



D1.4 Action Research Review

**Clustering and Inventory of Methods Based on
Experiences and Needs of Consortium Partners**

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- 1 PU = Public
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Summary

The Participatory Action Research Review is a document with review of action research tools and approaches. These tools and approaches are intended to guide the participatory action research in the BioTraCes case studies. They are based on experiences and needs of the consortium partners. The document provides general introductions of clusters of methods for different aspects or phases of the action research process that connect with the BioTraCes PEPE framework. The document also contains an extensive annex that lists methods with references to key texts, and a reference to where they are most suitable for purposes of analysis of current social-ecological systems, the development of joint future visions, or monitoring, evaluation and learning.

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Introduction: Participatory Action Research Review

Participatory Action Research (PAR) is a philosophy and “orientation towards inquiry” to research that blurs traditional boundaries between researchers and researched and that is committed to connecting knowledge to just action (Reason and Bradbury 2008, 1, emphasis removed). Building on Fine and Torre (2019), Lenette writes that it is an “epistemology” or “theory of knowledge” that simultaneously reconceptualizes what knowledge is, who holds it and how it can be gained (2022, 1). Thus PAR denotes a research approach that is in collaboration “with co-researchers, community-based organizations and partners” (Lenette 2022, 1) about issues they care about (Reason and Bradbury 2008, 1). As such, a PAR process breaks down dichotomies between lay and expert knowledge. In Lenette’s words (building herself on Brydon-Miller et al. 2003), participatory research “combines academic-expert research knowledge with local, lived experience-led or subjective knowledges, making the research instantly valid” (Lenette 2022, 2) or “practical” as Reason and Bradbury would have it (2008, 1-10).

It is in the ways that PAR is about context-specific issues that concern local communities that it “reflects a paradigm shift from conventional and extractive methodologies toward subjective and context-specific approaches” (Lenette 2022, 2). This not only widens the concept of who is a knowledge holder but simultaneously changes the role of the researcher. Bussu et al. instruct us that with PAR “knowledge is co-produced and the researcher helps mobilise different types of expertise,” where most of the researcher’s energies would be directed towards aiding the process (Bussu et al. 2021, 2). Similarly, Lenette sees how this repositions academics in the process, as they are now “committed learners rather than detached observers”, meaning they “relinquish their roles as leaders or “question askers” in favor of facilitating collaborative processes” (Lenette 2022, 6). Max Liboiron, provocatively states, that in the ideal case, we, as academic researchers should make ourselves “obsolete as an outsider” (Liboiron 2022, 143).

This orientation to other-than-academic expertise is particularly appropriate for BIOTraCes due to its commitment to practical relevance and social change. PAR blurs the boundary between theory and action and reverses the order of first knowledge creation, second implementation. As Wadsworth (1998) explains: “Participatory action research is not just research which we hope will be followed by action! It is action which is researched, changed and re-researched within the research process by participants.” In other words, PAR aims “to understand and improve the world by changing it” (Baum et al. 2006, 854 qtd. in Lenette 2022, 1) when change, simultaneously is “a result of research activities” (Lenette, 2022, 4). Thus in PAR, researchers, the subject of research, and the research process are intimately entangled and themselves subject to change. As Reason and Bradbury write: “Action research does not start from a desire of changing others ‘out there’, although it may eventually have that result, rather it starts from an orientation of change *with* others” (2008, 1).

As a methodological approach that repositions theory and action in the research process, PAR involves the iterative cycles. According to Reason and Bradbury, “Typically such communities engage in more or less systematic cycles of action and reflection: in action phases co-researchers test practices and gather evidence; in reflection stages they make sense together and plan further actions” (2008, 1). Citing McIntyre, Lenette tells us that with PAR is “a living dialectical process” that takes us “through a cyclical process of exploration, knowledge construction, and action” (McIntyre, 2008, p. 1 in Lenette 2022, 2). What is important, is that in all these stages within the PAR cycle can be done in a participatory way (Lenette 2022, 2).

PAR is a uniquely suitable approach for BioTraCes since it promotes collaboration and change and because it fits with the BioTraCes **PEPE principles** (Pluralising, Empowering, Politicising, Embedding) as it is inclusive of diverse actors, values, and knowledge systems in ways that respect differences (Pluralising); enables all participants to take ownership of the research and its outcomes (Empowering); supports a collective understanding and critical examination of power relations and obstacles of transformations towards biodiversity, justice, and equity (Politicising); and is committed to linking

knowledge to action by embedding the research and its outcomes in ongoing policy and other societal processes in ways that are locally appropriate and effective to catalyse change (Embedding).

In the remainder of this introduction, we will first reflect on three core research activities that lie at the heart of PAR, namely Mapping, Futuring, and Reflection. We will then reflect on how this deliverable was created and how to use it.

Main Research Activities of PAR

The BioTraCes research involves three main research activities in which PAR methods can be used: 1) **Mapping** : the analysis of the existing social-ecological systems of the case studies, including social actors, biodiversity aspects, policies, values, and knowledge systems; 2) **Futuring**: the joint creation of future visions, including the identification of obstacles and opportunities for transformation and the creation of pathways and action plans to realize these visions; and 3) **Reflection**: the joint evaluation of the research process and outcomes for purposes of learning and adaptation. **Table I** summarizes these three main **research activities**.

Table I: Summary of main research activities of Participatory Action Research

Mapping	The main research activity of mapping is about creating participatory, dialogical and collaborative research approaches and methodologies that allow to understand the various issues and actors at stake. This entails mappings of social actors (including their intersectionalities), values, knowledge systems and social, economic, and cultural factors.
Futuring	The main research activity of futuring is to envision the future in collaborative ways and facilitate the development of a joint future perspective for sustainability transformations.
Reflection	The main research activity of reflection is to participatorily monitor, evaluate, and reflect transformative processes. For this, indicators need to be co-produced to assess Participatory monitoring and evaluation techniques (for the co-production to assess progress towards transformative outcomes and facilitate joint learning).

Throughout this document, we will tag all methodological approaches and tools in relation to these three research activities. This should not be viewed as absolute classification, as certain methodological approaches and are relevant for more than one research activity.

How This Deliverable Was Created

Figure I: Image of the quantity of mural contributions



In keeping with BioTraCes' commitment to participation, the creation process of this deliverable was a highly participatory team effort. In preparation for the first live consortium meeting early February 2023, the task leaders of *T1.3 Tools and approaches for action research, participatory monitoring and learning* asked all the consortium members to share on a Mural board. On the sticky notes of the Mural board, everybody was asked to address the following points:

1. Why did you use this method?
2. How did you use it to interact with local actors?
3. Did you encounter any challenges when using it?
4. References to the method, of your own work or on what the method was based (e.g., articles, book chapters, project website)

As can be seen from **Figure I**, this provided us with a large number of different research approaches, methods, and techniques. As a next step, the methods were clustered into nine phases in a first draft using a structure that organized them in terms of how and where in the process of PAR they can be used.

This initial draft was then given for feedback to all project partners which was used to create the current version of the document.

How to Use this Review

This deliverable is not a comprehensive list of all available approaches and tools that can be used in PAR processes and has prioritized those that fit with the expertise, experiences and needs of the BioTraCes partners and cases studies. For the different methods we gathered, we make a provisional distinction between broader methodological **approaches** that offer a framework within which different tools can be used, or that include theoretical or conceptual guidance for analysis and **tools** that give more specific guidance on issues of data collection, or how to organise interactions. It should be seen as a living document that can be extended and developed during the project. The document can be used in different ways.

1 Identify methods based on phases or steps of the PAR process: The next part of the document contains introductions of nine clusters of methods that are differentiated on the basis of how and where in the PAR process they can be used. This clustering offers a relatively fine-grained structure of methods that allows for the identification of relevant methods based on specific needs. In these introductions, we refer to the BioTraCes principles of Pluralising, Empowering, Politicising, and Embedding where relevant and we list potentially useful methods. Full descriptions of each of the methods, including an explanation of whether they are tools or broader approaches, can be found in the annex.

2 Identify methods based on the three main BioTraCes research activities: Every method is tagged according to whether they are useful for Mapping, Futuring, and/or Reflection. This allows for an open way of identifying relevant methods with fewer categories than the nine clusters.

3 Search methods according to alphabetical order: All the methods are listed in alphabetical order in the annex including a description of the method and references. Here, you will also be able to identify who of the BioTraCes partners contributed these methods. This will allow partners to contact each other in case they would like to have a further discussion about a particular methodological approach.

For an overview of all the different methods and the various categorization systems by which they are introduced in this deliverable, see **Table II**.

Table II: Overview of Methods: Categorization according to Approach/Tool, Research Phase Cluster, and Research Activities.

In this table, methods are listed either as Approach or Tool. Methods are matched to relevant Research Phase Clusters (within which they are listed in alphabetical order). Lastly, every method is paired with one of the three main research activities. Methods marked with grey shade are not participatory in themselves, but may be part of a participatory methodology.

