiple dimensions and action scales can be linked. This is a challenge for applied theatre, which tends to focus on immediate changes by given actors. All in all, while more time and work is required to further enhance personal and collective competences to deal with the future and further test the robustness of our approach, our case provided a series of lessons, in the form of basic requirements and practical insights, which could be integrated in the future if applied theatre is developed in other educational contexts and MABs.

In the face of the mounting environmental challenges and overwhelming predictions about global environmental change, performative learning methods may open a space for constructing a future of hope. Integrating the arts in such a space can foster open communicative processes where conventional linear thinking and constrained imaginaries can be overcome. If sustainability learning is about transforming and improving the quality of our social-ecological interactions, then people need to be given the opportunities to imagine alternative futures and become actively engaged with them. Methodological proposals as the one developed in this action-research, could not only help free such imaginaries and alternative future visions, but also activate young people so they can start, by themselves, co-creating and becoming owners of their futures.

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Chapter 5

Conclusions

End of the workshops: sharing circle with participants, in the form of a symbolic well (*el pocito*). We throw away the things we don't want to take home, and take the things we would like to keep with us.

Chapter 5

Conclusions

This thesis dissertation is the result of four years of research and practice focused on exploring the potential of using participatory theatre to foster participation and knowledge integration in the context of sustainability learning processes. This was further motivated by the lack of integration of the Arts in methodological developments and innovations in participatory methods within sustainability science. As such, the papers in this dissertation aim to contribute both to theoretical reflections and empirical insights into the emerging incorporation of Arts-based practices in the fields of sustainability science, learning and practice. The research process, general contributions, limitations and potential future research lines are summarised in the following sections.

1 The PhD dissertation as a learning journey

This thesis has been, above all, a learning journey. A challenging and exciting one, which I had the privilege to be involved in. As such, the multiple processes and encounters it generated are at the core of this thesis value. I would like, therefore, to briefly review my research as a learning process of reflective practice.

I began the thesis with a broad question, which related to the possible role of the arts and of applying participatory theatre as a method in processes of social learning. Such a broad question allowed me to navigate through an open, goal-searching, research process, which took me in several directions as the research was taking shape. It initially required diving into many different areas of knowledge and practice, from sustainability science to performance studies, so as to identify *where* I wanted to locate my research. It took me one year to grasp that and, as I proceeded, I found my ‘academic self’ and subject at the intersections (and sometimes, the margins) of the main different disciplines and conceptual frameworks I was dealing with: sustainability science, Arts-based practices and different approaches to learning and social change. At this point, the development of the article about *performative methods for sustainability* enabled me to visualise and locate the potential contributions of my research within the conceptual map. I could then produce an extensive list of research questions related to the review, development and implementation aspects of the approach. Still, the context of application was not defined: I needed case studies through which my research questions could be grounded and explored, and specific implementation goals could be identified and assessed.

A second challenge arised at this moment. This was related to the broad range of potential applications of participatory theatre, but most of all, to specific research needs

and academic requirements. First, the 'action' within action-research implies that community needs must be addressed in the research intervention. In my case, this meant finding a window of opportunity, a context where there could be the need to generate a participatory process in which applied theatre could have an added value. And indeed, this is not a given. Furthermore, my contacts and experiences were mostly located in the domain of social action and community work, and not directly linked to social-ecological explicit contexts of action. This required further mapping of experiences and networking. Creating trusting relationships with the collectives and people I was contacting was essential to build a participatory process together, and in both cases, it took several months (in the case of Cherán, for instance, the first contact with the CSO ECA was on February and fieldwork started in November). Needless to say, the experience also needed to fulfil specific academic requirements (e.g. academic interest, consistent methodology, solid assessment). Although this may seem obvious, the idiosyncrasy and needs of participatory processes sometimes do not match the research requirements.

Following an opportunity criterion and the conjunction of these three basic requirements, the research focused on sustainability learning processes within different natural resource management contexts (CBNRM and MAB Reserves). The case studies allowed me to give another twist to the research questions, narrowing the list to concentrate on particular aspects of theatre as a community dialogue platform and active visioning tool. They also narrowed workshop participants down to young people. This followed in part a strategic reason as I realised that through working with young people entering into communities was much easier. However, during the workshops and seeing the responses from communities, I also became aware of the enormous potential of working with young people from an angle that places the attention on their role as legitimate and capable actors for participating in sustainability transformations and starting to build their own futures.

Similarly, there are several experiences that were carried out but were not included as part of my case studies, either because they did not meet the three criteria (implementation needs, social-ecological context, and research rigor) or because they were used as experimental pilots. These experiences include two pilot workshops at ICTA-UAB, a community theatre project developed in Belfast as a community dialogue tool, two theatrical sessions within the European agro-ecological meeting 'Beyond our Backyards', and two other theatrical workshops carried out in Chiapas, besides my work at La Sepultura (see CD for more details). All these experiences have contributed, however, to this thesis in some way, as they were absolutely necessary to train my facilitation skills and capacities and to allow me to experiment with different theatrical techniques. Furthermore, they also provided me with insightful reflections about the potentials of the theatrical approach; reflections which have, in turn, nurtured the discussions.

As expected, during my empirical work, I also experienced moments of frustration and hopelessness. Arts-based research is still a contested practice and introducing and defending my research within academic contexts was sometimes challenging. Especially

at the beginning, when my research was sometimes questioned in terms of whether the theatrical approach was a valid research practice, able to contribute to ‘real science’. Pushing forward the research implied, therefore, critically engaging with the epistemological and practical questions emerging from a non-conventional way of doing research, as well as with its resistances. This critical engagement also applied to my academic production through which I had to translate highly experiential theatrical encounters into the clearly defined and written formats of scientific papers (see tensions below).

Furthermore, from a practical stance, the implications of working on my own (the ‘one-man band’ or ‘do it yourself’ approach), which somehow shaped the possibilities of the process, were sometimes especially pressing in terms of material and human resource constraints during the participatory workshops. Through this process, however, I learnt to reframe and approach such constraints as methodological requirements -and sometimes limitations- of a highly transdisciplinary approach which especially relies on participants’ engagement and facilitators’ skills.

All in all, the different achievements, frustrations, quests and encounters allowed me to learn and reflect on what it means to design, develop, implement, analyse, defend and critically approach an alternative way of carrying out research and a participatory process, and on *where* I stand in such processes, both as a researcher and as a person.

2 Reflecting on the three experiences as a whole: contributions and implications of this thesis

The three articles presented in this dissertation have provided different kinds of insights of theoretical and empirical nature. In the following section I will briefly reflect on the main conceptual and methodological contributions of this thesis and their implications for sustainability science as well as for sustainability learning within the specific contexts of implementation. Limitations of the research are also identified.

2.1 Sustainability Science: conceptual and methodological contributions

As a strong integration effort (Mauser et al. 2013), sustainability science insists upon the need for participatory, highly interactive and deliberative processes involving different kinds of stakeholders and combining different ways of knowing and learning (Kates et al. 2001, Kasemir et al. 2003, O’Riordan 2003). Such emphasis and the realisation of the limitations of mainstream science to engage the public (Pohl et al. 2010) have emphasised the need for methodological innovations within sustainability research and practice.

Within this context, this research has approached the broad question of how participatory theatre can contribute to the development of new methods focused on social learning in sustainability science. This was articulated around two general objectives: i) integrating participatory theatre as a performative methodology in the context of social learning for sustainability, and ii) assessing the potential and the limitations of such methods in specific contexts of implementation. The conceptual and methodological contributions of such a venture are, therefore, to be located at the intersections between the different disciplines and application contexts it feeds from or nurtures. It is in these intersections, in the claim for participatory theatre as a valid form of knowledge integration and participation within contexts of sustainability learning and science that innovation potentials and implications mostly arise.

Thus far, there has been little systematic evaluation of the roles that drama techniques can play as participatory tools within sustainability science methodological innovations. This thesis research has aimed at addressing this gap. This has been done both theoretically, by providing an analytical framework assessing the potential role of performative methods within sustainability learning and science, and empirically, through original methodological developments exploring such potential.

Firstly, through the review of experiences and the assessment of performative methods, I have identified five potential functions supporting sustainability learning and transformations, as well as related limitations and conditions. These functions and limitations contribute to conceptual and methodological developments as they locate the use of performative methods within the picture of participatory tools and help us understand to what extent these new approaches can be of relevance in environmental action research and sustainability science, practice and learning.

Potential functions of theatre relate to its capacity to: i) integrate different kinds of knowledge and perspectives into stakeholder dialogue, ii) communicate and translate complexity, iii) foster social reflexivity and public deliberation, iv) build social-ecological identities and awareness, and v) foster engagement and emotional commitment leading to action. On the other hand, limitations especially relate to the actual degree of integration of the theatrical experiences within broader social and political processes, the dependency on the (transdisciplinary) skills of the facilitator/research team, the aesthetic quality of the performance and the capacity of the creative process to be informed by different kinds of knowledge avoiding oversimplifications.

Second, the different empirical experiences have explored and enriched such propositions by integrating participatory theatre techniques into specific methodological developments incorporating features of applied theatre in different action contexts. In this manner, I hope these empirical experiences could provide insightful reflections and examples for further methodological developments of performative methods within specific contexts of sustainability learning.

Based on such experiences, below I would like to highlight some of the **methodological contributions** that *at its best*⁴⁷, aesthetical experience, as an inherent quality of Arts-based practices, can provide to collective explorations, interactions and dialogues for sustainability through participatory theatre:

- **Theatre as embodied practice: liminal spaces⁴⁸ of collective exploration**

As an embodied practice, theatre generates an ephemeral space in which participants rethink, recreate and re-approach reality through dramatic action (Kuppers 2007). Dramatic action is not real, yet it is not completely fictional - participants are actually performing actions and reacting to them. Thus, a liminal space of collective exploration and interaction in-between reality and imagination can emerge (Turner 1987). The inspiring and reflective potential of these liminal *spaces of artful doing*, as Dieleman (2012) identifies them, is promising. In my experiences, the recreation of ‘what if’ situations provided opportunities for utopian performative visioning: the participants’ imagination was an essential ingredient in the process of creative exploration of possible developments. Such spaces where people can freely imagine and project themselves may inspire the expansion of frontiers and realms of possibility and, in turn, motivate action. Furthermore, because of the dramatic distance afforded by the character, playing provides an opportunity of being both inside and outside a situation at the same time. This in-betweenness, this encounter between one’s own perspectives and the ones of the character, can facilitate new insights into the situations performed: i) as we act – direct experience, ii) as we see ourselves and others acting – reflective mirror, and iii) during the debriefing after improvisations.

Furthermore, when engaged acting occurs, there is a transaction between the actor and the character performed. Theatre is about ‘standing in for others’ (Pelias 2008). In this regard, as embodiment allows us to experience other’s realities and discourses (we get into other people’s shoes), these insights are also of empathic and affective nature. The question is not only about how I would react in a given situation, but also how and why this character reacts as they do. All in all, such an encounter may thus contribute with experiential and emotional reflective insights that integrate different perspectives, not only from a rational standpoint, but also from a highly imaginative and empathic one. We move, therefore, from describing and

⁴⁷ As I mention below I do not want to suggest that every theatrical process can evoke such features. These are, however, distinctive qualities that can emerge through aesthetical experience and provide to Arts-based practices an added-value in sustainability contexts.

⁴⁸ Turner (1986, 1987) theorized notions of liminality and performance. In this context, the liminal refers to those spaces of threshold that are ‘be-twixt and between’, allowing for ambiguity and the creation of new meanings, forms and structures of experience (ibid).

integrating different perspectives to embodying and potentially creating new ones. This switch is essential as it fosters an experiential and emotional contact with the other's perspective and an openness, which in turn can favour responsibility towards others and recognition of diversity and possibility.

- **Theatre as listening: increasing awareness of systemic interactions**

The ephemeral universe created through theatre is relational: it is not an individual single action that matters but the interactions among all characters and elements in scene. As such, theatrical practice can be approached through a systems' perspective. And this systemic and relational dimension can only be sustained through constant listening - to your body, to your partners, to the breath of a situation. Listening (*la escucha*) is a foundational element of theatrical practice. As we act and, most importantly, as we react to others in scene, this listening has the potential to raise awareness of the different personal and group positionings (*Where am I? Where are we?*), perspectives (*What do I see? What do they see? What do we see as a group?*), and interactions (*How do we affect each other? What are these interactions like?*). In this manner, the exploration of topics through the relational universe of theatre may increase participants' self-awareness of their actions and their performative capacity, of the roles they can play and how they affect situations and other living beings. Moreover, as a collectively devised creation, participatory theatre challenges and potentially stimulates participants' listening and relational skills. This is approached both through spontaneous improvisations (whose developments will partly depend on participants' capacity to 'listen' to each other's proposals and react to them), and through carefully crafted theatrical creations in which participants have to share, collectively envision and negotiate their shared creation.

- **Theatre as nested dialogues**

Dialogue is at the core of theatrical practice. The dialectical unfolded through my experiences as a multi-dialogue process or a series of *nested dialogues*. Such dialogues started in the encounter between participant's bodies and their environments - through different aesthetical exercises focused on physical, sensual and spatial awareness, continued with the shared process of theatrical creation, and culminated in the aesthetical dialogue between participants and audience. This last dialogue was facilitated through theatrical representation, either in the form of improvised theatrical sketches and images or through the theatrical play.

Dialogue is at the basis of theatre's intersubjectivity: shared meanings are built through a dialogical relation that permeates the whole process (Norris

2009). This is especially clear at the moment of representation: as a highly evocative, communicative medium, theatre is always understood through the eyes of the viewer (Turner 1987). Furthermore, because theatre is always enacted and asserted in the present - in a specific moment in time, and the specific context of the audience, the relation between the audience and the theatre piece is always a performative one: the meaning of the play is built both by performers and audience in a dialogic and reflective manner. And because such nested dialogues are processed through the aesthetical, their potential to be empathic, listening and responsive to others is enhanced.

Needless to say, the empirical experiences also shed light on several challenges and tensions that affect the potential of theatre as a participatory method for sustainability science. An obvious challenge relates to the way facilitation and participants' engagement is carried out. Theatre's potential will be much dependent on the capacity of the process and the facilitators to create a proper atmosphere and engage participants in such an aesthetical experience. In this regard, some aesthetical features are more immediate while others require more time and a momentum. Participants' disclosure is delicate and demands careful and attentive facilitation. Even if facilitation is in the best hands, each group needs to follow its own journey and there is no certain recipe. This also applies to the aesthetic quality of the final artistic work, in this case the theatre play, and its capacity to generate responses from the audiences.