Main Research Activities	Research Phase Clusters	Approaches	Tools
Mapping	Entry	Critical and Collaborative Design Ethnography	
Mapping	Entry	Pilot Workshop	
Mapping	Entry	Starting Conversation	
Mapping	Entry		Writing an agreement & budget
Mapping	Situating Research in Complex Contexts	Co-Citation Network Analysis of the Literature Combined with Qualitative Analysis	
Mapping	Situating Research in Complex Contexts	Critical and Collaborative Design Ethnography	
Mapping	Situating Research in Complex Contexts	Discourse & Frame Analysis	
Mapping	Situating Research in Complex Contexts	Deep Collaborative Mapping	

Main Research Activities	Research Phase Clusters	Approaches	Tools
Mapping	Situating Research in Complex Contexts	Document Analysis	
Mapping	Situating Research in Complex Contexts	Grounded Theory	
Mapping	Situating Research in Complex Contexts	More-than-human research	
Mapping	Situating Research in Complex Contexts	Policy Analysis	
Mapping	Situating Research in Complex Contexts	Political Ecology	
Mapping	Situating Research in Complex Contexts	Stakeholder Analysis	
Mapping	Situating Research in Complex Contexts	System Analysis	
Mapping	Situating Research in Complex Contexts	Qualitative Dynamic Analysis Methods	
Mapping	Situating Research in Complex Contexts	Quantitative Research	Questionnaires & Surveys

Main Research Activities	Research Phase Clusters	Approaches	Tools
Mapping	Understanding a Specific Position	Cosmological perspectivism	
Mapping	Understanding a Specific Position	Critical and Collaborative Design Ethnography	
Mapping	Understanding a Specific Position	(Focus) Group Interview	Participatory Workshops
			Photo Elicitation Interview
Mapping	Understanding a Specific Position	One-to-One & Face-to-Face Interviews	Photo Voice and Visual Sociology
			Murals of Nature Futures from Magazines
			Hybrid Diary Study
			Walkthrough in situ
Mapping	Understanding a Specific Position	Static Observation in Situ	
Mapping	Understanding a Specific Position	Theatre-Based Methods	Forum Theatre
			Theatre of the Oppressed

Main Research Activities	Research Phase Clusters	Approaches	Tools
Mapping	Understanding a Specific Position	Walk-shops	
Mapping	Shared Understanding	Back Casting Scenarios	
Mapping	Shared Understanding	Community-Based System Dynamics	Clothesline of Ideas
			Problem Tree / Participatory System Mapping
Mapping	Shared Understanding	Complexigraphies	
Mapping	Shared Understanding	Critical and Collaborative Design Ethnography	
Mapping	Shared Understanding	Deep Collaborative Mapping	
Mapping	Shared Understanding	Eco-Ethnography	
Mapping	Shared Understanding	(Focus) Group Interview	Photo Voice and Visual Sociology
			Science and Art Conversations
Mapping	Shared Understanding	Other-than-Human Ethnography	

Main Research Activities	Research Phase Clusters	Approaches	Tools
Mapping	Shared Understanding	World Café for Dialogical Community Events	
Mapping	Experiential & Multi-Sensory	Participatory Field Work	
Mapping	Experiential & Multi-Sensory	Critical and Collaborative Design Ethnography	
Futuring	Experiential & Multi-Sensory	(Focus) Group Interview	Science & Art Conversations
Futuring			Photo Voice & Visual Sociology
Mapping	Experiential & Multi-Sensory	More-than-human Research	
Mapping	Experiential & Multi-Sensory	Participatory Field Work	
Mapping	Experiential & Multi-Sensory	Sound-Scapes	
Mapping	Experiential & Multi-Sensory	Smell-Scapes	
Futuring	Experiential & Multi-Sensory	Theatre-Based Methods	
Mapping	Experiential & Multi-Sensory	Walk-shops	
Futuring	Imagination	Collaborative Futuring	

Main Research Activities	Research Phase Clusters	Approaches	Tools
Mapping	Imagination	Critical and Collaborative Design Ethnography	
Futuring	Imagination	Envisioning shifting Temporalities Through Memory and Cognition	
Futuring	Imagination	Ethical Dilemma Scenarios	
Futuring	Imagination	Future Lab and Memory Lab	
Mapping	Imagination	More-than-humans Life Histories	
Mapping	Imagination	More-than-Human Research	
Futuring	Imagination	Participatory Scenario Development and Discussion	
Futuring	Imagination	Postcards from the Future	
Futuring	Imagination	Scenario and Future Imagination through performative Art	
Futuring	Imagination	2120	
Futuring	Dialogue Across Different Perspectives	Cosmological Perspectivism	

Main Research Activities	Research Phase Clusters	Approaches	Tools
	Dialogue Across Different Perspectives	Critical and Collaborative Design Ethnography	
	Dialogue Across Different Perspectives	Future Frictions	
Futuring	Dialogue Across Different Perspectives	Relational Co-Design	Round Table Discussion with Stakeholders
			Focus Group Meetings Building to Combined Meetings
Reflection	Dialogue Across Different Perspectives	Relatoscope	
Reflection	Dialogue Across Different Perspectives	World Café for Dialogical Community Events	
Reflection	Negotiated Action	Back Casting Scenarios	
Futuring	Negotiated Action	Critical and Collaborative Design Ethnography	
Futuring	Negotiated Action		
Futuring	Negotiated Action	Intervention	

Main Research Activities	Research Phase Clusters	Approaches	Tools
Futuring	Negotiated Action	Transition Pathways	
Reflection	Learning and Reflexivity	Critical and Collaborative Design Ethnography	
Reflection	Learning and Reflexivity	Developmental Evaluation	
Reflection	Learning and Reflexivity	Outcome Harvesting	
Reflection	Learning and Reflexivity	Relational Co-Design	Round Table Discussion with Stakeholders
			Focus Group Meetings Building to Combined Meetings
Reflection	Learning and Reflexivity	Participatory Monitoring	
Reflection	Learning and Reflexivity	Reflexive Monitoring and Learning History	
Reflection	Learning and Reflexivity	Relatoscope	

1 Methods of Entry

The ways in which we enter the field within participatory action research are easily overlooked, but it is relevant to consider how we as researchers are staging our first encounters. This is a crucial moment in the research process that can be marked through a particular activity or ritual that fits the situation. Although collaboration can take many different forms, it is important to recognize that simply organizing a workshop without first establishing connection and trust is unlikely to be effective and it can be extractivist, which means that researchers treat participants as data points rather than collaborators, holders of knowledge, and as researchers and analysts themselves. This is where methods of entry come in. This cluster of methods of entry is about situating ourselves – with humility – as researchers within the field we will be working. Methods of entry stand at the very beginning of participatory action research. However, entering the field is not something that ‘ends’ at the beginning. As our perspectives and research questions change over time but also as the field in itself is a changing entity (in terms of people, landscape, issues), throughout our fieldwork we will have to be aware of how we enter the field and present ourselves. In such a way, methods of entry are very context dependent, they are always relational to the fields we are engaging with. Therefore, they also evolve in tandem with methods of contextualizing and situating research in complex contexts.

Thinking of our first encounters with our research fields as a method helps to make it a thoughtful and intentional process. The aim is to transparently present ourselves as researchers with all our intentions and ambitions. However, this needs to be done carefully and in dialogue with our societal partners and other actors in the field. This cluster, thus, is not only about drafting the perfect ‘masterplan’ of how we would like to do our research, but also about careful dialogue with our collaborators about mutual expectations, and about how to collaborate together, including agreements about possibilities for refusal and withdrawal.

Within the BIOTraCes project, practicing good methods of entry means that all the research teams have conversations with their societal partners even as the conversations will be very different for every partner, as some are already working together for a long time with their academic partners for other projects, whereas others are starting a new collaboration. It might be advisable for researchers to first join societal partners in their efforts, for example as a researcher in residence, so that you become part of their world before you ask them to join your world. This is a way to establish relational humility which is an important part of efforts to level out pre-existing power inequalities between researchers and other knowledge holders.

Being conscious about how we enter a field is particularly relevant for allowing for the **pluralisation** of knowledge. Positioning our academic quest for knowledge and the questions we ask as one particular kind of knowledge next to many other knowledge systems, will allow us to understand the different knowledge systems at stake.

Methods of entry may entail:

- Critical and Collaborative Design Ethnography [Mapping; Reflection; Approach]
- Pilot Workshop [Mapping; Approach]
- Starting Conversation [Mapping; Approach]
- Writing an agreement and a budget [Mapping; Tool]

2 Methods for Situating Research in Complex Contexts

The BioTraCes case studies involve complex social-ecological systems. It is therefore important to situate the research within this complex context in an early stage of the research process. This involved gaining an understanding of the actors, not just in direct connection to the case, but also in the wider environmental, political, cultural and societal context, and an understanding of the different issues at stake and the relevant power relations, values, and forms of knowledge. Gaining this understanding can partly overlap with the previous cluster since it is important that researchers familiarize themselves with the situation before initiating contact.

This cluster can take the form of a relatively traditional research phase involve desktop research of documents or interviews or it can take a collaborative approach from the start. This will depend on the specificity of the case, as well as previous histories or collaboration. Regardless of the approach taken though, conversations with actors to demarcate the field, provide historical details, identify relevant documents and actors, and validate findings will be highly beneficial. This cluster provides the necessary basis for and can also overlap with the next cluster.

The understanding of the research context that will generated by applying methods from this cluster will be particularly relevant for the comparative analysis of the different initiatives at a later stage. In order to understand how change occurs in different ways, it is crucial to understand how the contexts in which change occurs are complex and different from each other.

Since this cluster is about contextualizing research and creating an understanding of the different political values and knowledge systems that are relevant in a given context, they are directly relevant for **Pluralising & Politicising**. This insight into power structures will also help actors to develop strategies for action, so this cluster also indirectly contributes to **Empowering and Embedding**.

Methods for contextualizing research in complex contexts make use of available documents and texts, the gathering, analysis, and/or evaluation of which may be done in collaboration with societal partners as a way of 'ground-truthing' findings.

Methods for situating research in complex contexts may entail:

- Co-Citation Network Analysis of the Literature Combined with Qualitative Analysis [Mapping; Approach]
- Community Based System Dynamics (CBSD) [Mapping; Approach]
- Critical and Collaborative Design Ethnography [Mapping; Reflection; Approach]
- Deep Collaborative Mapping [Mapping; Approach]
- Discourse & Frame Analysis [Mapping; Approach]
- Document Analysis [Mapping; Approach]
- Grounded Theory [Reflection; Approach]
- More-than-human research [Mapping; Approach]
- Policy Analysis [Mapping; Approach]
- Political Ecology [Mapping; Approach]
- Stakeholder Analysis [Mapping; Approach]
- System Analysis [Mapping; Approach]
- Qualitative Dynamic Analysis Methods [Mapping; Approach]
- Questionnaires & Surveys [Mapping; Tools for Quantitative Research]
- Quantitative Research [Mapping; Approach]

3 Methods for Understanding a Specific Position

This third method cluster gathers methods that aim to identify and understand specific positions of actors, including how they relate to a given context and to other actors, how they see their role in the case, what problems they experience, and what courses of actions they prefer.

Methods that serve this purpose may vary in terms of solution-orientedness. While group conversations are primarily exploratory, the relatoscope emphasizes complexity, and focus group conversations offer way to come to joint understandings and solutions. Besides, there is also variation in terms of the emphasis on the relationality between different actors. While the one-to-one interview is clearly about closely engaging with one specific position, some (focus) groups are purposefully relatively homogenous (e.g. adolescents of a specific age) while others purposefully already bring different actors to the table (e.g. senior citizens and food industry). Lastly, methods diverge by the way conversations are structured, scripted, or elicited by means of objects, images, or activities such as walking.

Understanding specific positions is an important criterium for understanding the plurality of perspectives that are available (**Pluralising**). Moreover, inclusion of this plurality in the overall narrative of the case, and of transformative change, can have **politicising** implications because new perspectives and actors are added to the story. For these new perspectives and actors, this cluster of methods can be **empowering**. Finally, understanding positions that are still underrepresented in institutional contexts might help to embed specific perspectives into systems from which they are oftentimes excluded (**Embedding**).

Methods for understanding a specific position may entail:

- Cosmological perspectivism [Mapping; Approach]
- Critical and Collaborative Design Ethnography [Mapping; Approach]
- (Focus) Group Interview [Mapping; Approach]
- Hybrid Diary Study [Mapping; Interview Tool]
- Murals of Nature Futures from Magazines [Mapping; Tool for Visual Sociology]
- One-to-One & Face-to-Face Interviews [Mapping; Approach]
- Participatory Workshop [Mapping; Tool for (Focus) Group Interview]
- Photo Voice and Visual Sociology [Mapping; Interview Tool]
- Photo Elicitation Interview [Mapping; Tool for Visual Sociology]
- Static Observation in Situ [Mapping; Approach]
- Theatre-Based Methods [Mapping; Approach]
- Walk-shops [Mapping; Approach]
- Walkthrough in situ [Mapping; Interview Tool]

4 Methods to Develop a Shared Understanding of an Issue

Methods for collaboratively understanding an issue are aimed at making sense of a problem together with local actors that is of relevance to a particular community. This is a crucial, but often overlooked aspect of PAR and of participatory processes more generally. Too often participatory initiatives are designed on the basis of preconceived ideas on the part of the initiators about what the issue is and who the relevant actors are. Based on the in-depth understand of plural positions and context that has been gained by the methods in clusters 2 and 3, this cluster of methods can be used to collectively create a shared understanding of the case study including a common understanding of the social-ecological system in the cases, including the definition of problems, the actors involved, underlying causes, and potential strategies and action plans.

The ambition of collaboratively understanding an issue also presents challenges and dilemmas. How can the plurality established through clusters 2 and 3 be maintained when also working towards a shared understanding of an issue? It is therefore important that a shared understanding is understood as working across difference instead of homogenising this. In such a way, developing a shared understanding is about acknowledging diverse ways of seeing an issue, as steppingstone towards shared action that can lead to change. If done well, a shared understanding has tremendous **empowering** potential, because it allows for collective action that is inclusive of voices that otherwise would be unheard and this is relevant if results are to be **embedded** in ways that are effective and just.

Methods for collaboratively understanding an issue may entail:

- Back casting Scenarios [Mapping; Approach]
- Critical and Collaborative Design Ethnography [Mapping; Reflection; Approach]
- Clothesline of Ideas [Mapping; Tool]
- Community-Based System Dynamics [Mapping; Approach]
- Deep Collaborative Mapping [Mapping; Approach]
- Problem Tree – Participatory System Mapping [Mapping; Tool for CBSD]
- Complexigraphies - Qualitative Mapping Visual Methods for the Complexity of the Thinking [Mapping; Approach]
- Eco-Ethnography [Mapping; Approach]
- Other-than-Human Ethnography [Mapping; Approach]
- Photo Voice and Visual Sociology [Mapping; Interview Tool]
- Science and Art Conversations [Mapping; Interview Tool]
- World Café for Dialogical Community Events [Reflection; Approach]

5 Experiential & Multi-Sensory Methods

Experiential methods facilitate different modes of engaging with people, nature, and issues that involve broader ways of understanding. They are discussed here as a separate cluster, but they can be valuable components for all other clusters as well. Whereas most methods heavily depend on verbal communication and cognition, this cluster includes experiences, multiple senses, and emotional and/or affective registers and ways of knowing and engaging. As such, it is useful for **Pluralising**. Since a multisensory and experiential approach to knowing can destabilize common views that see politics as a rational conversation between people with different opinions, this cluster of methods can also be useful to disrupt established power structures (**Empowering and Politicising**). Experiential approaches might (productively) stand in tension with **Embedding** initiatives since they generate ways of engaging and knowledge production that do not fit easily in existing institutional contexts.

Experiential & Multi-Sensory Methods might entail...

- Critical and Collaborative Design Ethnography [Mapping; Reflection; Approach]
- More-than-human research [Mapping; Approach]
- Participatory Field Work [Mapping; Approach]
- Photo Voice and Visual Sociology [Mapping; Interview Tool]
- Science and Art Conversations [Futuring; Interview Tool]
- Sound-Scapes [Mapping; Approach]
- Smell-Scapes [Method; Approach]
- Theatre-Based Methods [Futuring; Approach]
- Walk-shops [Mapping; Approach]

6 Methods for Imagination

Methods for imagination serve the purpose of broadening the spectrum of how issues are looked at and providing true alternatives to the status quo. Methods for imagination may make use of futuring techniques which can serve to develop future visions, question the limitation of present future imaginaries by providing new ones, or both. This can also be done in different ways, for example by speculating about and trying to give voice to more-than-human perspectives on an issue. Following on cluster 4, this cluster takes PAR from a common understanding to a creative output-oriented approach to developing alternatives.

By developing alternatives and questioning dominant conceptions of the future, this cluster is useful for **Pluralising and Politicising**. Regarding the way, that methods for imagination can give voice to non-heard voices may be **Empowering**, but as mentioned previously, there can be tensions with the existing institutional system that is geared towards accommodating dominant actors which can limit **Embedding**.

Methods for Imagination might entail

- Collaborative Futuring [Futuring; Approach]
- Critical and Collaborative Design Ethnography [Mapping; Reflection; Approach]
- Envisioning shifting Temporalities Through Memory and Cognition [Reflection; Approach]
- Ethical Dilemma Scenarios [Futuring; Approach]
- Future Lab and Memory Lab [Futuring; Approach]
- More-than-humans life histories [Mapping; Approach]
- More-than-human research [Mapping; Approach]
- Participatory Scenario Development and Discussion [Futuring; Approach]
- Postcards from the Future [Futuring; Approach]
- 2120 [Futuring, Approach]

7 Methods for Dialogue Across Different Perspectives

Dialogue methods are an important component of all PAR approaches, and they can be combined with methods in the other clusters. However, they require preparation, using methods from clusters 1, 2 and 3 to make sure that good connections and trust have been established, that an understanding of the diversity of actors, including views, values, interests, and power relations, as well as political, cultural and societal context has been achieved.

The main point of this cluster is to bring together different actors in ways that allow for genuine inclusion and engagement, that are attentive to power inequities, and that are respectful of difference. As such dialogue methods have to ensure mutual trust, respect, relational humility, and they should avoid dominance, exclusion and premature consensus. Dialogue methods are a way to make sure that learning does not only happen on the part of the researcher, but is shared among different participants.

This cluster is relevant for all elements of the PEPE framework depending on what the dialogues focus on. By ensuring diversity, it supports **Pluralising**, when power relations or dominant problem framings are discussed and questioned, it supports **Politicising**, when future visions or alternatives are developed, it can help **Empowering**, and when common actions are taken to put these visions into practice, they support **Embedding**. Bringing people together that are both from within institutional embedded contexts and outside lays important groundwork for **Embedding**, because it makes these differences tangible. It can show what lies outside of the institutional context, and how institutionalization could be beneficial. Simultaneously, it might also work the other way around and reveal what aspects of social life are now highly regulated by institutional structures, but in fact would benefit from less embedding to provide more room for bottom-up initiatives (**Embedding**). In such a way, methods for mutually understanding different positions already have an interventionist dimension.

Methods for mutually understanding different positions might entail...

- Critical and Collaborative Design Ethnography [Mapping; Approach]
- Cosmological perspectivism [Mapping; Approach]
- Future Frictions [Futuring; Approach]
- Relational Co-Design [Futuring; Approach]
- Relatoscope [Reflection; Approach]
- World Café for Dialogical Community Events [Reflection; Approach]

8 Methods for Negotiated Action

The aim of methods for negotiated action is to make a positive impact in the field you are working in. This stage epitomizes the idea of PAR. Drawing on results gained from previous clusters, this cluster focusses on defining concrete actions to realize common future visions and putting them into practice. This cluster requires political strategizing to ensure that actors are Empowered to achieve the Embedding of initiatives and visions, while making sure to not lose sight of inclusiveness and Pluralism and ambitions for transformation, including critical questioning of dominant power relations, values, knowledge systems, and interests (Politicising).

Methods for Negotiated Action may entail...

- Critical and Collaborative Design Ethnography [Futuring; Approach]
- Intervention Method [Futuring; Approach]
- Transition Pathways [Futuring; Approach]
- Back Casting Scenarios [Reflection; Approach]

9 Methods for Learning and Reflexivity

Reflection and learning take place throughout the PAR process to create opportunities to adapt and improve. Such adaptation is important given the open-ended nature of transformation. To create processes that are truly transformative, the research process itself can be understood as a reflexive process, otherwise, there is the risk to stay in traditional modes of knowledge production where the field serves as a source for data and the researchers produce knowledge.

This cluster of methods for learning and reflexivity intends to not only stimulate learning, but also harness and share this learning. Thus, it is not only something that the involved researchers are doing, but also something that is done in collaboration, and that can help the societal partners in their work because they are able to reflect differently on their own practices.

Methods of Learning and Reflexivity broaden the definition of what valuable knowledge is and they nurture the creation and documentation of knowledge in communities that otherwise are often thought to have 'merely' perspectives, values, or practical knowledge. Creative approaches are useful to enable diverse participants to express themselves in ways that are meaningful and that reflect diverse economic, social, spiritual, and ecological values.

Methods for learning and reflexivity are easily paired with other methods of participatory action research. In some cases, it becomes even difficult to distinguish whether something is 'only' about collaboratively understanding an issue, or whether it simultaneously also a method for learning and reflexivity.

Empowering is a central ambition of this cluster of methods in different ways. It may be empowering, to recognize that diverse ways of knowing are all important and relevant because it can result in the levelling out of power differences. Moreover, learning and reflection can create joint ownership of the research and its outcomes. This cluster supports the process of putting outcomes into practice in ways that are flexible, dynamic, and effective (**Embedding**), while also staying conscious of the original ambitions of the research.

Methods for learning and reflexivity may entail...