Furthermore, in the context of action research it outstands what Eisner identified as the tension in ABR between *metaphoric novelty*, i.e., providing fresh and new ways of seeing the world, and *literal utility*, i.e. improving our understanding and contributing to the particular context of implementation. In this regard, participatory theatre should be able not only to generate a vivid conversation or dialogue, but also to make it a purposeful one. In our research context, participatory theatre is a tool, an intervention that at its best can help communities frame (and reframe) particular challenges and identify lines of action. It can also motivate people and stimulate personal and interpersonal capacities to achieve them. Still, this can only be one step in the broader articulation of community action and learning processes required for sustainability transformations. From my empirical experiences I have observed a gradient of potentially transformative effects of theatre from just performing the play to raise collective awareness, to performing the play and facilitating critical dialogues, and finally, to including the insights of these dialogues into broader community sustainability learning processes and management structures. The further we progress along this gradient, the more we may impact on the different dimensions of sustainability learning and support community transformation processes.

All in all, these conceptual and methodological contributions carry different **research implications** for sustainability science. Among them, I would like to highlight the following:

- **From ‘knowledge integration’ to the integration of knowledge actors**

Inclusiveness is also a central component and goal of Arts-based research and participatory theatre. In practice it means the expansion of the focus of research from the integration of knowledge to the integration of people. In this regard, there is an obvious political purpose in advocating for performative methods. As an epistemological approach, they emphasise the need to transcend the exclusive and limited boundaries that sometimes constrain science and research activities. They also incite to radically rethink the assumptions and worldviews that guide the construction of valid knowledge and practice and who takes part in these. As a practice, and under the lenses of community theatre, the process of performance can reinforce commonalities, illuminate differences and alter boundaries of identity (Kuppers 2007). As such, it offers a space for renegotiating and redefining identities, values and perspectives. And by bringing this space to the public sphere, by opening up informal deliberative public spaces giving voice to often marginalised actors and by raising issues of their concern, in their own terms, these spaces can be turned into laboratories of practice for direct democracy (McGrath 2001, Kenelly 2006). In the context of sustainability action and research, such potential to encourage active and participant citizenship (Conquergood 2002, Nicholson 2005) can contribute to the transformation of spectators from the drama of unsustainability into active knowledge actors, playing their own stories and co-creating their own futures.

- **New roles for researchers**

Process-oriented approaches to sustainability science have already highlighted the urgent need to adopt and acknowledge new roles for researchers (Wiek et al. 2012, Wittmayer and Schöpke 2014). Developing participatory theatre and integrating it into research involves skills and competences that go way beyond those traditionally associated to researchers and scientists. The most evident is the artistic one. This has an important transdisciplinary implication as it explicitly brings artistry and artistic talent and competence to the side of the researcher –or *scholARTist*, as referred by some authors (Cahnmann-Taylor 2008). Even if the artistic process is led by an artist, the researcher needs to develop competences in the artistic medium as they will shape their approach to the research process and insights. Hence, explicit artistic training and esthetical sensibility are needed to enhance the quality of ABR and create a critical community within sustainability science capable of understanding, sensibly critiquing and further developing Arts-based approaches within the field. But beyond artistic skills, the capacity of the researcher to generate a comfortable and creative atmosphere, to catalyse equal participation and mediate tensions and conflict within the group is

essential. This facilitating role also requires adopting a self-reflexive stance during the process regarding our own position as researchers and facilitators and its relation to power dynamics within the group. Balancing participatory and artistic requirements with research ones is, however, a dance that requires skills and practice. Such a transdisciplinary dance would benefit from explicit training and more academic space to share these kinds of research experiences and facilitate reflexivity and learning about the new roles that emerge as we transgress discipline boundaries and expand methodological frontiers.

- **Re-thinking research and knowledge validity**

These new roles and understandings do not only expand the competences required for doing research, but also affect notions of ‘good science’ and criteria regarding research and knowledge validity. By challenging research epistemologies and assumptions, Arts-based practices can bring new modes of thinking and criteria for judging research quality in terms that are meaningful within sustainability science. These include questions such as: how does the work allow research audiences and communities to become active participants in the construction of meaning? How does it evoke engaged responses in people? How does it expand perception and sensibility? How does it inspire purposeful dialogue and hold open discussion? During my empirical experiences, theatre’s *action rehearsals* provided a ground to approach knowledge validity by allowing participants to test different proposals of action related to the topics approached through theatrical improvisations in scene (forum theatre). At these moments, facilitation provided questions to reflect on performed actions, but it was the participants who were proposing actions and reacting to them. Such reactions took place both in scene, testing multiple artistic creations, and later through the audience’s scrutiny and discussion about these developments. In this way, such rehearsals can serve to test the social relevance, acceptance and desirability of emerging proposals, which is crucial for knowledge validity within action-oriented sustainability research.

2.2 Sustainability Learning: main contributions and conclusions within contexts of implementation

The two empirical case studies provided further insights into specific contexts of social learning. First, within the area of Community-Based Natural Resource Management (CBNRM) and second, within futures thinking in educational processes in UNESCO Man and Biosphere Reserves (MAB’s). Such insights relate to the potential of bringing the aesthetical features of theatre into learning processes in which high doses of participation, social engagement and imagination are needed. Generally speaking, both

cases provided experiences of learning through the aesthetic and of aesthetic learning itself. This meant, on the one hand, the framing and reframing of different topics and participants' engagement in different insightful dialogues through the aesthetical medium of theatre, and on the other, the facilitation of intuitive, relational and emotional learning experiences through embodied practice. In this way, the thesis expects to contribute to innovations in participatory methodological developments within the specific contexts of implementation.

Most specifically, the thesis has explored participatory theatre as an innovative method for supporting natural resource management and conservation (Chapter 3). By connecting Cherán's experience with sustainability learning dimensions and the broader needs of participatory methods within CBNRM, I hope I could contribute to provide new insights into the possible role of Arts-based participatory methods within CBNRM approaches aimed at fostering community engagement and social learning. In this regard, Cherán's experience highlighted the potential of participatory theatre, under the form of Conservation Theatre, to generate interactive, non-conventional platforms for community dialogue and participation.

Such an approach emphasises the importance within CBNRM of processes and spaces where people can actually meet, share and build together relationships of trust and commitment so as to facilitate later joint action - processes that are sometimes overlooked by implementation agendas exclusively focused on material outcomes. Furthermore, theatre's creative and imaginative nature also draws attention to providing open, explorative spaces where people can create their own scenarios and developments without constraints; and, by so doing, expand the realms of possibility in the present. A proper balance between different kinds of approaches (descriptive and imaginative, action-focused and relationships-focused) is needed to develop participatory methods capable of addressing the complexity of CBNRM with the greater potential. In this regard, the experience also showed the need for a better integration of theatrical experiences within broader community and institutional processes if such experiences are expected to really integrate new knowledge actors (like the youth) and contribute to institutional transformations in the long run. This is still a challenge and more performative experiences should be tested in order to explore further potentials, limitations and conditions for such methods.

Regarding futures thinking within educational processes, this thesis has explored opportunities for methodological innovations within sustainability education at the intersections between futures thinking and applied theatre (Chapter 4). By bridging concepts from both domains at La Sepultura workshops, I have identified different methodological features relevant to the design of performative future exercises and assessed to which extent these novel methodological designs can contribute effectively to sustainability learning and education in contexts such as the MAB reserves. By doing so, I hope I have provided a series of lessons and practical insights which could be integrated into future methodological innovations if applied theatre is used in other MAB reserves or sustainability education contexts.

A central contribution of the theatrical approach to participatory futures thinking tools is the shift beyond passive forecasting to active visioning practices and the encouragement of a positive ownership of the future, through theatre's *rehearsals for action*. Through this shift, theatre features can provide a significant added value to those educational initiatives approaching futures thinking by allowing participants to experience system's complexity and providing a rehearsal arena activating individual and collective skills and motivations for action. On the other hand, the experience also showed potential areas for further work and improvement. These are mainly related to the need to further explore the methodological designs of Forum Theatre allowing a further embodiment of systems' complexity and a deeper integration of multiple action levels and stakeholders into *rehearsals of action*. Moreover, integrating MAB's research and monitoring data as inputs in the creative process and sharing the theatrical forum with other stakeholders could further expand the impact of the experience. In this regard, there is a pending opportunity for the integration of young people into mutual learning processes going on in MAB Reserves, and applied theatre could contribute to this integration by communicating young people's views and visions to other stakeholders in the MAB's in an active and engaging way.

2.3 Tensions and limitations of the research

Different choices were made during the research process, which allowed some kinds of developments while constraining others. At the same time, the empirical experiences reflected different tensions between action-research, academic requirements and Arts-based practices. This section briefly describes the main tensions and shortcomings associated to the research challenge and the implementation process.

A first tension lays in the action component of the action-research approach: academic requirements and institutional settings and times do not always match the needs and pace of participatory processes and community work. First of all, and quite obviously, real-life dynamics are normally much more complex and unpredictable than what we originally plan in a research design. In this regard, fieldwork idiosyncrasy implied readapting original designs and timings many times in order to adjust the theatrical workshops to changing contexts and conditions. While this is part of the open methodological approach and these adjustments made the workshops possible and adapted them to the participants' needs, the 'research' side sometimes suffered. That was the case, for instance, of the workshops in La Sepultura MAB Reserve, in which the original target group was significantly increased (from 12 to 25 participants) so as to facilitate participants' attendance, but, in turn, hindered getting deep feedback from everyone during the debriefings. These kinds of trade-offs were common during the workshops and although I tried to balance both dimensions, in the end, implementation processes were more or less adapted to contextual conjunctures and needs.

Similarly, participants' interests in taking part in the workshop did not always translate into a willingness to take part in the 'research part' of the process. This

sometimes limited participants' feedback, especially once the workshop was over. For instance, in the case of Cherán, the feedback questionnaire four months later could not be implemented due to a lack of support from the high school, which hindered access to the teenagers. Obviously, this is not a unilateral responsibility. Rather, it is related to different expectations about the participatory process, emphasising the need to articulate commonly agreed agendas among all stakeholders involved.

Furthermore, the need to implement the workshop, analyse its data and produce publishable materials in a certain period of time (particularly stressed by three-year PhD programmes), necessarily conditioned the kinds of processes I could get involved in and also the kinds of analysis I could make (short term vs. long term, for instance). Beyond academic time scales, this was also related to the trade-offs of being a white, foreign, female researcher entering a different community. While intercultural exchange provided me with a unique learning experience, it also required time to establish contact and a minimum immersion, and the acknowledgement that I would not be able to capture everything around me.

There is a second tension between research requirements and the aesthetical quality of experience. An excessive research presence can run the risk of distorting such an experience, both by hindering group intimacy and comfort and by excessively rationalising what initially happens through the aesthetic, through the embodied experience of performing. To minimise this risk, in those situations in which I perceived that my inquiry could be seen as invasive or overwhelming, I opted to respect and prioritise the process. For instance, in the première of Cherán's play, at the community's New Year's festivity, written feedback was not finally asked from the audience as people were clearly in a festive ambience and a questionnaire after the play might have been seen as forced and against the mood of the event.

A third tension stemmed from the thesis' methodological focus. The interest in methodological aspects of the approach limited looking deeply into the objects of exploration approached through performance. Although in the case of Cherán this was approached in the research report for the CBC (Chapter 3), it was not included in the thesis. Despite being a conscious research choice due to specific research focus and needs, the theatrical experience offered a wealth of information and insights into participants and their communities, which could be further explored. For instance, in the case of La Sepultura MAB Reserve, if the community were interested, further analysis could be done on the different discourses identified from participants' improvisations and written reflections, and on the proposals of action generated. Performance theory could bring much insight into this kind of explorations, by looking at the multiple elements present in embodied action.

Finally, a fourth tension emerges between the ephemeral and experiential nature of performance and the need to communicate and disseminate such experiences within academic contexts. Translating theatrical embodied experience into written explanations will always lose something in the process. Although a big effort was made through the

evaluation of the case studies and afterwards in the writing under an academic journal format, I acknowledge the inherent limitations of processing the theatrical experience through evaluation tools and translating it into (unilaterally) written text. In any case, pretending to accurately translate into an article what participants or audiences lived through the process or what it may imply at a personal or collective level, would certainly have been underestimating the nature of the aesthetic experience. This should not, however, discourage the necessary communication and sharing within academic contexts of these kinds of experiences. Rather, and as O'Shea (2012) points out, it implies that instead of thinking of written reports as accurate accounts of the embodied experience, we should see them as reformulations from the original experience, from which we can learn something about the experience, but also about the act of translating itself. In this regard, other means of sharing the theatrical experience, like video and theatrical play transcripts could be further explored. In a modest attempt to further share my fieldwork experience, this thesis has a CD attached with audio-visual materials related to the theatrical experiences.

3 Outlook for future research and action

Further research and practice are required in order to better understand and develop the potential of using performative methods as tools for participation and knowledge integration for sustainability learning and science.

As mentioned above, both sustainability science and Arts-based approaches (ABR) question conventional understandings of knowledge and research validity. The action-focused approach of sustainability science and the emphasis of ABR in aesthetic experience, imply reconsidering what makes a research valid and how we can measure its quality. Within the field of ABR approaches, notions of trustworthiness, credibility or authenticity (Leavy 2009, Barone and Eisner 2012) are emerging to address research validity, as these practices respond to a changing focus towards generating meaningful experiences addressing participants' expectations and aesthetic features, and ultimately, provoking personal and social transformations. These understandings may help re-approach the notion of knowledge and research validity in sustainability science and further research in this direction seems crucial. At this point, different research questions emerge, worthy of further exploration:

What makes knowledge relevant and valid in the context of sustainability transformations expecting to include as well aesthetical and emotional dimensions?

What kinds of new assessment criteria and notions could we incorporate to reflect these new approaches to knowledge validity?

And most specifically concerning the assessment of performative experiences:

How can we assess the quality and effectiveness of applied theatre in sustainability learning and transformation taking into account the multiple aesthetic and emotional dimensions which go beyond the ordinary scientific analysis and methods?

Such an approach will probably require changing assessment criteria and approaches to include more nuanced and subjective aspects of the research and action process (e.g., its generative and evocative capacity, the personal and collective significance, how it helps highlight issues) and also the relational and interpersonal dimensions (e.g. changes in relationships). Generally speaking, the difficulty to articulate the intrinsic values of the arts often places too much attention on the evaluation of its instrumental impacts, with the risk of underestimating their aesthetic, communicative and cognitive development roles (Badham 2010). The assessment of performative methods requires, thus, acknowledgement of such tensions (e.g. instrumental vs. aesthetical outcomes). This means finding a place from which the intrinsic values of the artistic experience can be recognised in addition to their educational, social or political impacts. Needless to say, this is a big challenge with important epistemological implications, but also a promising area of research which can allow us to better understand and apply performative methods in its best potential⁴⁹.