- Critical and Collaborative Design Ethnography [Reflection; Approach]
- Developmental Evaluation [Reflection; Approach]
- Focus Group Meetings Building to Combined Meetings [Reflection; Tool for Relational Co-Design]
- Knowledge Co-Production, from Co-Design to Co-Dissemination [Reflection; Approach]
- Learning History [Reflection; Tool for Reflexive Monitoring]
- Outcome Harvesting [Reflection; Approach]
- Participatory Monitoring [Reflection; Approach]
- Reflexive Monitoring [Reflection; Approach]
- Relatoscope [Reflection; Approach]
- Round Table Discussion with Stakeholders [Reflection; Tool for Relational Co-Design]

Annex: Methods Listed in Alphabetic Order

A

B

Back Casting Scenarios (UGOT)

[Approach; Mapping; Reflection; Shared Understanding; Negotiated Action]

Why: UGOT researchers used the method of Back casting Scenarios in a project on sustainable outdoor recreation, in order to identify matters that need to be addressed in order to steer towards a preferred goal. Other objectives were to raise awareness, initiate discussion and collaboration as well as identifying knowledge gaps.

How: A number of workshops were organized with about 10 representatives from key stakeholders; public authorities, NGOs in sport, outdoor recreation and nature conservation respectively, and landowners. During these workshops, a joint document was co-created describing trends and their possible outcome in 2030, and also presenting possible actions.

Challenges: How concrete should the descriptions of the future be? The participants coming from public authorities also had to take into account what they could sign as representatives for their authorities.

C

Clothesline of Ideas (CES)

[Tool for CBSD; Mapping; Shared Understanding]

Why: Creating a clothesline of idea may serve to map the problems and possible solutions or alternatives of a community. As such it may be understood as a tool for doing Community Based System Dynamics (CBSD).

How: In order to create the clothesline, a rope needs to be placed in a public place, with papers and writing/colouring materials. Subsequently, the public needs to be asked to share their knowledge, perceptions and ideas for the neighbourhood.

Challenges: It is a tool that is very time and resources consuming. It only properly works if many people need to be involved.

Co-Citation Network Analysis of the Literature Combined with Qualitative Analysis (CES)

[Approach; Mapping; Situating Research in Complex Contexts]

Why: A co-citation network analysis explores a corpus of literature revealing the connections based on the sharing of common references. The network may allow researchers to identify different types of communities sharing common references. It supports inter and transdisciplinary mappings of relevant concepts or theories and illuminate how particular subjects are addressed. It can be combined with qualitative analysis for more in-depth understandings.

How: A corpus of references is selected and then analysed in terms of its network structure based on the number of co-citations. These quantitative results can be qualitatively analysed in terms of their patterns and significance.

Challenges: Best performed by a team, combining individuals with domain knowledge, network analysis and computational skills as well as individuals with capacity to perform qualitative analyses.

Literature and Inspiration:

Melo, A. T. de, Caves, L. S. D., Dewitt, A., Clutton, E., Macpherson, R., & Garnett, P. (2020). Thinking (in) complexity: (In) definitions and (mis)conceptions. *Systems Research and Behavioral Science*, 37(1), 154–169. <https://doi.org/10.1002/sres.2612>.

Trujillo, C. M., & Long, T. M. (2018). Document co-citation analysis to enhance transdisciplinary research. *Science Advances*, 4(1), e1701130. <https://doi.org/10.1126/sciadv.1701130>.

Collaborative Futuring (UT)

See [Future Lab, Memory Lab / Collaborative Futuring](#).

Community-Based System Dynamics (UBB, CES)

[Approach; Mapping; Shared Understanding]

Why: Community-based system dynamics (CBSD) is the qualitative approach to system thinking. CBSD procedure starts with revealing community's understanding of an issue/problem/concept. In such a way, CBSD offers a picture of the existing situation, including change processes and dynamics. Moreover, the researcher may also go further and identifies the solutions preferred by the community to a given problem.

How: CBSD is a participatory research method based on the input of members of a specific community. The aim is to visualize the role of different identified causes and effects in the system and the nature of their interactions. Vensim software may be used to illustrate how the system is functioning (balancing and reinforcing loops).

Researchers at UBB applied CBSD in three cases. For example, in one case, they selected 15 key informants. They were considered both a source of information and a source for offering solutions. One of the main considerations in their selection was to create a panel with a combination of people who could offer insights about the challenges brought about by land degradation within their community. They tried to reveal the diversity of participants' views and to give space to those voices at risk of being diminished (for example, economically disadvantaged people, such as day laborers). They created a safe communicative space for each session through several ice-breaking sessions (e.g., "Find 5 things in common"; "What if exercise", and, "Word association/ "I say one word, you say two"). They established "ways of working", which means we explained of the basic rules of confidentiality, active listening, empathy, tolerance for the other's opinion and not needing to agree on everything and the freedom to leave the workshops. The biases of the research team were mitigated using the "handing over the stick" (pen) approach.

According to researchers at CES, Qualitative Dynamic Analysis can be done with any longitudinal set of data that is discrete or that can be converted into ordinal variables (e.g. likert scale) or categorical. Graphics are created which are coded in relation to the nature of the dynamic patterns that they reveal namely in terms of the degree of coordination between different reporters.

Challenges : Researchers at UBB report that it may be challenging to identify the key informants and find the best ways to approach them. To overcome this risk, one of the moderators was also a community member. According to CES researchers, Qualitative Dynamic Analysis is difficult to apply with many reporters.

Literature and Inspiration:

Hovmand, P. (2013). Community Based System Dynamics. In *Community Based System Dynamics* (p. 104). <https://doi.org/10.1007/978-1-4614-8763-0>.

Maleki, R., Nooripoor, M., Sharifi, Z., & Petrescu, D. C. (2022). Application of community-based system dynamics for the management of rural households' vulnerability to the drying of Urmia Lake. *Systems Research and Behavioral Science*, 40(3), 573–585. <https://doi.org/10.1002/sres.2848>.

Melo, A., & Alarcão, M. (2016). Qualitative Methods for the Exploration of Complexity in Human Social Systems: Applications in Family Psychology. In S. Battiston, F. De Pellegrini, G. Caldarelli, & E. Merelli (Eds.), *Proceedings of ECCS 2014* (pp. 21–32). Springer International Publishing. https://doi.org/10.1007/978-3-319-29228-1_3.

Complexigraphies - Qualitative Mapping Visual Methods for the Complexity of the Thinking (CES)

[Approach; Mapping; Shared Understanding]

Why: There is a need to promote more complex modes of thinking to manage real world complex problems. There is a challenge in how to scaffold individuals and collectives towards performing more complex thinking movements. A visual map allows individuals and groups to “see” their thinking, encapsulated in a pictographic map, where each pictogram represents a movement of the thinking, and its complexity (defined in relation to characteristics of complex systems, and to identify patterns and alternative movements. The maps can be used also to “choreograph” the processes underlying the unfolding of the thinking, guiding participants to try to enact different types of complexity in grasping the complexity of a target system of interest.

How: The researcher can build a preliminary Live map and provide immediate feedback as well as a more detailed graphic map and feedback during and after events of collection of written or oral narratives where participants share their understanding, descriptions, explanations or action plans in relation to a particular problem. The method can be coupled with the Relatoscope method which aims at supporting the structural and dynamic complexity of the thinking, as well as the complexity of the observer.

Challenges: It training and experience (specially for live coding).

Literature and Inspiration

Melo, A. T. de; Renault, Letícia (2022), ""Complexigraphies: Une méthodologie d'analyse qualitative des mouvements d'une pensée complexe" [Complexigraphies: A qualitative methodology for analysing the movements of a complex thinking]", paper presented at Congrès Scientific International "Comprendre les processus de changement: Apports des méthodes qualitatives et mixtes", Université de Liège, Liège, Belgium, 13 to 14 October.

Melo, A. T. & Renault, L. (2023). Complexigraphy: Theoretical Foundations And Methodological Challenges Of Mapping Complex Thinking. Paper submitted to publication.

Cosmological perspectivism (UNICT)

[Approach; Mapping; Understanding a Specific Position; Dialogue Across Different Perspectives]

In recent decades, in the wake of the so-called “ontological turn”, the Brazilian anthropologist Eduardo Viveiros de Castro has developed an approach called “perspectivism” (or natural relativism) that inverts the equation between nature (as a given: naturalism) and culture (as variable: multiculturalism). Focusing on the interaction between humans and animals (or other living beings), this approach attempts to theorize that nature is the variable whereas culture is less variable or, at least, has a less radical difference than nature. Perspectivism does not treat difference as equal in power and value. It re-politicizes nature worldviews and cosmologies. By “perspectivism” Viveiros de Castro means “seeing how”. Under normal conditions, humans see humans as humans and animals as animals. Animals, however, see humans as animals, as prey but also as predators. Then they perceive themselves as human or become anthropomorphic beings. According to animist theories, human beings, animals and

spirits are considered within a shared set of interactions and relationships and this occurs through communication, mutual understanding and the possibility of transforming and becoming the Other.

This approach was applied in several interesting collaborative research project. For instance, Franz Krause (2019) introduces the idea of “hydro-perspectivism” to better understand what happens if anthropologists, together with their research participants, comment on terrestrial life from an aqueous point of view. Being afloat rather than grounded inland shifts people’s points of reference, even though their general cultural framework may remain the same. He argues that a “perspectivist approach to the juxtaposition of water-based and land-based subjective positions pays attention to the specific materialities of aqueous heterotopias, and the ways in which water can generate certain social and political forms, instead of others” (ibidem).

Literature and Inspiration:

Cadena, M. d. I., and Blaser, M. (Eds.). (2018). *A World of Many Worlds*. Durham, NC: Duke University Press.

Castro, E. V. d. (1998). Cosmological Deixis and Amerindian Perspectivism. *The Journal of the Royal Anthropological Institute* 4(3): 469–88. <https://doi.org/10.2307/3034157>.

Escobar, A. (2018). *Designs for the Pluriverse: Radical Interdependence, Autonomy, and the Making of Worlds*. Duke University Press.

Krause, F. (2019). Hydro-perspectivism: Terrestrial life from a watery angle. *Anthropological Notebooks*, 25(2), 93–101.