On the other hand, as reflected through the thesis, the success of these approaches in fostering the integration of new knowledge actors and providing an improved understanding of social–ecological systems’ dynamics and of alternative systems’ development pathways is much dependent on the degree to which these interventions can be linked to meaningful transformations in specific contexts of action. This opens lines of action related to the integration of participatory theatre experiences with research, political and learning processes occurring at community and broader levels. Further work is required for the joint processes through which the design, outcomes and discussions from the workshops and plays can be further incorporated into community governance and learning structures. In this regard:

How can we involve and better integrate the different stakeholders and dimensions of community action into the performative process?

What kinds of alliances with communities and community actors are required to ensure long-term projects?

What kinds of practical constraints and methodological limitations do we need to work on in order to facilitate such integration and alliances?

In this regard, there is a big potential for theatrical development feeding from different areas of action and research and further involving multiple stakeholders from the design stage through to the analysis and communication stages. This also applies to

⁴⁹ I will have now the chance to further elaborate on and test an assessment framework through PERFORM!, a three-year European research project that will look at the ways in which integrating performing arts into science education processes can help generate richer learning and participatory experiences.

the integration of young people into community processes and their recognition as legitimate stakeholders in community transformations. For instance,

How can we integrate learning and educative programmes focused on the youth in broader community learning processes?

What would happen if the young participants were also involved in the analysis and communication stages of the process?

How would that influence the impact of the process both on participants and within the community?

In this respect, future lines of action would also benefit from further exploration of participatory theatre designs approaching the complexity of sustainability problems, characterised by multiple interactions among multiple actors and social-ecological dynamics at multiple levels. This is particularly relevant in those theatrical approaches implying rehearsals for action (like Forum Theatre), in which there is the risk of introducing situations which actually require more actors and actions than the ones present or able to do in scene so as to explore solutions. Carefully handling this dimension is key in order to manage expectations, avoid frustration and prevent overwhelming feelings while inviting people on scene to rehearse possible transformations. Although the goal is not to find *the* solution through one scene, performed scenes should contain enough relevant elements and characters so as to allow actors to find actions that can help them advance in the *search for solutions*. And very importantly, so as to enhance their performative self-awareness and allow them to freely explore and play different roles in different open futures. Information and communication technologies (ICT, e.g. virtual recreations of different atmospheres, virtual interactions, social media) could have a promising role in this integration of complexity which would be worth exploring.

Moreover, such designs will surely require a strong alliance between applied theatre practitioners and sustainability researchers, so as to create joint ventures integrating insights, perspectives and expertise from multiple disciplines. This is related to a final and strategic line of future action: the creation of long-term interactions and alliances between academia and artists, and between science and the Arts, to favour these new kinds of action research experiences. This collaboration should also be present in the translation of Arts-based experiences into academic formats and its communication in academic forums and beyond. There is a promising area of work in this regard, which implies exploring ways of integrating different communicative mediums beyond the written text. Again ICT has an important role to play.

Multiple Arts-science integrative experiences are currently taking place worldwide through which we can start grasping, understanding and assessing the role of Arts-based methods as transdisciplinary and transformative practices within sustainability. Just as the wolf cannot be understood without the myth, the admiration and the fear it has evoked for humans since early times... sustainability cannot be approached in all its complexity unless we find ways of integrating multiple sensibilities, wisdoms and

layers of understanding that help us build meaning and sense around it. This dissertation has intended to shed light on how theatrical performance can contribute to these new insightful ways of understanding science and research, and by doing so, to humbly contribute to changing research preconceptions, landscapes and practices in the transdisciplinary field of sustainability science and praxis. The path might be long and steep, but also beautiful and exciting: we are ready to take on the challenge!

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Chapter 6

Appendixes



Writing down notes and thoughts after
a day of workshop in Cherán

APPENDIX 1. ON PARTICIPATORY THEATRE

Through this thesis, I have designed and explored performative methods by developing theatrical workshops which combine different techniques of participatory theatre adapted to specific action contexts and implementation objectives. In this section, I will go deeper into the notion of participatory and applied theatre, its trajectory and the theatre forms that I have applied through the thesis, so as to provide the reader with a broader picture of the theatrical methodologies nurturing my workshops.

Participation and transformation: locating applied theatre practices

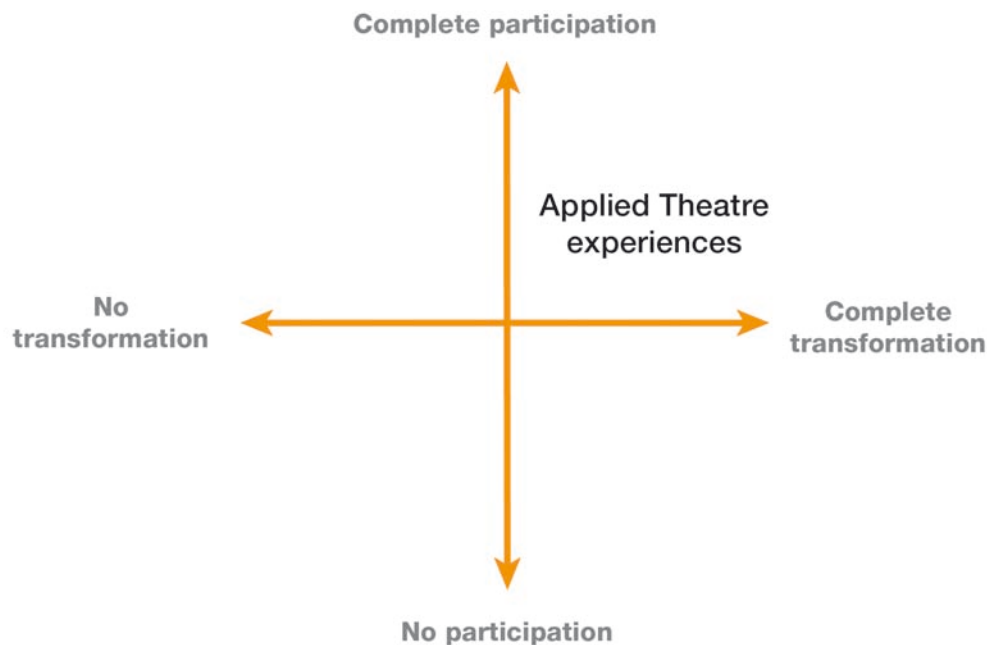
Participatory theatre is a form of applied theatre that engages people in identifying and critically analyzing issues of their concern and thinking together how to bring about change (Sloman 2011). Applied theatre and drama⁵⁰ is an umbrella term used to refer to a wide range of dramatic activities ‘that primarily exist outside conventional mainstream theatre institutions, and which are specifically intended to benefit individuals, communities and societies’ (Nicholson 2005, p.2). It refers therefore to a collaborative and participatory art form, mostly under different forms of community-based and educational theatre (see below), using dramatic techniques and theatrical performance with explicit social, political and educative goals. However, applied drama and theatre include highly interdisciplinary and hybrid practices, each of which has its own theories and debates and draws on different branches of philosophy and the social sciences (ibid). What all these different theatre forms have in common is an explicit intention, i.e. to bring about change, and the active involvement of the audience (Ackroyd 2000). By crossing two continua - audience participation and transformational capacity, Ackroyd (ibid) proposes the following grid to locate applied theatre experiences and help identify some of its distinguishing features (see Figure A1). Participation - either as a participant of a theatrical performance, as an active audience member or as a reflexive participant in a drama workshop, is a distinctive feature of applied theatre. Moreover, there is always an explicit aim to bring about some kind of change or movement, related to the context of the play and its participants.

Although the term applied theatre is relatively new (late 90’s-beginning 2000’s), the practices it refers to have a long tradition. A branch of applied theatre finds its origins in political and radical theatre practices associated with cultural activism in the twentieth century (Nicholson 2005). The Workers’ Theatre Movements in the 1920’s, and the use of performance in civil rights and ecologist movements in the 1960-70’s provide examples of the use of theatre as a platform for denounce and public debate and for the

⁵⁰ The terms ‘drama’ and ‘theatre’ are used in this text interchangeably. However, some authors and practitioners use the term ‘drama’ to refer to process-based activities and ‘theatre’ when the focus is on performance (performance-based processes). Another distinction can be found between British literature, which uses more the term ‘drama’, and North-American literature, in which ‘theatre’ is more commonly used.

performance of protest (Conquergood 2002, Nicholson 2005, Schechner 2013). From the 1960's–70 onwards, participatory theatre has also been widely used in fields such as therapy, community development and education (Kuppers 2000, Mbizvo 2006, Harris 2007, Sloman 2011, Schonmann 2011). The term applied theatre and drama represents, thus, an attempt to recognize these practices and establish a scholarly field where they might be theorized and where vocabularies taken for granted in theatrical practice (e.g. empowerment, transformation) might be reassessed and contextualized (Nicholson 2011).

Figure A1: Applied Theatre's grid, proposed by Ackroyd (2000)



Most applied theatre experiences can be located in the top right hand quadrant. As Ackroyd acknowledges, we should not expect to locate any theatre forms at the extreme ends of either of the continua. On one hand, because it is hard to bring about a complete transformation through a play, or to foster complete audience participation. On the other hand, because theatre is always participatory to a degree, as it involves the audience in the active process of decoding, responding and constructing meaning from the different stimuli provided (Jackson 2011) and this entails some element of transformation, even if minimal (Ackroyd 2000).

Due to the scope of my thesis, I have been particularly interested in those participatory, applied theatre forms related to community theatre, in which community members actually create their own theatrical pieces to engage broader community audiences in such dialogues (Van Erven 2001, Boal 2009). While immersed in learning and educative contexts, my theatrical approach also resonates with educational drama, in which dramatic techniques are used to open participatory learning processes (Bolton 1984, Schonmann 2011).

Community theatre and Boal's Theatre of the Oppressed

Community theatre is a form of theatre practiced worldwide based on 'local and personal stories that are first processed through improvisation and then collectively shaped into theatre under the guidance either of outside professional artists and facilitators (...) or local amateur artists' (Van Erven 2001, p. 2). Although it includes a wide range of performance styles and approaches, 'its material and aesthetic forms always emerge directly from 'the' community, whose interests it tries to express' (ibid, p.3). Hence, there is not a single artistic author but rather a participative and collective creation process through which participants reflect and build upon something that affects all of them (Kuppers 2007). Community theatre moves away, therefore, from other conventional approaches in which theatre is used as a one-way communication tool to convey a message, towards an approach in which theatre provides a participatory forum for community members to share ideas, express their feelings and views, pose critical questions, reframe problems in their own terms and explore new ways of living and affecting change together (Slachmijlder 2006, Sloman 2011). As such, community theatre is process-based: its finality is not to create an artistic product but to create an open process facilitating creative expressions and new ways of understanding and empowering people. Just as the concept of community is dynamic and depends to a large extent on borders of inclusion and exclusion that can change (most of them perceptual, e.g. shared values, interests, beliefs), community performance provides a medium through which perceptual borders of difference can be renegotiated and redrawn (Kuppers 2007). At its best, collective creation requires a movement towards mutually agreed goals and a constant negotiation of meanings and form. As such, 'the performance process reinforces commonalities, illuminates differences and alters boundaries of identity' (Kuftinec 1997, in Kuppers 2007 p. 36). Purposes of community theatre are, thus, related to self-emancipation, community engagement, empowerment and social change (Boal 1992, Van Erven 2001, Kuppers 2007, Sloman 2011).

The most immediate antecedents of community theatre appear in different forms of counter-cultural, post-colonial, educational, and liberational theatres of the 1960s and 1970s (Van Erven 2011, p.1). One of them is the *theatre of the oppressed*, one of the most influential and widespread forms of community theatre nowadays. In my thesis, due to my theatrical training and the scope of the research, I have applied and adapted several techniques of this theatrical form.

Box A1: Three different experiences of community theatre**1. Theatre Of Witness**

Theater of Witness is a form of testimonial performance developed by founder and artistic director Teya Sepinuck since 1986 in which true life stories are performed by the storytellers themselves as a way for audiences to bear witness to significant social issues. Theatre of Witness' productions are developed in the USA, Poland and Northern Ireland and performers include refugees and immigrants, survivors and perpetrators of violence, prisoners and their families, elders and victims of war and conflict, among others. The theater productions are scripted from individual and group interviews as well as a variety of creative process techniques and consist of scripted text, music, movement, imagery and film projection. The productions are created with the performers who themselves have directly experienced the issues being explored. Theater of Witness invites audiences to put a face and heart to societal issues of suffering and to celebrate the power of the human spirit to grow and transform. Theater of Witness is a form of peace building and inspiration.

Theatre of Witness 2015

2. Legislative Theatre in Afghanistan

The Legislative Theatre initiative was born in Afghanistan in 2010, led by the Afghanistan Human Rights and Democracy Organization (AHRDO) - an independent, non-profit organization working to promote participatory democracy and human rights in the region. AHRDO uses theatre-based programs to create spaces for dialogue, peace-building, social justice and public participation. Through the Legislative Theatre Initiative women from different parts of the country use different interactive theatre techniques to elaborate suggestions for legislation on women's rights. Women act out events in their lives to theatrically illustrate different issues and problems they face and audiences are invited to jump on scene and perform proposals of action. These are written down and common themes are collectively examined. The ideas gathered through this project were taken to a lawyer, who collated them into a legal report with 24 recommendations for new legislation concerning women's rights. These were presented to the Afghan parliament and the document is currently being used by the Women's Commission to transform women's rights legislation.

AHRDO 2012, James 2014

3. Janakaraliya: Theatre of the People

Janakaraliya is a mobile cultural organization in Sri Lanka that uses a collapsible theatre and travels through districts with its multi-ethnic theatre group. The project travels from district to district organizing drama and theatre training for youth, providing cultural and spiritual experiences and also giving the people an opportunity to participate in cultural activities and theatre workshops. It provides the area with a cultural hub during its stay, using both traditional performance and applied theatre to engage in human development and education initiatives with underprivileged rural communities. The established identity of Janakaraliya is taking the theatre or the arena to the audience without waiting for the audience to approach the theatre. By bringing together Sinhala, Tamil and Muslim youth, Janakaraliya expects to expand the message of peaceful coexistence among multi-racial and multi-ethnic societies of Sri Lanka.

Janakaraliya 2011

The *theatre of the oppressed* (TO) was created in the 1970s by Brazilian dramaturge and activist Augusto Boal, feeding from the popular theatre movements in Latin America and the pedagogical ideas of Brazilian Marxist educator Paulo Freire. Freire proposed a critical pedagogy based on the centrality of the learner as an active participant in the appropriation of knowledge in relation to lived experience (Morrow and Torres 2002). This approach was opposed to what he considered as ‘banking education’, i.e. a unidirectional educative approach, based on the mechanical accumulation of knowledge (Freire 2005). Conversely, Freire’s work extended the idea that pedagogy could act as resistance to political oppression (Nicholson 2005, p.42). Freire argued for active pedagogical models, in which learners were encouraged to bring in their own experiences and local knowledge as a starting point for learning, critically reflecting about them and sharing them with others through dialogue. This process of active and critical engagement with experience is referred to as ‘*conscientização*’ (critical consciousness) and is essential to produce social change (Freire 2005). Reflection and action, word and practice, are therefore related through praxis, or the coherence between action and thought (Baraúna and Motos 2009). In this regard, praxis ‘as the reflection and action which truly transform reality, is the source of knowledge and creation’ (Freire 2005, p. 101).

Freire’s critical pedagogy permeated community theatre rationales initially through Boal’s arsenal of *theatre of the oppressed* (TO). Boal proposes that theatre or theatricality is the human property that allows a subject to look at herself in action. And this ‘seeing ourselves in action’ allows us to understand what we are, realise what we are not and imagine what we can be (Boal 1992). Theatre’s aesthetical space provides not only such a mirror allowing us to see ourselves in action, but also an imaginary space to transform that mirror, to create new and different developments. As such, theatre is both a form of knowledge and a trigger for social and political action (ibid). Under such perspective, TO includes a diversity of games, exercises and theatrical techniques aimed at providing experiences and tools to activate and enrich people’s expressive, communicative and critical thinking resources so as to actively explore and engage in social change. This kind of theatre is conceived as an instrument not only to understand the past or present, but also to look at the future and transform reality, by allowing participants to transgress conventional theatrical rituals and penetrate the scene, the theatrical image in order to transform it. In the words of Boal (1979):

‘In order to understand (the) poetics of the oppressed one must keep in mind its main objective: to change the people –‘spectators’, passive beings in the theatrical phenomenon– into subjects, into actors, transformers of the dramatic action. (...) the poetics of the oppressed focuses on the action itself: the spectator delegates no power to the character (or actor) either to act or to think in his place; on the contrary, he himself assumes the protagonic role, changes the dramatic action, tries out solutions, discusses plans for change -in short, trains himself for real action. In this case, perhaps the theater is not revolutionary in itself, but it is surely a rehearsal for the revolution!’

(p. 122).

The main theatrical techniques used by Boal (1992) include the use of body sculptures to create images (Image Theatre), the creation of popular and aesthetical forums of discussion (Forum Theatre), the development of incognito theatre pieces (Invisible Theatre) and the inclusion of forum techniques in political development processes (Legislative Theatre). Box A2 describes the main techniques from Boal applied in my theatrical workshops.

Box A2: Techniques from Boal adapted and integrated in my theatrical workshops.

1. Games & exercises

Physical exercises and aesthetic games aimed at activating participants' senses, generating body and self-awareness and reflecting on our body's expressiveness both as a sender and receiver of messages. Furthermore, theatrical games can provide experiences of abstract concepts and help unveil power dynamics and other relationships within the group, enhancing group awareness.

Among the different games we can find a series focused on the activation of the different senses (touching, hearing, sight), on group integration, on the invention of spaces and spatial relationships, and games involving the creation of characters.

2. Image theatre

The creation of body sculptures to compose theatrical images which can be later 'activated', adding movement and sound. Image Theatre allows for a progressive appropriation of dramatic language and provides a symbolic language to express tensions and a way of exploring mental representations about the topics approached. Through the 'polysemia of the image' it allows us to explore multiple perspectives and sights. Image Theatre works with collective images that connect individuals with social visions.

3. Forum theatre

The creation of a theatrical play based on participants' experiences in which spectators can enter a scene and change the course of events, in search of alternative developments.

Through a Forum Theatre piece participants can:

- Identify a conflictive situation, its actors, relationships and interests;
- Analyse the situation and recognise different possibilities of action;
- Activate themselves and experiment with such possibilities by performing them in the scene; and
- Collectively reflect on and discuss the outcomes of the rehearsed action.

Applied theatre as a pedagogical approach

Both Freire's educative approach and Boal's theatrical developments share a pedagogical ground that identifies the learning experience as a political act, and relates education to 'the act of reading and interpreting the world, so as to transform it' (Baraúna and Motos 2009, p.95). Under this perspective, education is basically a dialogic act (between the person and the world, between the person and other people) and knowing requires expression and communication (ibid). The shift of 'one-way' or banking models of education to participatory and experiential ones has been parallel to aesthetic theories that emphasize the potential contributions of dramatic participation to develop participants' interest, ownership and engagement in their learning processes (Jackson 2011).

Box A3 provides some examples of experiences of applying theatre and drama in education. Among the different approaches found in this field, there is a strand of applied theatre commonly referred to as drama in education (Bolton 1984), educational drama (Bolton and Heathcote 1996) and process drama (O'Toole 1992). Under these approaches, drama is applied to explore students' ideas and feelings and to look at different perspectives through improvisations and theatrical games, rather than creating a final play (McNaughton 2006). In this way, participants of the educational drama play both 'in-role', as they actively perform and readapt different perceptions, and 'out-role', as they reflect on their improvisations (ibid). As a pedagogical approach, applied theatre is participatory, dialectic and dialogic. In other words, theatrical activities require the implication from each participant to engage in action and reflect on it, are contextualized to each group and socio-cultural situation and they develop through critical reflection between participants and dialogue. Therefore, knowledge in applied theatre is embodied, culturally located and produced through interaction with others (Nicholson 2005). Intersubjectivity, i.e. the creation of shared meanings by people through their interactions (Seale 2012) and dialogue play, thus, an important role in shaping learning experiences within applied theatre and drama. In this regard the scope of the learning process will be much dependent on the theatre's ability to embody multiple 'voices, ideas and cultural forces', challenging participants and audiences' preconceptions and requiring active engagement and reflection (Jackson 2005).

Box A3: Two experiences of educational drama

1. Dorothy Headcote's 'Mantel of the Expert'

The Mantel of the Expert (MoE) was created by British drama educator Dorothy Headcote in the 80's as an imaginative-inquiry approach to learning and teaching. Under MoE's approach students are asked to behave 'as if they are experts' on a given subject (may it be scientists in a laboratory, workers in a factory or librarians, for instance). Both teachers and students engage in an imaginary enterprise, taking roles as experts and working together to carry out a specific job or commission. In this way, the children are working from a specific point of view as they use their imagination, encounter tensions, explore their learning and embody different characters, bringing special responsibilities, language needs and social behaviors. Broadly speaking, MoE draws on three teaching modalities: inquiry learning; drama for learning, and 'expert framing'. This reframing asks students to frame or think about their learning in a new way.

Excerpts from Mantel of the Expert 2015, Aitken 2013

2. Educational Drama in Education for Sustainability

McNaughton proposes a series of drama lessons addressed to primary school students as a way to help young people develop awareness and knowledge, acquire action skills for the environment and encourage positive attitudes and personal lifestyle decisions. Two sets of drama lessons were implemented through a period of 12 weeks, based on sustainability and citizenship themes, at the local and global scale. The first set of lessons looked at illegal dumping of rubbish and waste and their impacts on a small community (local perspective). Students in role were asked to play as the residents living in the dumping site and in this way, the lessons looked at, and acted out, the problem from different perspectives. The second set of lessons looked at the destruction of the rainforests and its effects both on the environment and on communities who live in and depend on the forests (global perspective). The drama viewed the issue from the perspective of a group of villagers (children in role) whose homes were threatened by deforestation. In both cases, the lessons explored the feelings and responses of people affected by different unsustainability problems. After each drama lesson the children completed classroom-based activities to further reflect about the topics explored (e.g. group research into alternatives to dumping and deforestation, writing speech bubbles giving different perspectives on the situations explored or individual and group poems).

Excerpts from McNaughton 2004

Challenges in applied theatre experiences

There is a wide acknowledgement of the theatre's potential to influence people, raise awareness and effect change. The different attempts throughout history to censor and control theatrical production also exemplify this recognition (Ackroyd 2000). However, this potential is also subjected to different challenges and limitations.

As a collective and artistic process, applied theatre is quite unpredictable: each group has to make its journey. There are no given recipes and theatrical experiences cannot simply be duplicated: they are much dependent on the participants' backgrounds, interests and engagement, on the facilitators' skills, contextual factors, etc. It is an open process. For this reason, and as Van Erven suggests (2001, p.244), flexibility and adaptation to unforeseen events, cross-cultural sensitivity, and the skill to generate original performances are valuable assets in community theatre artists and facilitators.

Furthermore, applied theatre is a tool for participation and as such its potential (and impacts) will depend on how this tool fits its purpose within a given context. In other words: how does it help us to achieve our goals? There will be contexts of action in which the theatrical approach can provide much added value and others in which theatrical requirements and demands may not be worthwhile related to their contribution. As Eisner highlighted (2002), the means of approaching and representing reality that we choose determine what we can or we can't see. Theatre provides an aesthetical medium and a language through which we are able to grasp certain understandings and aspects of human experience and miss others.

Also, applied theatre is not detached from certain values or ideologies. On the contrary, participatory theatre is applied with a certain purpose and agenda. This agenda should be also shared, scrutinized and negotiated among all participants if we want to avoid manipulation and using theatre as a soft means to legitimize concrete perspectives or messages or to validate a given status-quo or authority. In the words of Ackroyd (2000):

'It is not enough to look at whether or not the theatre piece achieves its ends. We also need to ask whether or not those ends should be achieved. Whose needs are served by a drama applied to calming inmates or young people in care? The inmates and young people? The authorities? Both? (...) To decide whether or not the ends being sought are appropriate is clearly highly contentious. In our struggle to reach conclusion, I suggest a question may help us: are the ends in question publically debated and defended? (...)

We need to ensure that our practice comprises more than simulation exercises and role play, that it is truly reflective, and that we debate the purposes of what we are doing. Applied theatre is a mighty form and like fire can work for us or against us'.

(p.6.)

In this regard, the question of participation and the kinds of participation that applied theatre facilitates is a crucial one. Just as Schechner (1994) reminds us, ‘without the potential for change, participation (in performance) is just one more ornamental, illusionistic device’ (p.77). Given this, there is still a need for more critical scrutiny of participation in applied theatre practices and of how this participation may lead to the expected empowerment, engagement and critical learning. Otherwise, and just like with many other participatory methods, the risk is there for participation to become ‘the new tyranny’ of theatrical programs (Cook and Kothari 2001, in Jackson 2011).

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APPENDIX 2. THEATRICAL EXPERIENCES WITHIN THE ACADEMIA

Table A1. Detailed account of theatrical experiences reviewed within the academia: experience description, promoters and receivers, evaluation type and impacts.

Field	What and what for?	For whom?	How?	Evaluation type	Outcomes
Psychotherapy and Psychology	<p>Playback theatre performed to promote recovery in the field of mental health to the participants</p> <p><i>The arts in Psychotherapy</i> (Moran, 2011)</p>	<p>Individuals with psychiatric disabilities (schizophrenia, bipolar disorder, PTSD, major depression...)</p> <p>n=19, USA</p>	<p>10 week playback course with 2 different groups (n=9; n=10) in an university-based programme</p>	<ul style="list-style-type: none"> • Pre–post self- report measures for self-esteem, personal growth and recovery • Post self-report measure (the playback impact scale) 	<p>Playback theatre potentials as an effective practice for enhancing recovery processes from serious mental illness</p>
	<p>Dance performance to experience movement as a way of expression (movement therapy) and to provide alternative visions of mental illness for society</p> <p><i>Theatre Topics</i> (Kuppers, 2000)</p>	<p>Individuals with moderate to severe mental illnesses (Schizophrenia, voice hearing, depression...)</p> <p>United Kingdom</p>	<p>Video installation (Traces)</p> <p>2 years process</p> <p>12 shows during 6 months</p>	<ul style="list-style-type: none"> • Participant observation 	<ul style="list-style-type: none"> • Re-appropriation of personal and physical space. • ‘Body-ownership’ • Creating new images of people with mental health problems
	<p>Theatrical performance as a form of therapy</p> <p><i>The Arts in Psychotherapy</i> (Snow, 2003)</p>	<p>Individuals with developmental disabilities (deficits in communication, cognition and social skills)</p> <p>n= 20, Canada</p>	<p>3 month process</p> <p>Period of intense rehearsal and play preparation</p> <p>Performance to the public and post-performance evaluation</p>	<ul style="list-style-type: none"> • Pre-post performance interviews to the participants. • Observations made from running records at different intervals 	<p>Reported therapeutic benefits: increased socialization, enhanced communication and interpersonal skills, improved self-confidence, increased sense of responsibility and maturity, a sense of accomplishment, an expanded, more positive sense of self, enhanced psychological well-being, more empathy towards others</p>

<p>A theatre-related method (TRM) as form of therapy for pain treatment <i>The Arts in Psychotherapy</i> (Bojner- Horwitz et al. 2010)</p>	<p>Patients with fibromyalgia n= 7 Sweden</p>	<p>3 month process for the TRM (12 sessions):</p> <ul style="list-style-type: none"> • Training of the patients in body and voice expression. • Acting drama onstage together with professional actors. Use of video interpretation techniques to help patients interpret their own emotional expressions . 	<ul style="list-style-type: none"> • Professional follow up • Video recordings • Self-rated pain and health scales 	<p>When acting with professional actors:</p> <ul style="list-style-type: none"> • Increase in self-rated health and a decrease in pain • A correlation between strong emotional expression and decreased pain
<p>Play-back theatre to better understand views of aggression and empathy and to measure students' understanding of the criminal justice/court system <i>The Arts in Psychotherapy</i> (Crossman et al., 2011)</p>	<p>Students from an urban middle school: Theatre group n= 24 Video intervention control group n= 23 USA</p>	<p>Group selection and pre-test period Documents to read by students Division in 2 working groups: video and theatre. Post-test period and together session</p>	<p>Pre- and post-intervention testing:</p> <ul style="list-style-type: none"> • Comprehension test of the criminal justice/court system • Aggression questionnaire and an empathy scale 	<ul style="list-style-type: none"> • Significant increase in comprehension levels of the criminal justice/court system • Overall students' perceptions of aggression showed less tolerance • Empathy scores were not significantly affected
<p>Dance/movement therapy to promote psychosocial intervention supporting reconciliation, through creative movement opportunities and other embodied healing activities <i>Intervention</i> (Harris, 2007)</p>	<p>Adolescent orphans who, as boys, had been involved in wartime atrocities n= 12 Sierra Leone</p>	<p>Previous intake process and initial assessment of the teenagers by local counsellors (psychological inventory). 10 DMT sessions, followed by a 12-week break and six additional meetings Public performance in front of the community</p>	<ul style="list-style-type: none"> • Participant observation • Group discussion • Self-reported ratings Psychological inventories pre-during-post session 	<ul style="list-style-type: none"> • Fostering empathy and reciprocal sharing • Overcoming violent impulses and rediscovering the pleasure of collective endeavour • Reconciliation within the local community