Critical and Collaborative Design Ethnography (UNICT, CER)

[Approach; Mapping; Reflection; Entry; Situating Research in Complex Contexts; Understanding a Specific Position; Shared Understanding; Experiential & Multi-Sensory; Imagination; Dialogue Across Different Perspectives; Negotiated Action; Learning and Reflexivity]

Why: Ethnography is, by definition, participatory. This why the trajectories of ethnography and participatory action research (PAR) have become entangled in different ways. Among the various anthropological approaches used in PAR, “critical design ethnography for change” and “collaborative ethnography” have an interesting peculiarity: crucial attention is paid to the tensions between the design agenda and the empowerment agenda. These approaches are ethically committed to appreciating socio-cultural collaborations for the welfare of the groups researchers work with, but what is more they carefully evaluate the risks connected with the tendency of patronizing the other and soliciting neutralized forms of community consultation through PAR. Instead of emphasizing the goodness of participation, these approaches stress the importance of collaboration and radical compromising research ethics and practices. As defined by Lassiter, the main characteristic of collaborative ethnography is to “resituating collaborative practice at every stage of the ethnographic process, from fieldwork to writing and back again”, or said in another way to favoring “constant mutual engagement at every step of the process”.

How: For researchers from CER this means that there is a collaborative process that involves everything from production to dissemination. For example, they prepared scientific papers, short and slow films and books together with traditional knowledge holders.

Challenges: One of the challenges is that locals are often not well informed who will read/watch/use these materials, and what knowledge these people have about their social-ecological context. Another key challenge is the real and fair benefit sharing, easier said than done, very specific to each situation.

Literature and Inspiration

Lassiter, L. E. (2005). *The Chicago Guide to Collaborative Ethnography*. University of Chicago Press. <https://press.uchicago.edu/ucp/books/book/chicago/C/bo3632872.html>

Schensul, J. J., & LeCompte, M. D. (2016). *Ethnography in Action: A Mixed Methods Approach*. Rowman & Littlefield.

Reason, P. (2004). Critical Design Ethnography as Action Research. *Anthropology & Education Quarterly*, 35(2), 269–276.

D

Deep Collaborative Mapping (UNICT)

[Approach; Mapping; Situating Research in Complex Contexts; Shared Understanding]

Why: “Deep maps are not confined to the tangible or material, but include the discursiveness and ideological dimensions of place, the dreams, hopes, and fears of residents – they are, in short, positioned between matter and meaning” (in Bodenhamer et al. 2015, 3).

A deep map is an approach that emerged in the humanities following the “spatial turn” at the turn of the century. Although there is no strict definition, it is considered the “essential next step” beyond Euclidean cartography, aiming to comprehend the many layers of memory, experience, and perceptions of a particular place over time through the variety of narratives that are anchored there. A deep map may interweave official documents with auto-biographical stories, folklore, architecture, archaeological objects, weather reports, and natural history.

How: Deep mapping is a qualitative research method that involves collecting and analyzing in depth information about a specific territory or place, including its socio-ecological histories. Deep mapping seeks to uncover the layers of meaning and complexity that exist within a particular area, and to use this understanding to inform transformation processes. It can be particularly useful for exploring issues related to biodiversity restoration, as it allows researchers to gain a more comprehensive understanding of the ecological, social, and cultural contexts in which restoration efforts are taking place. By identifying the power dynamics at play in a given place, deep mapping can also help to inform more inclusive restoration strategies. Engaging local communities in a deep mapping exercise serves to identify and prioritize areas for restoration, as well as potential barriers to restoration. It is also a method that facilitates transformative citizen science actions, involving citizens in data collection, in monitoring restoration activities, and providing them with opportunities to actively engage with biodiversity. Deep mapping can be a useful tool for identifying biodiversity lock-ins. By providing a rich and context-specific understanding of the ecosystem at stake, it can help reveal how social and ecological factors interact to create and maintain patterns of biodiversity loss. It can also help identifying potential opportunities for disrupting or shifting these patterns, by highlighting areas or challenges where community engagement, policy interventions, or other forms of change might be most effective.

Another key difference between participatory deep mapping and other forms of mapping is the active engagement of local people in the map-making process by building trust and fostering collaboration. A deep mapping approach can make use of various technics, such as using paper maps, GIS software, online mapping platforms and/or other creative/art-based tools, including literature, radio talks, and multimedia installations.

Literature and Inspiration

Bodenhamer, D.J., Corrigan, J. and Harris T.M. (Eds.). (2015). *Deep Maps and Spatial Narratives*, Bloomington: Indiana University Press.

Earley-Spadoni, T. (2017). Spatial history, deep mapping and digital storytelling. Archaeology’s future imagined through an engagement with the Digital Humanities. *Journal of Archaeological Science* 30, 95-102.

Deep Mapping – deep-mapping sanctuaries: <http://deepmappingsanctuaries.org/deep-mapping/>

Roberts, L. (Ed.). (2016). Special Issue “Deep Mapping.” *Humanities*, 5(1). https://www.mdpi.com/journal/humanities/special_issues/DeepMapping.

Developmental Evaluation Approach (CES)

[Approach; Reflection; Learning and Reflexivity]

Why: The need to promote change and understand “how things can be” imposes a different rhythm and raises questions that traditional research and evaluation models cannot properly address. There are contexts where change is much needed and where knowledge needs to be produced in the context of application and in a more design-oriented fashion. Research methods and approaches need to be fit for purpose and capable of responding and adapting to contexts of innovation, high complexity, uncertainty and change.

How: A developmental evaluation approach tends to be collaborative and co-constructed with different stakeholders. It is guided by the principles organising complex systems to ensure it is adaptive to the unfolding context, the interventions and their effects. It is an “agile” and “bricolage mode of conducting evaluations, using different types of data and integrating a variety of methods and tools as fitted for a particular context and its evolution. It is “utilization-focused”, attending to the intended users and their needs, ensuring that information is “timely, understandable, practica, accurate and useful” (Patton, 2011, p. 59) and that it can be used, supporting ongoing learning and transformations. It can accommodate and be guided by different types of inquiry frameworks.

Challenges: The success of “real-world” projects which include a dimension of intervention is dependent on a high level of engagement and embedding of the researcher in the contexts where the action takes place and the development of strong relationships of trust and true partnership particularly when the interventions have a great degree of uncertainty and complexity. There is a need for a significant investment of time which may not easily or immediately convert into “academic currency”. There is a lot of “messy” data and data that can be “lost” or unusable.

Literature and Inspiration:

Patton, M. Q., McKegg, Mixed K., & Wehipeihana, N. (Eds.). (2015). Developmental evaluation exemplars: Principles in practice. Guilford Publications.

Patton, M. Q. (2011). Developmental Evaluation: Applying Complexity Concepts to Enhance Innovation and Use. Guilford Press. https://market.android.com/details?id=book-gd_RvUbSWnsC.

Discourse and Frame Analysis (UT, UGOT)

[Approach; Mapping; Situating Research in Complex Contexts]

Why: To examine vested interests, institutional contexts, paradigms and power relations, and assess barriers or opportunities for agency and change, discourse analysis can be a powerful tool.

How: This can be done by identifying key documents that serve as the basis for a systematic context analysis that is based on pre-defined questions and also doing word searches. Besides documents, interviews or visual materials can be used to identify dominant and more marginal discourses and evaluate and how they define problems, attribute causes, distribute responsibilities etc. Not always seen as a participatory method, but it is an essential part of the project.

Challenges: There are potential ethical dilemmas since the analysis itself is inevitably the result of framing and involves the production of discourse itself. Moreover, it may be challenging to catch what the words 'really mean'. Understanding the 'power' of the documents, i.e. how influential they are on management, regulations and actions.

Literature and Inspiration:

Stone, D. A. (1989). Causal Stories and the Formation of Policy Agendas. *Political Science Quarterly*, 104(2), 281–300.

Hajer, M., & Versteeg, W. (2005). A decade of discourse analysis of environmental politics: achievements, challenges, perspectives. *Journal of Environmental Policy & Planning*, 7(3), 175–184. <https://doi.org/10.1080/15239080500339646>.

Bacchi, C. (2012) Introducing the 'what is the problem represented to be' approach. In Bletsas, A. & Beasley, C. eds. *Engaging with Carol Bacchi*. Adelaide: University of Adelaide Press. 34-37.

Turnhout, E., Tuinstra, W., & Halffman, W. (2019). *Environmental Expertise: Connecting Science, Policy and Society*. Cambridge: Cambridge University Press. doi:10.1017/9781316162514.

Document Analysis (UGOT)

See [Discourse and Frame Analysis](#).

E

Engaged Citizen Social Science (CES)

See [Introduction: Participatory Action Research Review](#).

Envisioning Shifting Temporalities Through Memory and Cognition (UNICT)

[Approach; Futuring; Imagination]

Future envisioning approaches have deep roots in applied anthropology, as well as in other human sciences. It was especially in the 1960s and 1970s, however, that a cohort of scholars began to develop methodologies for exploring possible cultural futures or “futures as cultural facts”, to borrow an Appadurai’s notion (2013). As explained by English-Lueck and Avory (2020), “anthropologists sought to decenter the presumption that the future could only be made [and forecasted] by elite actors in developed and democratic nations. Anthropologists deliberately sought out non-elite people of diverse backgrounds, tapped into their imaginations, and delved into the choices they would make to shape the future”.

Some of the techniques of anticipatory anthropology converge today with design thinking methodologies. Both anticipatory anthropology and design thinking explore the present or the past to imagine the future. They can thus make use of similar methods to sightsee forthcoming ways of relating with a specific situation or with an affected landscape or a looming ecological challenge. Envisioning the impacts of climate change, for instance, working closely with local populations – especially vulnerable groups – is an emerging frontier of future studies.

Literature and Inspiration

Stewart Pamela, J., Andrew Strathern. (2003). *Landscape, Memory and History: Anthropological Perspectives*, Pluto Press.

English-Lueck J.A., Miriam Avery. (2020). *Futures Research in Anticipatory Anthropology*, <https://doi.org/10.1093/acrefore/9780190854584.013.14>.

Appadurai, A. (2013). *The Future as Cultural Fact: Essays on the Global Condition*, Verso Books.

Eco-Ethnography (UNICT)

[Approach; Mapping; Shared Understanding]

Why: Eco-ethnography is a method mostly used for designing and facilitating citizen science initiatives. Eco-ethnography builds upon Appadurai’s highly influential book “The future as a cultural fact”, in which

he proposes to take seriously the kind of knowledge that our interlocutors deem necessary for their survival, and to their claims as citizens.