Medicine (Including Public health research and policy)	<p>Use of research-based theatre to disseminate the results of qualitative studies on metastatic breast cancer <i>Health Expectations</i> (Gray et al., 2000)</p>	<p>Practicing health professionals General public (n = 507) USA</p>	<p>Production created and acted by ensemble casts (amateur actors, researchers and cancer survivors) Creation based on research data and collective exploration of metastatic breast cancer, with the collaboration of a professional playwright Several months tour across North America</p>	<p>Open and closed-ended post-performance questionnaires</p>	<ul style="list-style-type: none"> • Dramatic presentations of research results have tremendous power to trigger individual insights and positive change • The inclusion of multiple voices and perspectives allows for more points of recognition for audience members • Research foundation is important for ensuring a sense of relevance
	<p>Theatre play to educate citizens to scientific, clinical, and psychosocial issues of adult predictive genetic testing and as public engagement tool for health-policy development <i>Health Policy</i> (Nisker, 2006)</p>	<p>General public Clinicians Key informants Jewish community n= 1000 Canada</p>	<p>70 minutes theatre play, performed by a professional actor (Sara's daughters) For an average audience of 50 people. 12 shows during 6 months</p>	<p>1-h audience discussion taped and transcribed for qualitative analysis Audience members' comments forwarded to author after the discussion</p>	<p>Useful tool for:</p> <ul style="list-style-type: none"> • Public engagement • Eliciting health-policy opinions • Eliciting public participation in policy development
	<p>Theatre for dissemination of health information and reinforcement of positive health messages regarding HIV <i>Medicine and Creativity</i> (Mbizvo, 2006)</p>	<p>Women at risk Cameroon Namibia</p>	<p>Theatre performance to the community followed by question and answer sessions</p>	<p>Discussion forum Red Cross follow-up</p>	<ul style="list-style-type: none"> • Greater confidence and self esteem • Information on services, practices and skills • Empowerment through involvement as peer educators and in income-generation projects

<p>Applied drama to bring to life elements of community research about the needs of individuals with dementia and their families <i>Practice Development in Health Care</i> (McKay and Bright, 2005)</p>	<p>Practicing health care practitioners from primary and community care settings United Kingdom n = 38</p>	<p>Creation of a performance by an acting troupe, using prior research from the research team Presentation to stakeholders within the health care community</p>	<p>Postproduction open-ended questionnaires: • Immediately after the show • 4 months later</p>	<p>Changes in practice:</p> <ul style="list-style-type: none"> • Greater empathy or understanding • Improved knowledge • Greater awareness of best practices
<p>Ethnodrama (plays based upon ethnographic studies) combined with Forum Theatre to raise community awareness about schizophrenia, and to provide an alternative educational experience within a nursing programme <i>Nurse Education Today</i> (Rolfe et al., 1995)</p>	<p>Year 2 Nursing students Research informants Health care professionals n>200 Australia</p>	<p>Play performed by student actors and student nurses for the audience Opening of stage intervention and forum discussion Opening of stage intervention and forum discussion</p>	<p>Post test:</p> <ul style="list-style-type: none"> • Informal discussion • Student reflection papers 	<ul style="list-style-type: none"> • Better intellectually and emotionally understand mental illness • Impacted values, beliefs and understandings of schizophrenia
<p>Interactive ethnodrama combined with Forum Theatre to educate and aide to grapple with complex bioethical issues faced within a clinical setting <i>Literature and Medicine</i> (Brown and Gillespie, 1997)</p>	<p>Graduate students in occupational therapy (n = multiple classes ranging from 10 to 60 students)</p>	<p>Scripting of “real-life” scenes, based on in-class discussions Performance by the students themselves for one another</p>	<p>Not formally evaluated: feedback gained through in-performance discussions</p>	<p>Students’ identification of methods to combat ethical distress in the workplace</p>

Teaching and Education	<p>A participatory theatre approach to enable youth in rural areas to reduce their risk of HIV infection <i>Evaluation and Program Planning (Mabala, 2002)</i></p>	<ul style="list-style-type: none"> • District officials • Artists • Village and ward leaders • Youths and their communities <p>n= 30.000 Tanzania</p>	<p>≈1 month process Training of young community members by theatre specialists in participatory research and theatre. These youths then researched and encouraged discussion within community and evaluation of factors contributing to HIV transmission. Transformation of discussion results into community and district level performances.</p>	<ul style="list-style-type: none"> • Follow-up meetings and evaluations between district officials and community theatre specialists • Feedback sessions with co-ordinators and artists to record lessons learned • Notes from the ward groups 	<ul style="list-style-type: none"> • Identification of cultural practices that contribute to the spread of HIV/AIDS • Real changes in community practices • Change of young artists' status (from potential delinquents to serious actors)
	<p>Boalian theatre games to play with power and privilege in teacher education and serving as tools for envisioning, negotiating, and rehearsing positive change <i>Teaching and Teacher Education (Souto-Manning, 2011)</i></p>	<p>Teachers in training in 3 pre-service teacher education classes (25-27 teachers per class) n=75 USA</p>	<p>Performance of two theatre games that examined power and privilege (Columbian Hypnosis and Power Shuffle) Classes meetings of 75 minutes, once/twice a week over a period of 15 weeks</p>	<p>Collection of data through participant observation and field notes, student write-ups, journal entries, quantitative surveys (MEIM) and two subscales of the Colour-Blind Racial Attitudes Scale (CoBRAS), and follow up debriefing interviews</p>	<ul style="list-style-type: none"> • The games helped unveil the privileges of White pre-service teachers, deconstructing meritocracy ideas (qualitatively and quantitatively) • Scores in CoBRAS scales went down, suggesting awareness of race issues and less colour-blindness. • Higher scores in MEIM suggest pre-service teachers also became more aware of ethnic identity and more committed to issues of ethnicity

<p>Theatre nutrition education sessions to identify and categorize a nutrition education strategy for the promotion of a healthy diet <i>Journal of nutrition education and behavior</i> (Colby and Haldeman, 2007)</p>	<p>Latino youth in a summer camp n=19 An audience of peers, family, and community members USA</p>	<p>4 weeks period: 90 minutes a day, 5 days a week Discussion groups within children Development of a theatre play through the creation of skits Play rehearsal and performance in front of an audience</p>	<ul style="list-style-type: none"> • Pre-post performance surveys to the group and to a control-group • Individual interviews post-intervention to assess changes 	<p>Effective in increasing knowledge and changing attitudes, beliefs, and behaviours</p>
<p>Use of theatrical performance as assessment procedure in Operational Research courses <i>European Journal of Operational Research</i> (Pierre-Brans and Macharis, 1998)</p>	<p>University students: Commercial Engineers, Computer Scientists and Mathematicians n= 100 Belgium, France, Thailand</p>	<p>Group discussions Performance creation in groups 45 minutes performance played in front of the class and audience (business sector, professors and family)</p>	<ul style="list-style-type: none"> • Students' report • Observation • Questions to participants 	<ul style="list-style-type: none"> • Efficient oral examination method • Technical contribution to the understanding of the course • Social implications (group work, interactive discussions, collective contributions...) • Enhanced motivation in students
<p>Collaborative play-creating project as an integrative method for education for a sustainable future <i>Procedia - Social and Behavioral Sciences</i> (Lehtonen, 2012)</p>	<p>11 and 12 year old primary school students Finland</p>	<p>Four-month project Collaborative play-creating process: improvisation</p> <ul style="list-style-type: none"> • play-creating • performing and reflecting 	<ul style="list-style-type: none"> • Extensive field notes • Video recorded improvisation • Collaborative play-creating lessons • Group reflections • Content analysis 	<ul style="list-style-type: none"> • Information and richer concepts about the future • Group reflections and critical thinking on the topic • More realistic and sustainable future views • Reflections and re-evaluation skills of prejudices and misconceptions • Collaboration and collective processes are not simple and conflict-free

<p>Forum Theatre to enhance students' critical reflection on communication and behaviour in triangular relationships</p> <p><i>Neuropsychiatrie de l'enfance et de l'adolescence</i> (Bonnaud-Antignac et al., 2009)</p>	<p>Students of the 4th and 5th years of medical studies n= 60 France</p>	<p>Meeting and discussion between students and professional actors</p> <p>Theatrical performance in front of the students of three specific situations of doctor–parents–child relationship</p> <p>Students' participation to experiment their interpretation of the clinical situations presented</p> <p>Students' evaluation</p>	<ul style="list-style-type: none"> • Post-performance evaluation: mixt survey • Content analysis 	<ul style="list-style-type: none"> • Efficacy of theatre as interactive pedagogical method in medical studies • New insights and student's experimentation on communication and relations doctor-patient • Students' approach to the relational problem and perception of its difficulties
<p>Educational Theatre Programmes (ETP) to promote knowledge on healthful eating and active living behaviours</p> <p><i>Journal of Nutrition Education and Behavior</i> (Cheadle et al., 2011)</p>	<p>3rd and 4th grade students from 47 schools n= 2915 USA</p>	<p>2 years programme</p> <p>45-minute interactive plays with messages about health issues (performed by professional or high school actors)</p> <p>Post-performance in-class workshop led by actor-educators complementing the themes of the performance</p>	<ul style="list-style-type: none"> • Brief survey pre-post performance to measure children's knowledge of 4 healthful behaviours • Post-delay survey 3 weeks later • Statistical analysis 	<ul style="list-style-type: none"> • Statistically significant increases in knowledge pre/post for individual topics • Knowledge retention over the short term

	<p>Poem-like stories to humanize patients' illness narratives and to capture emotional dimension of patient experiences <i>Medical Education</i> (Rosenbaum et al., 2005)</p>	<p>Undergraduate medical students n= 413 USA</p>	<p>As part of the curriculum in a 6-months programme Researchers' conduction of a series of interviews with patients, focused on their interactions with health care providers, selection of key pieces and arrangement into poem-like stories Transfer of the poems to the students and students' performance for the larger class Discussion of the reactions</p>	<ul style="list-style-type: none"> • Post-performance open-ended questionnaire to the students • Content analysis (Atlas.ti) • Students' evaluation of the lecture 	<ul style="list-style-type: none"> • Appreciation of the patient's perspective • Identification of critical concepts • Effective tool for increasing students' awareness of patients'
Environment	<p>Street theatre complementary to a structured training to increase knowledge of the hazards of mercury use <i>Journal of Cleaner Production</i> (Veiga et al., 2012)</p>	<p>Artisanal gold miners Audience≈ 9.000 Zimbabwe</p>	<p>Scripting workshop with the local community based group Performance of the play, Nakai, by semi-professional actors and traditional dancers Mobile training unit</p>	<p>The repression of the police on miners and theatre players limited sound assessment of the awareness initiatives</p>	<ul style="list-style-type: none"> • 700 miners followed the training on safer and more efficient recovery methods • Impact on miners was probably limited due to the unstable economic and political environment
	<p>Interactive theatre to explore the components of income-generating activities, which can support women in participating in their own sustainable development <i>Journal of Sustainable Development</i> (Osnes, 2012)</p>	<p>Women in poverty that want to pursue income-generating activities n= 25 Nicaragua</p>	<p>Two-day intensive Voices for Change Workshop, focused on:</p> <ul style="list-style-type: none"> • vocal strength and confidence • exploring key aspects of successful income-generating activities 	<ul style="list-style-type: none"> • Group discussion • Participant observation 	<ul style="list-style-type: none"> • Increased confidence • Increased sense of group • Enhanced critical reflection and analysis • Knowledge on solar-powered lights • Contemplation of a program for selling solar-powered lights

	<p>Theatre for (energy) development to empower women participants: sharing tools for vocal empowerment that support their participation in public discussions</p> <p><i>Energy Development (Osnes, 2012)</i></p>	<p>Women affected by poverty and gender inequity in rural areas Middle and high-school students and their communities Panama and Guatemala</p>	<p>3hour vocal empowerment workshop with the women Small skits performed by these women or by students to the community with talk-back sessions</p>	<ul style="list-style-type: none"> • Participant observation • Talk-back session with questions to the public 	<ul style="list-style-type: none"> • Introduction to cook stove techniques • Instigating a lively community dialogue • Building of cooking stoves
Sociology	<p>Popular theatre as pedagogic and research tool to collectively draw out, represent and question risky youth experiences</p> <p><i>International Journal of Qualitative Methods (Conrad, 2004)</i></p>	<p>A group of high school drama students in a rural community n=22 USA</p>	<p>1 month process (30 hours) Creation of 'Life in the Sticks', a theatrical play from the students' experiences and stories, following Theatre of the Oppressed techniques</p>	<p>Audio and video recordings Field notes and research journal Students' journal Informal voluntary interview to a small group of students</p>	<ul style="list-style-type: none"> • Students' examination of issues and beliefs through exploration and re-evaluation of aspects of their experiences • Discursive analysis showed how students identified themselves, perceived their behaviour and their responses to the label 'at-risk.'
	<p>Playback and Forum Theatre to produce different kinds of knowledge and insights regarding constructions, contestations and authorisations of identities</p> <p><i>Social Research Online (Kaptani et al., 2008)</i></p>	<p>Kosovan, Kurdish and Somali refugee groups An ethnically mixed group of students in advice work United Kingdom</p>	<p>On each group:</p> <ul style="list-style-type: none"> • Two Playback performances • Five Forum Theatre workshops 	<ul style="list-style-type: none"> • Semi-structured interviews • Video and audio recordings • Written notes by observers • Transcription of theatre sessions and interview narratives • Discourse analysis 	<ul style="list-style-type: none"> • Theatre as a viable form of action research and powerful tool of disseminating information • Production of embodied, dialogical and illustrative knowledge on individual and collective constructions of power, authority and identity. • Data on controversial subjects, articulations of non-conformist positions

Computational Science	<p>Interactive theatre to present a dynamic discussion illustrating the challenges that older people face when trying to use the Internet</p> <p><i>Interacting with Computers</i> (Newell et al., 2011)</p>	<p>Attendants to a public lecture in the 2011 Edinburgh Science Festival: general public and computer professionals n>75 Scotland</p>	<p>Combination of videos and live performance within an invited keynote session Interactive discussion with the audience (“hot seating” technique)</p>	<ul style="list-style-type: none"> • Post-performance questionnaire to the audience • Observation 	<ul style="list-style-type: none"> • Increased interaction during the discussion • Interaction with the actors increased the effectiveness of the event • Awareness raising (changing attendants’ attitudes to how computer should be designed)
	<p>A live game show to support a keynote lecture on accessibility</p> <p><i>Proc. 12th Annual SIGCSE Conference</i> (Hanson et al., 2007)</p>	<p>Audience in an international conference on computer education n= 76 Scotland</p>	<p>A game show where the audience is divided in groups who compete. Professional actors act a range of characters with various disabilities and facilitate a discussion with the audience based on questions concerning accessibility of technology.</p>	<ul style="list-style-type: none"> • Post-performance questionnaire to the audience 	<ul style="list-style-type: none"> • Interactive forum for raising awareness • Entertaining and thought-provoking • Power as communication technique
	<p>Theatre for requirements gathering from users in the design process for smart housing</p> <p><i>Interacting with computers</i> (Newel et al. 2006)</p>	<p>Audience of older people, professional carers and designers Scotland</p>	<p>Films and live theatre used to present different scenarios Facilitated discussion with the audience and related design possibilities</p>	<ul style="list-style-type: none"> • Observation • Group discussions 	<ul style="list-style-type: none"> • Theatre provided very useful information that was fed into the design process • Extremely useful for provoking discussion at the pre-prototyping stage

APPENDIX 3. WORKSHOP SESSIONS

The next subsections describe the structure of the different workshop sessions for each case study. They include as well information on specific workshop objectives, timing, participants and facilitation team.

3.1 Workshop structure in Cherán

Workshop specific objectives

1. To explore the perceptions and attitudes of the young participants regarding community forest management and local governance issues.
2. To allow alternative ways of collective expression and expressiveness and a greater visibility of young people's voices into collective reflection about community forest management.
3. To open a public space of dialogue and discussion about community forest management and local governance among different stakeholders (students, community members, council members, teachers)

Participants

Workshop moment	Participants
Workshops' common sessions	25 students ages 16-18, from COBAEM*
Theatre sessions	14 students (9 constant participants)
Storytelling sessions	11 students
Theatre play	13 (9 from the theatre workshop, 4 from the storytelling workshop)

* COBAEM: Colegio de Bachilleres de Cherán (Cherán's High School)

Workshop team

We were two main workshop facilitators and a support team composed by 6 people, assuring that we were at least three people in each workshop. Three young women from the community interested in participatory methods and processes volunteered as part of the support team.

Workshop Team	
Theatre facilitator	María Heras
Story-telling facilitator	Sofía Molina Dávalos
Theatre assistant	Arnim Scheidel
Theatre volunteers	Miriam Niniz and Betsy Torres
Audiovisual recorder (photo, video, audio)	Graciela González
Story-telling assistant	Yurixhi Ochoa
Story-telling volunteer	Yunuen Torres (from Cherán)

Timing

The *Relatro!* workshop took place between January 24th and February 1st 2014.

It was structured in 7 workshop sessions of three hours each. Additionally, three extra sessions were carried out with the theatre group as part of the theatre play rehearsals.

The theatre play was performed four times, which implied two more rehearsals (see Table A2). The two last shows were facilitated by Sofia Molda (storytelling facilitator), since I was already back in Spain.

Table A2 Theatrical representations: context and audiences

Play	Context	Audience
1/02/2014	New Year's Festivity	≈ 300 people <ul style="list-style-type: none"> • Community members (all ages) • Main governance council (Consejo Mayor)
12/02/2014	Cherán High-school	≈ 60 <ul style="list-style-type: none"> • Students (16 -18 years old) • Teachers
4/03/2014	Cherán Secondary school	≈ 500 <ul style="list-style-type: none"> • Students (12 -15 years old)
18/03/2014	Teachers event at Cherán high-school	≈ 60 <ul style="list-style-type: none"> • Teachers and director • Members from the Consejo Mayor, Common Resources Council and Education Council

Meetings and complementary informal interviews

Table A3 Meetings and complementary informal interviews carried out during the different stages of project design and implementation in Cherán.

Selected key community members	Type of encounter	Objectives
<i>1st stage Exploration</i>	Alicia Lemus, anthropologist from Cherán	Informal interview Preliminary counselling
	Concejo Mayor	Formal meeting Presentation and discussion of workshop preliminary proposal, mutual sharing of needs
<i>2nd stage Design</i>	COBAEM director and teachers	Formal meeting Concretization of the proposal and logistics, information about the group and specific needs'
	Don Josué, CBC member, and Jaime Navia, CBC technician	Formal interview Inputs for the workshop
	Don Rosalío, CBC member	Informal interview Participation in the Forest Watch Unit (<i>ronda de vigilancia forestal</i>)
	Doña Geno, CBC member	Informal interview
<i>3rd stage Implementation</i>	Tata Trini, Concejo Mayor	Informal interviews Context information
	Tata Antonio, Concejo Mayor	Informal interview Context information

Table A4 Workshop structure in Cherán: stages and corresponding objectives, guidelines, inputs and tools.

Phase	Objectives	Guiding questions/guidelines	Inputs	Tools
Theatrical workshop: 1 st EXPLORATORY PHASE Sessions 1-2 n= 25	<ul style="list-style-type: none"> • Introducing theatrical techniques • Reflecting about participants' condition as young people within the community 	What does it mean to be young in Cherán? What is the relationship between the youth and the community like? What is your image of the community?	Key concepts from the CBC to propose images: <ul style="list-style-type: none"> • Neighbourhood • Community • Unity 	Theatrical games Image theatre: still images created through body sculptures, to explore abstract concepts and concrete situations.
2 nd DIVING PHASE Sessions 3-4-5 n= 14	Exploring and reflecting about their: <ul style="list-style-type: none"> • Bond with the forest • Perceived forest challenges • Participation in the community movement 	Share a story about: <ul style="list-style-type: none"> • A special personal experience related to your forest and territory • A challenging situation related to your forest • Your participation in the community movement 	Key concepts from the CBC to propose the sharing of stories: <ul style="list-style-type: none"> • Forest • Bond • Livelihood • Territory 	Theatrical games Storytelling Improvisations created in sub-groups, based on shared stories. Representation and group discussions

<p>3rd TRANSFORMATI ON PHASE Sessions 6-10 n= 14</p>	<p>Transformation of stories and improvisations into a theatre play reflecting their views and concerns</p>	<p>How are the different scenes interconnected? What are their main elements and insights? What stories do we want to tell?</p>	<p>Scenes previously created. Story-telling workshop stories. Information from the CBC</p>	<p>Collaborative play creation: transforming improvisations and narrated stories into interconnected theatrical sketches. Scene on CFM completed with information provided by CBC members to the group</p>
<p>Interactive play: (RE) PRESENTATION PHASE n= 14</p>	<ul style="list-style-type: none"> • Sharing youth perspectives on CFM with the community • Facilitating community dialogue 	<p>Does this happen in your community? How? What's been your personal experience of it? What could be different in this scene? How could that change the outcome? How could we get there?</p>	<p>Questions for the audience Live music</p>	<p>Interactive play and dialogues</p>

3.2. Workshop structure in *La Sepultura*

Workshop specific objectives

1. To stimulate participants' self-confidence and expressive and cooperative skills through a first contact with the theatrical language
2. To ground contents from the environmental education program and foster participants' critical reflection through the exploration of different futures of the MAB Reserve
3. To activate and mobilize participants' resources for action through the theatrical rehearsal of action proposals

Timing

The theatrical workshop took place between September and October 2015, as part of a broader environmental education program. It was structured in 3 workshop sessions of three hours each, during three consecutive days.

Exceptionally, G1 had two extra-sessions, as they started the process as initially planned (12 participants in the afternoons), but due to little time availability, after two sessions we decided to expand the workshop to the whole grade group as a school activity. Consequently, the first two sessions were used as warm-up with the smaller group.

Participants

Group	Age and school year	Number of participants	Sessions
G1	15 to 18 <i>1° Bachillerato</i> (Grade 9/10)	25-30	5, 24 th -25 th September 6 th – 8 th October
G2	14 to 15 <i>3° Secundaria</i> (Grade 8)	25-30	3, 6 th – 8 th October
G3	12 to 14 <i>2° Secundaria</i> (Grade 7)	25-30	3 27 th – 29 th October

Workshop team

We were two workshop facilitators: the environmental educator Amayrani Meza, who was already working in *Los Angeles* in a pilot environmental education program and knew the participants, and myself.

Table A5 Workshop structure in La Sepultura: sessions, specific aims, guiding questions, other in-puts and tools

Session	Specific aims	Guiding questions/ Guidelines	Other inputs	Tools
Session 1: Picturing the community	<p>To introduce participants to the theatrical language</p> <p>To generate a shared picture of the community, its main actors and social-ecological interactions</p> <p>To foster cooperative work and participants' communication skills</p>	<p><i>What is your image of the community?</i></p> <p><i>What is your image of the youth in your community?</i></p>	<p>Reflection cards:</p> <ul style="list-style-type: none"> • <i>What are the main elements that characterize the community?</i> • <i>Who are the main actors in the community?</i> • <i>How are their relationships?</i> • <i>What do they do for a living?</i> • <i>How are young people in the community?</i> • <i>What do they do?</i> 	<p>Warm-up: Theatrical games and group activities focused on:</p> <ul style="list-style-type: none"> • Physical awareness • Sense activation • Self and group awareness • Communication and cooperation <p>Image theatre:</p> <ul style="list-style-type: none"> • The image of the community • The image of the youth <p>Debriefing:</p> <ul style="list-style-type: none"> • <i>What do you see in the image? (Different levels of observation)</i> • <i>What kinds of relations do you identify?</i> • <i>How does it make you feel?</i> • <i>Would you add or change something?</i> • <i>How would you like the image to be?</i> • <i>Where are you in such images?</i>
Session 2: Visioning futures	<p>To connect present trends with plausible futures</p> <p>To foster visions of future</p> <p>To compare different futures and identify desirable pathways</p> <p>To foster cooperative work and participants'</p>	<p><i>How would the future of the Reserve look like in 20 years if...? (land-use strategy)</i></p> <p><i>How would you like the future of the Reserve to look like in 20 years?</i></p>	<p>Participants' land-use strategies resulted from the previous environmental education process :</p> <ul style="list-style-type: none"> • Conservation • Intensification • Diversification <p>Discussion cards: <i>How is your future scenario?</i></p> <ol style="list-style-type: none"> 1. Main economic activities 	<p>Warm-up: Theatrical games and group activities focused on:</p> <ul style="list-style-type: none"> • Physical awareness • Sense activation • Self and group awareness • Communication and cooperation <p>Discussion groups</p> <p>Image Theatre: the fluid image of the future</p>

	communication skills		<ol style="list-style-type: none"> 2. Main actors 3. Ecosystem services provided by the social-ecosystem 4. Relationship of humans with nature according to their management strategy 5. Main challenges faced by people 6. Values associated to the scenario 	<p>Debriefing:</p> <ul style="list-style-type: none"> • <i>What characters do you see in scene? How do they interact?</i> • <i>What values are reflected?</i> • <i>What desirable aspects do you see? And what negative aspects?</i> • <i>Which future elements do you prefer?</i>
Session 3: Rehearsing present transformations	<p>To reflect about current socio-ecological dilemmas faced by the community and explore different solutions</p> <p>To foster cooperative work and participants' communication skills</p>	<p><i>Think individually of a/several identified negative aspect/s from the future that you currently see in your community</i></p> <p><i>Share a story with the group about a day-to-day situation related to that aspect/s in which you are involved</i></p>	<ul style="list-style-type: none"> • Identified negative aspects from the future • Own experiences 	<p>Warm-up: Theatrical games and group activities focused on:</p> <ul style="list-style-type: none"> • Physical awareness • Sense activation • Self and group awareness • Communication and cooperation <p>Forum theatre: Sharing of personal stories in subgroups Improvisational sketch creation based on shared stories.</p> <p>Representation to the group and discussions:</p> <p><i>What have we seen in the scene?</i> <i>Who are the characters? What are the problems reflected?</i> <i>Does this happen in your community? How?</i> <i>What's been your personal experience of it?</i> <i>What could be different in this scene? How could that change the outcome?</i></p> <p>Debriefing:</p> <p><i>What kinds of actions were proposed?</i> <i>Do they represent possible solutions? How?</i> <i>Are they feasible in our community?</i> <i>What trade-offs do they imply?</i> <i>What would be our role?</i> <i>How would we like to engage in?</i></p>

APPENDIX 4. EVALUATION TOOLS

This appendix presents the original evaluation tools applied during the workshops. It introduces, for each case study, the Likert scales, the open evaluation, the reflection cards - when pertinent, and the evaluation dartboard.

Both evaluation designs were broadly guided by the following evaluation purposes and questions:

Table A6. Main evaluation purposes and questions in the case studies.

Purpose of the evaluation	Evaluation questions
<p><i>Common purpose:</i></p> <p>Contribution as a method fostering social learning among young people</p>	<p>To what extent does the methodology provide a creative space that allows for open experience, thinking and sharing?</p> <p>How does the methodology help generating new insights on the topics addressed?</p> <p>How does it help providing and facilitating social interactions?</p> <p>How does it contribute to spread learning to wider social units or communities of practice?</p> <p>How does it help to create collective meaning?</p> <p>How does it contribute to capacity building?</p> <p>How does it help foster empowerment and reflective enactment?</p> <p>How does it provide the required flexibility to respond to the needs and priorities of participants?</p> <p>To what extent does the methodology help fostering balanced participation?</p>
<p><i>Specific to Cherán:</i></p> <p>Contribution as a public platform for stakeholder engagement and participatory dialogue</p>	<p>To what extent does the methodology help raise and bring to the public delicate issues?</p> <p>To what extent does the methodology help create a comfortable space for discussion?</p> <p>To what extent does the methodology help create a safe space for diverse opinions and positions?</p>
<p><i>Specific to Los Angeles:</i></p> <p>Contribution as a participatory tool facilitating futures thinking</p>	<p>How does the methodology help engaging participants into critical thinking and discussions about the future?</p> <p>How does it help connecting future patterns with present situations?</p> <p>How does it help approaching systems' complexity?</p> <p>How does it help motivating participants to take part in present transformations?</p>

A4.1 Evaluation tools in Cherán

The following subsections present the original evaluation tools applied in the theatrical workshops carried out in Cherán.