How: In eco-ethnography, researchers and citizen scientists alike are co-participants in processes aimed to increase community involvement in environmental knowledge creation. Eco-ethnography may also be seen as an improved form of citizen science, which works with interlocutors as co-designers of research projects and as co-creators of ‘common knowledge.’ Eco-ethnography opens up a discursive space where hybrid solutions are possible. Indeed, it draws from the story-telling character of anthropological research and its longstanding history to tell stories from an inside (*emic*) perspective, and is therefore well-suited to foster a hybrid space where knowledge from diverse realms merge and intertwine. Politicising and complexifying the ecological approach at stake in a specific frictional zone are the main goals of eco-ethnography. Territorial conflicts, energy flows, clash of values among different knowledge sources are understood in political relational terms.

Literature and Inspiration:

Grace-McCaskey, C. A., Iatarola, B., Manda, A. K., & Etheridge, J. R. (2019). Eco-Ethnography and Citizen Science: Lessons from Within. *Society & Natural Resources*, 32(10), 1123–1138. <https://doi.org/10.1080/08941920.2019.1584343>.

UNICT researchers are experimenting this methodology in a project titled “ReVersE - The Anthropocene Upside Down: Responsible research, VERSatile Knowledge, Environmental futures in action”, by cooperating with a network of territorial groups in Sicily.

Ethical Dilemma Scenarios (UT)

See [Participatory Scenario Development and Discussion](#).

F

(Focus) Group Interview (UBB, UGOT, MRU)

[Approach; Mapping; Futuring; Understanding a Specific Position; Shared Understanding; Experiential & Multi-Sensory; Imagination]

Why: The overall aim of the focus group interview is to exchange viewpoints between different stakeholders and discuss disagreements between participants. It may also be useful to understand where different positions are able to meet and where solutions can be found.

Researchers at MRU used it to understand the attitudes of adolescents concerning interventions aimed at facilitating youngsters’ environmentally friendly behaviour because at a later stage in the research, they aimed to include adolescents in the intervention creation process. They assumed that if adolescents will decide on certain elements of intervention, youth will be more likely to participate and engage in it.

Researchers at UBB used the focus group interview for example to identify senior consumers’ perceptions about how a healthy meal should be. This served the purpose of creating new meat-based products that are suitable for senior consumers’ needs and tastes.

How: UGOT met with 5-8 people per session. There is agreement that thorough preparation and skilled facilitation is necessary, UGOT for example used a discussion guide. UBB researchers make a distinction between *focus group interviews* and *group interviews*, a distinction that primarily lies in the role of the moderator. In a focus group interview, the moderator allows the discussion to flow and only guides the conversation to ensure that the group does not go out of topic. In the case of a group interview, the moderator/researcher asks directed questions and evaluated the responses. Specifically, this may serve to identify senior consumers’ dietary preferences and perceptions about healthy foods and to identify opportunities and limitations of engaging with consumers from companies’ perspective

(food producers, food retailers, and food packaging producers). Both UGOT and UBB researchers took notes and recorded the sessions when possible. In the online versions Google Jams were used to write down ideas and show images.

Challenges: A good moderator is needed because the role of the moderator is key to make attendees interact and feel free to speak. The role of the moderator is slightly easier for a group interview than for a focus group interview because there is more structure. Sometimes the moderator's bias is hard to prevent. The speaking time of some participants may be higher than that of others, making their contribution disproportionate. Moreover, UGOT researchers experienced that it may be challenging to handle the local power structures. The sometimes received a phone call after a participatory workshop form participants telling them that they should not trust what appeared to be common views, since many participants did not dare to express their disagreement with the strong voices. Lastly, it might be difficult to find people that are willing and have time to meet, discuss, and engage,

Literature and Inspiration:

GoGreen. Retrieved May 23, 2023, from <http://gogreen.mruni.eu/>.

RIS Consumer Engagement Labs—EIT Food. Retrieved May 23, 2023, from <https://www.eitfood.eu/projects/ris-consumer-engagement-labs>.

Stanfield, R. B. (2000). *The Art of Focused Conversation: 100 Ways to Access Group Wisdom in the Workplace*. New Society Publishers.

Focus Group Meetings Building to Combined Meetings (WR)

See [\(Focus\) Group Meetings](#) and [Round Table Discussion with Stakeholders](#).

Forum Theatre (CES)

See [Theatre-Based Methods](#).

Future Frictions (UT)

[Approach; Futuring; Dialogue Across Different Perspectives]

Why: UT researchers wanted to enhance awareness of multiple perspectives around urban technology and awareness of how technology choices have consequences in the future, affecting different actors in different ways.

How: To this aim, they developed scenario-based interactive digital tool ('game') that allow users to experience a neighbourhood, make decisions regarding the use of technology, and experience consequences.

Challenges: The scenarios were co-created with the project consortium partners at the time, around issues they found important (currently, we are developing an open digital toolkit that will allow diverse groups and communities to co-create their own scenarios, also around other topics like sustainability, biodiversity, etc).

Literature and Inspiration

Matos Castaño, J., Baibarac-Duignan, C., & Geenen, A. (2022). *Towards Responsible Smart Cities: Cook-it Book by responsible cities - Issuu*. https://issuu.com/responsiblecities/docs/22009-boekjeet-digitaal_final, with link to tool (p.34).

Future Lab and Memory Lab / Collaborative Futuring (UNICT, UT)

[Approach; Futuring; Imagination]

Why: A future lab is a type of research lab that focuses on exploring and developing new ideas and ways of thinking about the future. The aim is to engage researchers and societal partners (co-researchers) and stimulate imagining futures that bring to light diverse values and perspectives. Besides, it may serve to collaboratively anticipate and shape future possibilities. Future labs can focus on a wide range of topics, from sustainable technologies to urban planning to landscapes and biodiversity restoration. Future labs can be used to imagine alternative futures by engaging communities in the co-creation of new narratives and visions for environmental restoration and repair.

A memory lab, on the other hand, focuses on memory and cognition, and how they affect human experience in the world. Memory labs - for instance - can be used for reconstructing ecological pasts by exploring cultural and social memories related to environmental change. Researchers may use memory labs to investigate how people remember and interpret past ecological events, such as natural disasters, changes in local ecosystems, or shifts in environmental policies and practices, or to investigate how local knowledge and traditions related to environmental stewardship have evolved over time, and how these traditions are affected by changing social and economic conditions.

How: Researchers found that it was beneficial to involve different generations in memory labs and future labs on ecological changes. This can provide a richer and more diverse range of perspectives, and can also help to foster intergenerational dialogue and understanding. For example, a memory lab on ecological changes might bring together elders and youth from a particular community to share their memories and stories about environmental change over time. Involving different generations can also help to bridge gaps in knowledge and understanding, and to promote mutual respect and learning.

Another thing that UNICT researchers found beneficial was to connect a memory and future lab approach to “walking ethnography”. Walking ethnography involves walking through a particular landscape or environment, often with a focus on sensory experiences, and can be used to explore the social and cultural dimensions of a place. A memory and future lab approach can involve walking through a particular environment or landscape, focusing on remembering the past and envisioning the future of that place. Walking through a particular environment can also help to bring to life the memories and experiences shared in a memory lab, and to connect them to a specific landscape, fostering a deeper sense of place-based knowledge, and informing more grounded and context-specific visions for the future. Similarly, UT researchers combined experiential aspects (e.g. walking) with speculative and making activities to stimulate awareness of the present and open imagination around future possibilities as desired by them.

Instead of walking, photographs can also serve as prompts for memory in a lab, helping participants to recall specific events or experiences associated with a particular place or environment. They can also be used to prompt discussion and reflection on future perspectives, and to help participants to visualize and communicate their ideas. In addition, photographs can be used to help participants reflect on the process and outcomes of the labs in the future.

Challenges: UT researchers found that it was challenging to involve diverse people from the neighbourhood, which was mostly a question about time and availability to participate on the part of the participants but also due to the short project phase as it was only a short pilot project.

Literature and Inspiration:

Eijnden, T. van den, Baibarac-Duignan, C., Lange, M. de & Goede, M. de. (2022). Materials and Modes of Translation: Re-Imagining Inclusive ‘Zero’-Waste Futures. *Frontiers in Sustainable Cities* 4. <https://www.frontiersin.org/articles/10.3389/frsc.2022.958423>.

G

Grounded Theory (CES)

[Approach; Mapping; **Situating Research in Complex Contexts**]

Why: Grounded theory is a methodological approach encompassing collection of techniques, strategies and procedures for building theory "from the ground up". Grounded theory serves to develop a deep and rich understanding of a particular phenomenon. In addition, it may help to compose a theoretical framework to guide actions.

How: Grounded theory is a general methodological approach encompassing a collection of techniques, strategies and procedures for building theory "from the ground up", fully emerging from the data. Some authors have proposed this investigation need not be fully blind but can be "informed" by existing theories and concepts. It is oriented towards the development of theory and the development of hypotheses around given phenomena, encompassing both inductive and abductive modes of thinking. It can be conducted in congruence with more or less constructivist or realist epistemology.

Challenges: It requires a very deep engagement with data which is, in itself quite demanding and makes coordination difficult. Also it can be very interpretative (when done in a constructivist manner) and the person of the researcher is a fundamental tool. The team has to coordinate how they are making sense of the data since there is no pre-established code book or guiding categories (the categories of analysis emerge from the data).

Literature and Inspiration:

Canlas, I. P., & Karpudewan, M. (2020). Blending the Principles of Participatory Action Research Approach and Elements of Grounded Theory in a Disaster Risk Reduction Education Case Study. *International Journal of Qualitative Methods*, 19, 1609406920958964. <https://doi.org/10.1177/1609406920958964>.

Charmaz, K. *Constructing Grounded Theory*. SAGE, 2006.

Thornberg, R. (2012). Informed Grounded Theory. *Scandinavian Journal of Educational Research*, 56(3), 243–259. <https://doi.org/10.1080/00313831.2011.581686>.

Teram, E., Schachter, C. L., & Stalker, C. A. (2005). The Case for Integrating Grounded Theory and Participatory Action Research: Empowering Clients to Inform Professional Practice. *Qualitative Health Research*, 15(8), 1129–1140. <https://doi.org/10.1177/1049732305275882>.

Group Interview (UBB)

See [\(Focus\) Group Interview](#).

H

Hybrid Diary Study (UT)

[Interview Tool; Mapping; **Understanding a Specific Position**]

Why: UT researchers wanted to explore everyday mobility practices through the eyes of the participants.