A4.1.1 Likert scale before the workshop

■ Enero 2014

A continuación encontrarás un cuestionario que nos va a ayudar al equipo de talleristas a conocer mejor al grupo y su opinión respecto a diversos temas. El cuestionario se compone de 29 frases que tendrás que valorar marcando con una X en la casilla correspondiente, según tu grado de acuerdo:

- Totalmente de acuerdo
- De acuerdo
- Indiferente
- En desacuerdo
- Totalmente en desacuerdo

Ejemplo:

Frase	Totalmente de acuerdo	De acuerdo	Indiferente	En desacuerdo	Totalmente en desacuerdo
Los cuestionarios son aburridos		X			

Verás que al final del cuestionario hay un espacio para ‘comentarios adicionales’. Este espacio está por si tuvieras algún comentario especial sobre alguna pregunta o alguna de tus respuestas; por ejemplo, si sientes que las categorías no reflejan tu opinión y quieres compartirla en esa casilla para que te entendamos mejor, o si quieres matizar alguna respuesta.

Ejemplo:

Comentarios adicionales:

En la pregunta 4 no entendí la palabra ‘epistemología’ y por ello no pude responderla

Te informamos que este cuestionario es anónimo y se analizará en términos de grupo y no individualmente. Puedes responder sinceramente, pues nos interesa mucho tu opinión y... ¡esto no es ninguna evaluación!

Si tienes alguna duda, consúltanos o a tus maestros.
¡Muchísimas gracias!

Sofía y María

Edad:**Género (varón o mujer):**

Frase	Totalmente de acuerdo	De acuerdo	Indiferente	En desacuerdo	Totalmente en desacuerdo
1. Me siento una persona creativa					
2. Me siento vinculado/a a mi comunidad					
3. Me siento unido/a a mi territorio					
4. He participado activamente en las labores de defensa del territorio de Cherán					
5. Considero que luego del 2011, se ha restablecido el sentido de justicia en mi comunidad					
6. Conozco los relatos e historias de mi comunidad y su territorio					
7. Me preocupa la situación medio-ambiental de mi comunidad					
8. Conozco bien el bosque de mi comunidad					
9. El bosque y sus parajes son para mí un elemento fundamental de la comunidad de Cherán					
10. Me gustaría participar en la gestión comunitaria del bosque en Cherán (vigilancia, monitoreo, reforestación, etc.)					
11. Siento que en Cherán hay futuro para los jóvenes					
12. Siento que los jóvenes no tenemos suficiente participación en los asuntos de la comunidad					
13. Siento que se consulta mi opinión desde los consejos de auto-gobierno de la comunidad					
14. Siento que, como miembro de la comunidad, he de tener responsabilidades con ella					

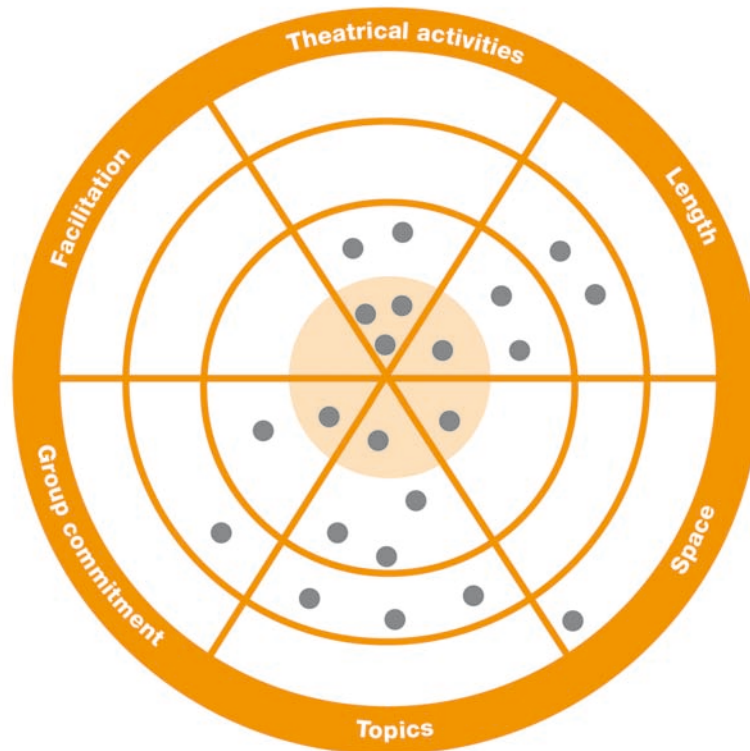
15. Me gustaría participar más en las tareas asociadas al autogobierno en Cherán					
16. Me gustaría que nos consultaran más a los jóvenes desde los consejos de auto-gobierno de la comunidad					
17. Siento que puedo participar en las actividades del movimiento de defensa de la comunidad					
18. Creo que las obligaciones son parte de la comunidad, igual que los derechos					
19. En el futuro tengo planeado emigrar de Cherán a otro lugar					
20. Siento que hay pocas oportunidades de trabajo para los jóvenes en Cherán					
21. Me interesa la gestión del bosque en mi comunidad					
22. Me gustaría conocer más el trabajo que se hace desde el Consejo de Bienes Comunes					
23. Siento que dentro de Cherán los jóvenes tenemos un espacio para comunicarnos con el resto de la comunidad					
24. Tengo dudas sobre lo que significa ser 'comunero' en Cherán					
25. Conozco las empresas comunitarias de Cherán					
26. Colaboro con alguna empresa comunitaria en Cherán					
27. Conozco el trabajo que se hace desde el Consejo de Bienes Comunes					
28. Creo que ser miembro de la comunidad conlleva demasiadas obligaciones					
29. Creo que los jóvenes de Cherán tenemos un papel importante en la comunidad					

Comentarios adicionales:

A4.1.2 Evaluation dartboard

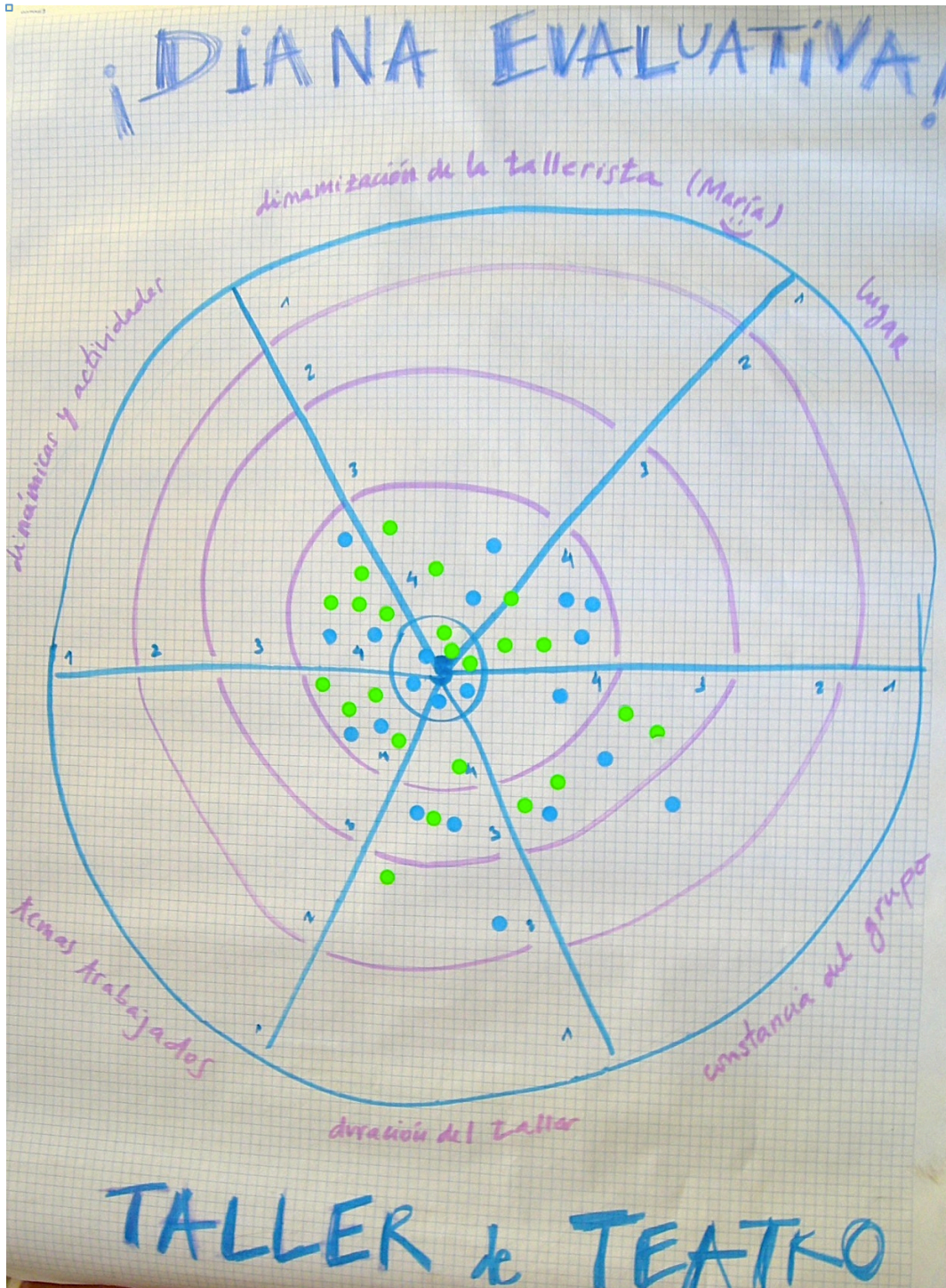
The following ‘evaluation dartboard’ was used at the end of the workshop to assess practical and technical aspects of the workshop in a visual way:

Figure A2 *Evaluation dartboard: model used in Cherán*



Participants used sticky dots to grade the different aspects from 1 to 5 following the same logic as in the darts game (the nearer their mark was to the bull’s eye, the higher their satisfaction). Picture A1 shows the evaluation dartboard with participants’ answers.

Picture A1 Evaluation dashboard in Cherán: image of participants' answers



A4.1.3 Open-ended questionnaire

□

SOBRE TU PARTICIPACIÓN EN EL TALLER DE TEATRO

ABOUT YOUR PARTICIPATION IN THE WORKSHOP

Nombre/Name:

Edad/Age:

0. ¿Qué te motivó a participar en este taller?

What motivated you to participate in this workshop?

1. ¿Cómo te has sentido participando en este taller? (Tanto a nivel personal como en tu relación con el grupo)

How did you feel participating at this workshop? (Both with the group and at a personal level)

2. ¿Para qué te ha servido este taller?

What was this workshop useful for?

3. ¿Qué consideras que ha aportado esta manera de trabajar (a través del teatro o del relato) al diálogo dentro del grupo?

In which ways do you think that this way of interacting (through theatre) has contributed to dialogue within the group?

4. Lo que más me gustó del taller fue...

What I liked most was...

Y lo que menos me gustó...

What I liked least was...

5. Otros comentarios sobre el taller o sobre este cuestionario (si es que tienes)

Other comments you may have about the workshop or this questionnaire

A4.2 Evaluation tools in La Sepultura

The following subsections present the original evaluation tools applied in the theatrical workshops carried out in La Sepultura MAB Reserve.

A4.2.1 Likert scale before and after the workshop

Nombre: _____
y grupo _____

Edad: _____ grado

1. Señala tu grado de acuerdo con los siguientes enunciados.

		Totalmente de acuerdo	Acuerdo	Indiferente	Desacuerdo	Totalmente en desacuerdo
#	Enunciado	▲ ▲ ▲	▲ ▲ ▲	▲ ▲ ▲	▲ ▲ ▲	▲ ▲ ▲
1	Me gusta comer tortillas hechas en casa					
2	Me siento una persona creativa					
3	Expresarme ante los demás me da pena					
4	Siento que formo parte de mi comunidad					
5	Me interesa lo que pase en nuestro ejido y en nuestro entorno natural					
6	Cuando sea mayor me gustaría irme a vivir fuera					
7	Me motiva poder hacer cosas por mi ejido					
8	La degradación del medio ambiente no es una amenaza para mi Ejido					
9	Creo que los jóvenes del Ejido Los Ángeles tenemos un papel importante en la comunidad					
10	Me preocupa la situación medio-ambiental de mi ejido					

11	Siento que en nuestro ejido no hay futuro para los jóvenes					
12	Siento que como joven puedo hacer poco por nuestro medio-ambiente					

A4.2.2 *Reflection cards during the workshop*

Reflection cards were distributed to participants after the first and second session. These cards encouraged participants to share impressions about the activities and personal insights through the sessions.

Sample of a reflection card:

Nombre/Name:	Sesión/Session:
<p>Lo que más me gustó hoy fue... porque... <i>What I enjoyed the most today was... because...</i></p>	
<p>Hoy en el taller me di cuenta de.../ descubrí... <i>Today I realized that... / I became aware of...</i></p>	

A4.2.3 *Open-ended questionnaire after the workshop*

□

Nombre/Name _____ **Edad/Age** _____ **Grado y grupo/ Grade & group** _____

1) ¿Cómo te has sentido participando en este taller? (tanto a nivel personal, como en tu relación con el resto del grupo)

How did you feel participating at this workshop? (Both with the group and at a personal level)

2) ¿Para qué te ha servido este taller? ¿Cuál crees que es el valor de talleres como éste?

What was this workshop useful for? What do you think that is the value of this kind of workshop?

3) ¿Qué has aprendido en el taller o de que te has dado cuenta respecto a tu ejido y tu medio ambiente?

Anything you learned or realized about your community and environment during the workshop?

4) ¿Qué consideras que ha aportado esta manera de trabajar (a través del teatro) al diálogo dentro del grupo?

In which ways do you think that this way of interacting (through theatre) has contributed to dialogue within the group?

A4.2.4. *Feedback questionnaire 4 months later*

Nombre: _____ Edad: _____ Grado y grupo _____

1. Señala tu grado de acuerdo con los siguientes enunciados y pon ejemplos cuando se indique.

Enunciado	Totalmente de acuerdo	Acuerdo	Indiferente	Desacuerdo	Totalmente en desacuerdo
1. Participando en el taller de teatro pude sentirme más unido/a con los/as compañeros/as					
2. Gracias al taller de teatro me he sentido con más confianza y he perdido algo de pena					
3. En el taller de teatro pude reflexionar sobre nuestra comunidad y las distintas personas que formamos parte.					
4. En el taller de teatro pude pensar y reflexionar sobre distintos futuros posibles en mi comunidad.					
Indica los futuros que recuerdes que surgieron:					
5. Haciendo la dinámica de futuros pude identificar aspectos que nos gustaban de los futuros (positivos) y aspectos que no nos gustaban (negativos).					
Señala tres aspectos positivos que recuerdes y tres aspectos negativos: Positivos: Negativos:					

Enunciado	Totalmente de acuerdo	Acuerdo	Indiferente	Desacuerdo	Totalmente en desacuerdo
6. Haciendo las escenas de teatro pude identificar situaciones en mi comunidad relacionadas con nuestro medio ambiente que me gustaría cambiar					
Señala algunas de estas situaciones que recuerdes que compartiste o compartieron otros compañeros/as durante los teatros:					
7. Haciendo las escenas de teatro pude explorar algunas soluciones para estas situaciones que nos gustaría cambiar					
Señala algunas de estas soluciones que recuerdes que compartiste o compartieron otros compañeros/as durante los teatros:					
8. Durante el taller sentí que pude compartir mis experiencias y opiniones sobre las escenas que hacíamos y temas que debatíamos					

APPENDIX 5. LA SEPULTURA: SCENARIO OUTCOMES

This appendix further presents some of the results from the biospheric futures' workshop carried out in La Sepultura. Most specifically, it presents the inferential analysis of the questionnaires handed in before and after the workshop, the positive and negative aspects from the future that emerged during group discussions; and the summary of proposals of action suggested and performed by participants.

A5.1 Results from questionnaires completed before and after the workshops in La Sepultura.

Table A7 Results from questionnaires completed before and after the workshops: Group 1, Group 2 and Group 3.

Group 1

n= 28								
<i>Q</i>	<i>Mean B</i>	<i>Std. Dev. B</i>	<i>Mean A</i>	<i>Std. Dev. A</i>	<i>Positive difference</i>	<i>Negative difference</i>	<i>Tides</i>	<i>Wilcoxon Test</i>
Q1	4,107	0,629	4,179	0,723	9	5	14	0,401
Q2	3,464	1,036	4,143	0,705	11	1	16	0,003
Q3	4,500	0,638	4,214	0,686	4	11	13	0,064
Q4	4,357	0,780	4,500	0,923	11	7	10	0,347
Q5	2,857	1,433	2,607	1,449	8	8	12	0,624
Q6	4,321	0,723	4,357	0,678	7	7	14	0,931
Q7	3,786	1,449	3,964	1,401	8	8	12	0,747
Q8	3,821	1,278	4,250	0,928	11	5	12	0,086
Q9	4,643	0,488	4,321	0,772	4	10	14	0,091
Q10	4,429	0,879	4,536	0,637	8	7	13	0,798
Q11								

Group 2

n=23								
<i>Q</i>	<i>Mean B</i>	<i>St. Dev. B</i>	<i>Mean A</i>	<i>Std, Dev, A</i>	<i>Positive difference</i>	<i>Negative difference</i>	<i>Tides</i>	<i>Wilcoxon Test</i>
Q1	3,478	0,994	3,870	0,757	8	2	13	0,060
Q2	2,522	1,675	2,478	1,163	7	7	9	0,975
Q3	4,304	1,063	4,348	1,112	5	5	13	0,906
Q4	4,435	0,945	4,391	0,722	4	6	13	0,563
Q5	2,652	1,584	2,435	1,647	6	8	9	0,527
Q6	3,826	1,230	4,304	0,765	9	4	10	0,118
Q7	3,130	1,792	3,261	1,573	10	6	7	0,544
Q8	4,043	1,296	4,652	0,573	6	0	17	0,015
Q9	4,522	0,665	4,348	0,832	2	5	16	0,291
Q10	3,391	1,438	3,130	1,486	4	7	12	0,346
Q11	2,52	1,70	2,52	1,50	7	6	10	0,9236

Group 3

n= 22								
<i>Q</i>	<i>Mean B</i>	<i>St. Dev. B</i>	<i>Mean A</i>	<i>Std, Dev, A</i>	<i>Positive difference</i>	<i>Negative difference</i>	<i>Tides</i>	<i>Wilcoxon Test</i>
Q1	3,91	1,02	4,05	0,72	8	6	8	0,6094
Q2	2,77	1,31	2,64	1,09	8	10	4	0,6325
Q3	4,32	0,95	4,14	1,17	5	6	11	0,6614
Q4	4,14	0,89	4,18	0,96	7	6	9	0,8644
Q5	2,36	1,56	2,27	1,20	8	10	4	0,8562
Q6	3,14	1,25	4,09	0,92	14	5	3	0,0106
Q7	2,86	1,36	2,59	1,01	8	9	5	0,5077
Q8	4,32	0,99	4,14	1,17	6	7	9	0,6718
Q9	4,00	0,76	4,23	0,87	7	3	12	0,2449
Q10	2,86	1,28	2,55	1,37	7	10	5	0,4104
Q11	2,36	1,09	1,95	1,05	5	13	4	0,103

Main analysis insights:

Perceived creativity (Q1) and communicative skills (Q2)

Participants' perceived creativity increased in G1 and G2 and remained the same in G3 (no significant changes, however). Participants' perceptions of their communicative capacities significantly increased in G1, but remained low in G2 and G3.

Motivation to act (Q6) and perceived importance of the role of the youth (Q8)

The motivation to act (Q6) significantly increased in G2 and G3. In the youngest group, G3, the average value for motivation increased from 3,14 to 4,09, the highest increment in the questionnaire. The perceived importance of the role of the youth (Q8) significantly increased in G1 and G2. In G2, the perceived importance of the role of young people got the highest questionnaire score after the workshop, with an average value of 4,6.

In the cases in which Q6 and Q8 did not change significantly (G1 and G3 respectively), their mean values were already high before the workshop and remained high.

Perceptions and attitudes towards their community and the environment (Q3, Q4, Q5, Q7, Q9)

Response changes showed high values and no significant variation for these items, except for the item on environmental concern (Q9), which slightly decreased in G1. Despite the decrease, Q9 kept a very high score in the three groups, with mean values over 4.

Perception of future possibilities for the youth at the MAB (Q10) and perceived capacity of action as young people (Q11)

No significant changes were found in participants' perception of future possibilities for the youth at the MAB (Q10), and no common pattern was followed in the three groups (while in G1 it remained very high; in G2 and G3, mean values remained around the middle position of the Likert scale). Participants' perceived capacity of action remained in a mean value (G2) or low (G3), showing a small but significant decrease in the youngest group, G3.

A5.2 Positive and negative aspects of the future

A7. Positive and negative future aspects, and scenarios in which these aspects were identified. E1= conservation scenario, E2= diversified scenario; E3= intensive scenario, and E4= desired scenario. Positive and negative aspects have been organised in five dimensions corresponding with the discussion cards that were used during the activity of scenario building.

Table A8 Positive and negative future aspects and scenarios in which these aspects were identified.

POSITIVE ASPECTS	E1	E2	E3	E4
Economic and productive model				
Protagonism of forest regeneration activities	G1, G3			
Diversity of productive activities: agriculture, fishing, forestry		G1,G2, G3	G1	G2
Livestock	G2			
More Jobs		G1,G2		G2, G3
Less external dependence		G1		
More food availability (quantity)		G2,G3	G1,G2	G3
Stronger economy		G2		G2 G3
Urban growth/ Land available for housing			G2	
More technology				G2
Economic gains are invested in improving the community				G3
Environmental variables				
Abundant flora and fauna	G2			G2
No significant environmental pollution	G2			
River recovery	G3			G3
Fertile farmland available		G3		
Human relationship with nature				
People are concerned about protecting the environment (nature, animals ...)	G2 G3	G3		G3
Emotional bound with nature (Love)	G1			G3
Social relations within the community				
Greater conviviality and community unity				G3
Good communication and coordination between people				G3
Values				
Responsibility	G1			
Environmental awareness	G1			
Respect for nature	G1, G3			G3

NEGATIVE ASPECTS	E1	E2	E3	E4
Economic and productive model				
Competition and intensification of the productive model			G1 G3	
Increased deforestation			G1,G3	
Less self-sufficiency	G1			
Higher economic cost of food	G1			
Intensive use of agrochemicals			G1	
Loss of food's quality and taste			G1,G3	
No resources are being used	G2			
No human presence (or houses)	G2			
More technology				G2
Environmental variables				
Loss of arable land	G1,G3		G3	
Loss of vegetation / wildlife		G2	G2	G2
Loss of soil fertility due to agrochemicals			G3	
Water pollution			G3	
Air pollution			G3	
Depletion of environmental resources		G2		
Soil erosion caused by livestock production			G1,G2	
Landslides			G2	
More pollution and waste			G2	
Temperatures increase			G2	G2
Environmental diseases increase			G2,G3	
Human relationship with nature				
Lack of respect for nature		G1		
Impatience in resource use		G1		
Social relations within the community				
Social inequality	G2			
Forced migration		G1	G3	
Violence and disputes over the land		G1	G3	
Lack of dialogue between people			G3	
Distrust		G1		
Politicians' abuse				G2
Jealousies among neighbors			G3	

A5.3 Proposals of action emerging from forum theatre

As an adaptation to the backcasting technique commonly applied in future scenarios, we created theatrical scenes rescuing future negative aspects already happening in the present, so as to rehearse proposals of action using participants' resources at hand.

While theatrical improvisations in G2 had a clear thematic focus on waste and environmental health, G3 and G1 also performed problematic situations and proposals of action related to agriculture, the broad production system, knowledge recovery and interactions among stakeholders. Interestingly, in those scenes in which young people were part of the enacted situation, they were normally the characters suffering the consequences of the problems shown (getting ill, being lied by the grocers and politicians, being forced to leave the community). Only in the scenes on domestic waste, they were also contributing to the problem, while throwing away waste in the street, in the park or in the river.

Actually, domestic waste seems to be one of the closest problems to their day-to-day life. Most of the proposals that emerged were related to waste and pollution alleviation, articulated through a variety of initiatives and stakeholders (themselves as community members, but also farmers, grocers and other consumers).

Due to the immediacy of the theatrical setting and guidelines of the activity (theatrical improvisation within a specific situation), most of the proposals emerged were quite immediate, short term and can be performed by students themselves. However, some of the proposal related to a medium term, and require the coordination of other or several stakeholders. Table A9 summarizes the main problems identified, performed scenes and emerging proposals of action.

Table A9 Summary of broad sustainability problems identified, specific situations performed and corresponding proposals of action.

Transversal sustainability problems	Proposals of action
<p>Increasing pollution (domestic, agrarian production) Inappropriate waste management Environmental toxicity</p>	<ul style="list-style-type: none"> • Place trash containers along the riverside, to reduce littering associated to leisure activities⁵¹ (G3) • Cooking and eating more home-made snacks to avoid plastics and packaging (like fruit) (G3, G2)
<p>Situations performed</p> <ul style="list-style-type: none"> • Intoxication produced by air pollution due to the burning of waste in the community (G2) • Impacts at the family level (illness, migration in the long run) of intoxication produced by polluted water due to domestic washing with chemical products in the river (G2) and to agricultural production (G1). • Rising of illnesses among young people due to polluted and low-quality food (bad quality of irrigation water, use of agrochemicals, livestock fed with industrial meat-derived food) (G1, G3, G2) 	<ul style="list-style-type: none"> • Change the snack plastic containers that we use in the school for less harmful and more readily recyclable materials, like cardboard⁵² (G2) • Re-use plastic bags and avoid their use when not necessary (G2) • Individually pick-up the rubbish when we see it (G3) • Organize turns to clean together the park⁵³ (G3) • Spread the word to other school mates on why is important to reduce the waste and how can we do it (G2) • Disinfect the food before eating it (G1, G3) • Wash at home, instead of in the river (G2) • Change industrial soap for home-made bar soap (G2) • Recover the use of organic, locally grown pastures, instead of industrial feed (G2) • Implement a more strict animal quality control (identify producers of <i>gallinaza</i>) (G2) • Use our voice as consumers to demand that animals are correctly fed (G2)

⁵¹ Currently there is no public waste management system in the community.

⁵² G2 often sells snacks during the break to collect money for the school

⁵³ Following this proposal, the group decided to meet after the workshop to go clean together the park

Transversal sustainability problems	Proposals of action
<p>Natural resources degradation and loss Indiscriminate logging Expansion of intensive agriculture</p>	<ul style="list-style-type: none"> • Learn how to generate compost so as to produce our own manure (G3) • Foster a greater autonomy of productive cycles within the farm: cultivate our own pastures for the livestock, and use animal manure as organic fertilizer (G2) • Develop a school organic garden managed by the students, so as to learn about organic cultivation and give an example to the adults (G1) • Recover some traditional knowledge related to food production: ask our grandparents how they used to do, make some internet research, make interviews to wise people in the community (G1)
<p>Situations performed</p> <ul style="list-style-type: none"> • Impacts in the community of tree logging to facilitate agricultural expansion (G1) and to sell wood (G3) • Overuse of agrochemicals in household agricultural production due to and reinforcing the loss of traditional knowledge (G1) 	
Transversal sustainability problems	Proposals of action
<p>Conflicts between different production models Social conflicts Crisis of values</p>	<ul style="list-style-type: none"> • Demand more communication and coordination among farmers and grocery sellers, and more transparency to consumers, so as to foster a more sustainable production system and trust among people (G3) • Change our consumption criteria and put pressure on grocery sellers so they sell more sustainable products (G1) • Organize ourselves collectively to take care of our community and MAB and provide the services that are not covered by the government (G3)
<p>Situations performed</p> <ul style="list-style-type: none"> • High competition and conflicts among extensive, local farmers and intensive and corporate farmers which results in a lack of community coordination in the production of food and externalization of environmental impacts (G1) • High competition between grocery sellers within the community leading to a lack of communication and the lowering of food quality (G1, G3) • Lack of proper information on how food is produced which leads to conflicts between grocery sellers and consumers in the community (G1) • Some people's individualism and indifference towards some community social and environmental problems which aggravates inequality and hinders solutions (G3) • Politician's indifference and own agenda, lack of transparency and overuse of power which contribute to the status quo (G2) 	