How: UT researchers developed the approach by combining elements of go-along interviews with diary methods and mobile mapping.

Challenges: Having more time to follow whether taking part in the diary process had longer term effects on how the participants moved around the city and their awareness of sustainability issues. This

challenge can be addressed by carrying out a longitudinal study that monitors any potential changes in perspective and/or actions in relation to everyday mobility practices.

Literature and Inspiration:

Baibarac, C. (2015). Spatial-technological experiments in the environment: eliciting and representing experiences of urban space, *Digital Creativity*, 26:3-4, 263-278, DOI: [10.1080/14626268.2015.1090454](https://doi.org/10.1080/14626268.2015.1090454).

I

Intervention Method (MRU)

[Approach; Futuring; Negotiated Action]

Why: Researchers at MRU were making use of intervention methods in two different contexts. One was about encouraging youngsters to volunteer, the other was about stimulating environmentally friendly behaviour in adolescents. First, educational practices facilitating young people's volunteering is relatively rare in Lithuania, therefore researchers designed a program aimed to nudge youngsters towards engaging in volunteering activities. Second, a sense of environmental citizenship could be one of the important factors facilitating adolescents environmentally friendly actions and determining their attitudes towards environment conservations in the future. Therefore, researchers designed educational materials that could potentially add to development of environmental citizenship.

How: First, they implemented intervention based on positive youth development (PYD) theoretical framework. The intervention comprised of eight interactive, stimulating and engaging meetings with adolescents that fostered mentorship, volunteering and contribution to the society attitudes. Second, adolescents from four schools participated in discussions on for topics related to environment degradation (energy, transportation, water, biodiversity). The discussion was facilitated by the moderator. Students discussed these topics in small groups and then joined to the plenary discussions. Altogether, four discussions were organized during the regular school time. Researchers measured the effectiveness of educational practice in intense longitudinal study (survey).

Challenges: First, scalability needs ownership. Second, for some students, this type of interaction was not interesting or engaging.

Literature and Inspiration:

Kaniušonytė, G., Truskauskaitė-Kunevičienė, I. (2021). The Trajectories of Positive Youth Development in Lithuania: Evidence from Community and Intervention Settings. In: Dimitrova, R., Wiium, N. (eds) Handbook of Positive Youth Development. Springer Series on Child and Family Studies. Springer, Cham. https://doi.org/10.1007/978-3-030-70262-5_23

Project website of studies POSIDEV:

<http://www.esparama.lt/projektas?id=34470&order=&page=&pgsz=50>.

Project link of ENVICI: <http://envici.mruni.eu/>.

This project was inspired by the work of COST action researchers and educators <https://enec-cost.eu/>.

J

K

Knowledge Co-Production – from Co-Design to Co-Dissemination (CER)

See [Relational Co-Design](#).

L

Learning History (WR)

Can be a Tool for Reflexive Monitoring. See [Reflexive Monitoring](#).

M

More-than-humans life histories (UNICT)

[Method; Mapping; Imagination]

Why: More-than-human life histories is a method for exploring the relationships between humans and non-human beings (animals, plants, landscapes, etc.) over time. More-than-human life histories involve the collection and analysis of narratives and stories about the lives of both humans and non-human beings, as well as the recalling of their interactions with each other and the environment. These narratives can take many forms, including oral histories, ethnographic fieldnotes, direct observations, and literary texts or paintings. Through more-than-human life histories, researchers can explore the ways in which human lives are intertwined with the lives of other beings and their lived-in world. They can gain insights into the complex social and ecological processes that shape these relationships, as well as the cultural values and practices that inform human interactions with the environment. More-than-human life histories can also shed light on the ways in which environmental changes and disruptions affect both humans and non-human beings.

How: By examining the stories of individuals and communities over long periods, researchers can identify patterns of change and continuity in these relationships, and gain a deeper understanding of the impacts of environmental change on social and ecological systems. The life history of a river system in a particular region, for instance, could be considered a more-than-human life history. A river system has a complex relationship with the human communities that live along its banks, as well as the other living beings that inhabit its waters and surrounding ecosystems. The more-than-human life history of a river system might involve collecting and analyzing narratives from different perspectives, such as:

- Oral histories from local people about their interactions with the river over time, including stories about fishing, irrigation, flood events, and other uses of the river.
- Direct observations of the ecological processes that shape the river, including the movement of water, sediment, and nutrients, or the flora and fauna that inhabit the river and its surrounding ecosystems.
- Literary texts, such as poems or novels, that reflect on the cultural significance of the river in the region, and how it has been represented in different historical periods.

By bringing together these different perspectives, researchers could develop a more holistic understanding of the life history of a river system, and the complex relationships between humans and non-human beings that have shaped its course over time. They could also identify patterns of change and continuity in these relationships, and use this knowledge to inform efforts to promote more sustainable and equitable relationships between humans and the environment.

Another possible application of more-than-human life histories could be the study of the social life of seeds, for understanding the social, cultural, and ecological processes that shape the conservation and use of seed diversity in a region, and to identify opportunities for more sustainable and equitable seed governance practices. To collect more-than-human life histories of seed diversity, the researchers may conduct interviews with farmers, seed collectors, traders, and conservationists, as well as direct observations of seed diversity in the target regions. They could also analyze literary texts and cultural practices related to seed diversity, such as seed fairs and festivals. Through this process, it would be possible to identify the complex social and ecological processes that shape these relationships, including the role of class, caste or gender in seed governance practices, the influence of political and economic policies on seed diversity, and the importance of cultural practices and beliefs in shaping attitudes towards seed conservation.

Literature and Inspiration:

O’Gorman, E., & Gaynor, A. (2020). More-than-human histories. *Environmental History*, 25(4), 711–735. <https://doi.org/10.1093/envhis/emaa027>.

Wright, K. (Ed.). (2017). *Transdisciplinary Journeys in the Anthropocene: More-than-human encounters*. Routledge. <https://www.routledge.com/Transdisciplinary-Journeys-in-the-Anthropocene-More-than-human-encounters/Wright/p/book/9781138615199>.

More-than-human research (UNICT)

[Approach; Situating Research in Complex Contexts; Experiential & Multi-Sensory; Imagination]

More-than-human research is a participatory approach that recognizes the importance of non-human entities in their relationships with humans. In promoting dialogical research, it seeks to move beyond traditional anthropocentric perspectives, which focus solely on human culture and society, and instead considers the agency and perspectives of non-human beings, such as animals, plants, landscapes, rocks, minerals, technologies, etc. This approach sees humans as interconnected with non-human entities, and thus, for designing action research, it recognizes the ways in which they shape each other’s lives and worlds. More-than-human research try to mobilize the social, cultural, and ecological relationships that exist between humans and non-humans by proactively explore the complex ways in which they co-create each other’s worlds, and co-determine their mutual transformations. More-than human research has been reshaping classical qualitative methodologies (participant observation, dialogical in-depth interviews, creative methods, etc.) or inventing new methods (see the methodologies section below) in order to work with non-humans in participatory ways.

Literature and Inspiration:

Michelle Bastian, Owain Jones, Niamh Moore, Emma Roe (2017), *Participatory Research in More-than-Human Worlds*, Routledge (This book contains multidisciplinary insights and diverse methodological approaches to question how to revise, reshape and invent methods in order to work with non-humans in participatory ways. The book offers a framework for thinking critically about the promises and potentialities of participation from within a more-than-human paradigm, and opens up trajectories for its future development).

Literature and Inspiration:

Kirksey, S. E., & Helmreich, S. (Eds.). (2010). *The emergence of multispecies ethnography*. *Cultural anthropology*, 25(4), 545-576.

Kohn, E. (2013). *How Forests Think: Toward an Anthropology Beyond the Human*. Univ of California Press.

Tsing, A. L. (2015). *The mushroom at the end of the world: On the possibility of life in capitalist ruins*. Princeton University Press.

Tsing, A. L., Swanson, H. A., Gan, E., & Bubandt, N. (Eds.). (2017). *Arts of Living on a Damaged Planet: Ghosts and Monsters of the Anthropocene*. Univ of Minnesota Press.

Murals of Nature Futures from Magazines (WR)

Tool for [Photo Voice and Visual Sociology](#).

N

One-to-One & Face-to-Face Interviews (UBB, UGOT, CER, UNICT)

[Approach; Mapping; Understanding a Specific Position]

Why: The advantage of the one-to-one interview is you can get more into depth and detail with a specific position. Researchers at UBB used it for example to identify food waste causes, reduction strategies, and motivations to reduce food waste from food chain members. Researchers at UGOT used it in order to get in-depth knowledge about the rationale for individuals or households for their actions, to understand how they relate to structures and to other actors, to learn about possible ways forward. Researchers at CER used it to study the traditional ecological knowledge of small-scale land users, mostly herders and mountain farmers since 2003.

How: Researchers at UBB developed a script and organized face-to-face and online interviews on Teams and Zoom. Researchers at UGOT conducted semi-structured interviews with one or two respondents, including landowners, public managers, land users (eg. people strolling for recreational purposes) following an interview guide. They took notes and recorded the interviews whenever that was allowed. Researchers at CER met with individuals and small groups. They interviewed several hundred people for 1-3(-20) times each. They did both indoor and outdoor interviews, deep interviews, semi-structured ones, pile sorts, landscape walks, free listings etc.

Challenge: time consuming, participants concern regarding confidentiality (despite assurance by the interviewer). Moreover, the selection of participants may be challenging. Researchers at UGOT identified it as challenge that the capacity to express oneself varies. Moreover, it may be challenging to take care of both what is individually specific and what is generalizable. For the researchers at CER, one of the interesting challenges was to identify ecological knowledge that we were not at all aware of (e.g. scattering of hay seed, strategic herding). The other challenge CER researchers encountered is how to arrange FPIC (free, prior and informed consent), because the Indigenous protocols or the EU GDPR are often culturally not appropriate. We prefer long-term (>5-10 years long) collaborations, where ethical issues can be freely discussed with key partners (our paper on some methodological issues, [HERE](#)). Researchers at UNICT faced yet another set of challenges when doing face-to-face interviews, in-depth interviews, and participatory observation. They examined the political positions of citizens with reference to the project of a 5star resort on the coast. The area, listed by the EU as a SIC, was later declared nature reserve. They followed the controversy with a more standard qualitative approach rather than participatory action research. It was very complicated to understand what was at stake, behind an appearance of market vs democracy polarization of the debate. For this reason, they spent long hours talking with citizens, main actors and listening to cultural and public debates. A challenge was that they were perceived as qualified experts and they faced both the risk of manipulative and deceptive answers and attitudes.

Literature and Inspiration:

Borgatti, S.P. (1998). Elicitation Techniques for Cultural Domain Analysis: *The Ethnographer's Toolkit. Vol 3*. Creek, W. (Ed.). CA: Altimira Press. [elicitation.pdf \(analytictech.com\)](#).

Quintiliani, L. M., Campbell, M. K., Haines, P. S., & Webber, K. H. (2008). The Use of the Pile Sort Method in Identifying Groups of Healthful Lifestyle Behaviors among Female Community College Students. *Journal of the American Dietetic Association*, 108(9), 1503–1507. <https://doi.org/10.1016/j.jada.2008.06.428>.

Outcome Harvesting (UNICT)

[Approach; Reflection]

The Outcome harvesting is an evaluation approach that allows to “explore the intended and unintended, positive and negative outcomes triggered by an intervention” of social change. Rather than comparing

the planned outcomes with the achieved ones (as it is generally done in traditional “logical framework” evaluative processes), Outcome harvesting collects evidence of outcomes that are defined as impactful and transformative by the actor themselves as agents of change. With its key principles and methodologies, Outcome harvesting is often used to test the validity of projects or interventions inspired by the TOC (Theory of Transformative Change).

Literature and Inspiration:

What is Outcome Harvesting? (2015, January 15). <https://vimeo.com/116856982>. Explains the essence of the Outcome Harvesting approach in this brief video (< 3 minutes).

How is outcome harvesting done? (2020, January 24). <https://www.youtube.com/watch?v=ljXhefwHuSE>.

O

Other-than-Human Ethnography (UNICT)

See [Eco-Ethnography](#).

P

Participatory Field Work (CER)

[Approach; Mapping; Experiential and Multisensory]

Why: Participatory field work may help to better understand the role of knowledge (and various contexts) in short- and long-term land-use decisions and the origin/transmission/adaptation of traditional ecological knowledge.

How: CER researchers spent hundreds of days with local land users in the field doing herding, hay making, forest work etc.

Literature and Inspiration:

Babai, D., Molnár, Á. P., & Molnár, Z. (2014). “*Ahogy gondozza, úgy veszi hasznát*” *Hagyományos ökológiai tudás és gazdálkodás Gyimesben. (Traditional ecological knowledge and land use in Gyimes (Eastern Carpathians))*.

Molnár, Zs., & Babai, D. (2021). Inviting ecologists to delve deeper into traditional ecological knowledge. *Trends in Ecology & Evolution*, 36(8), 679–690. <https://doi.org/10.1016/j.tree.2021.04.006>.

Molnár Zs. (2012): *A Hortobágy pásztorszemmel. A puszta növényvilága. (Traditional ecological knowledge of herders on the flora and vegetation of the Hortobágy)* Hortobágy Természetvédelmi Közalapítvány, Debrecen.

Participatory Monitoring (WR)

See [Reflexive Monitoring](#).

Participatory Scenario Development and Discussion (WR, UT)

[Approach; **Futuring**; **Imagination**]

Why: Co-developing scenarios may open up the imagination for possible futures and adaptive governance strategies. Especially if the future of the scenario is very far, e.g. the year 2120 a different perspective on the present is offered. This can be refreshing, as scientific insights on climate change are often experienced as ‘knock down arguments.’ Far-Future futuring by means of co-developing scenarios potentially brings a positive narrative to climate debates. Besides issues around climate change, scenarios may also be used for other discussions, e.g. ethical dilemmas around potential impacts and unexpected consequences of urban technologies or other relevant issues.

How: Scenarios may be developed together by producing various, diverging storylines, work these out in maps, discuss governance options. In order to jump right into the discussion researchers can also develop scenarios in advance. WUR researchers developed a climate adaptive scenario for parts of the Netherlands hundred years into the future on the basis of soil and subsoil conditions. This scenario was used as a conversation starter in debates on climate adaption in multiple local government meetings. More location specific scenarios are currently being developed in co-creation with stakeholders from different sectors. UT researchers prepared a set of four orthogonal scenario snapshots that relate to the same initial prompt but that expose different potential futures and ethical dilemmas.

Challenges: The scenarios were co-created with the project consortium partners at the time, around issues they found important. A main challenge that arises is whether and how others relate to these scenarios. This can be addressed by using the scenarios as conversation tools as part of a workshop, and by supporting the participants to relate them to aspects they find important for their contexts. Moreover, WUR researchers report that governance commitment and competing transition agendas as a challenge. The 2120 scenarios are a useful tool to address climate related risks and opportunities and decisions that have to be taken in current day spatial planning. However, many local governance authorities are pressurized by multiple lobby groups with competing transition agenda’s. Therefore many local authorities are struggling to pledge their commitment and make decisions.

Literature and Inspiration:

Nederland in 2120. (2020, January 30). WUR. <https://www.wur.nl/nl/dossiers/dossier/nederland-in-2120.htm>.

Wright, D., Finn, R., Gellert, R., Gutwirth, S., Schütz, P., Friedewald, M., Venier, S., & Mordini, E. (2014). Ethical dilemma scenarios and emerging technologies. *Technological Forecasting and Social Change*, 87, 325–336. <https://doi.org/10.1016/j.techfore.2013.12.008>.

Matos Castaño, J., Baibarac-Duignan, C., & Geenen, A. (2022). *Towards Responsible Smart Cities: Cook-it Book by responsiblecities - Issuu*. https://issuu.com/responsiblecities/docs/22009-boekjeet-digitaal_final.

Participatory System Mapping (WR)

See [Problem Tree](#).

Participatory Workshops (UGOT)

See [\(Focus\) Group Interview](#).

Pilot Workshop (UT)

[Approach; **Mapping**; **Entry**]

Why: Pilot workshops might be a way to figure out ways of working together, including values, and expectations through action.

How: A small action that can also stand on its own is organized.

Challenges: Sometimes it might be challenging to free enough resources for pilot projects because oftentimes a lot needs to be developed from scratch. Moreover, there is a danger that pilots remain in a pilot phase and never grow into more sustainable projects in terms of resources and impact.

Political Ecology (UNICT)

[Approach; Mapping; Understanding a Specific Position]

Why: Political ecology is a field of critical research that aims at approaching environmental issues focusing on power relations as well as the coproduction of nature and society. It seeks to untangle and deconstruct the intricate, interconnected and sometimes blurred or invisibilized economic, political and social processes that shape environmental access, management and transformation. In particular, it looks at how economic, political and social forces can affect access to natural resources and create disparities and injustices in the distribution of costs and benefits forming highly uneven socio-physical landscapes.

This approach scrutinizes specific arenas and communities, however it moves beyond an analysis of only local environmental change to frame issues in broader sets of economic and political patterns and relations, such as those shaped by capitalist and neoliberal decision/policy-making.

The political ecology approach has evolved from a focus on the effects of human impacts on the environments to a more powerful focus on the production of socio-environmental relations using combined inputs such as nature, technology, capital and human labour. Accordingly, political ecology aims at breaking an image of a world where humans and non-humans are disconnected.

How: Political ecology borrows its methods and analytical tools from various disciplines such as geography, anthropology, political economy, political sciences, social sciences, history, or environmental sciences like the ones described below in the report.

Literature and Inspiration:

Robbins, P. (2020). *Political Ecology*. Oxford: Blackwell.

Heynen, N., Kaika, M., & Swyngedouw, E. (2006). *In the Nature of Cities: Urban Political Ecology and the Politics of Urban Metabolism*. London; New York: Routledge.

Bridge, G. McCarthy, J., & Perreault, T. (Eds) (2015). *The Routledge Handbook of Political Ecology*. London; New York: Routledge.

Photo-Elicitation Interview (CES)

See [Photo Voice and Visual Sociology](#).

Photo Voice and Visual Sociology (CES)

[Interview Technique; Mapping; Understanding a Specific Position; Shared Understanding; Experiential and Multi-Sensory]

Why: This interview technique is not about mirroring reality, but rather to make a world visible that otherwise is easily overseen. Photo Voice and visual sociology techniques follow the most recent trends of understanding photography as a tool and as research data. The aim is to explore a more holistic presentation on the living conditions and styles, practices and meaning shaped in the social space. This may include, ethnographic comparison, immaterial elements and deep inter-relational dynamics with the

community. It is a technique that may be also used with young research participants in the around 5-6 years old to ask them questions about how they relate with the urban environment and how urban biodiversity impact that relation.

How: Conversations are initiated through the photographs taken by the researcher or brought by the participants.

Literature and Inspiration:

Campos, R. (2022). Including younger children in science-related issues using participatory and collaborative strategies: A pilot project on urban biodiversity. *Journal of Science Communication*, 21(2), N07. <https://doi.org/10.22323/2.21020807>.

Postcards from the Future (BC3, UT)

[Approach; Futuring; Postcards from the Future]

Why: Researchers at BC3 used the exercise of writing postcards from the future, to create space for creativity and positive future visions about desired future neighbourhoods based on Degrowth imaginaries in an online, pandemic context. As such, it also served as a method to break ice with online participants. For researchers at the UT, the emphasis was on critically addressing the notion of neighbourhood 'data' and how its embodied collection and mapping might inspire participants to imagine alternative futures for the area.

How: UT researchers developed the approach in collaboration with a local group of artists combining a walk, with the collection of landscape fragments, hands-on mapping and creative writing. Similarly, it would be also possible to ask participants to write a letter or newspaper from the future. Challenges: Given the online context, reduced participation and online fatigue were among the largest challenges for researchers from BC3. Similarly, researchers at UT encountered limitations by the Covid19 social interaction restrictions, which made it difficult to engage more residents.

Literature and Inspiration:

Workshop. Retrieved May 24, 2023, from <https://tfmdepot.hotglue.me/?workshop>.

Policy Analysis (MRU)

[Approach; Mapping; Situating Research in Complex Contexts]

Why: There was a need to systematically analyze to what extent national and EU level policies support and empower adoption of sustainable technologies such as zero water discharge technologies in textile dyeing industry.

How: MRU researchers analyzed country and EU level policies to see if there is such evidence. Country level policies were technically analyzed by local representatives. Final analysis integrated local and EU level knowledge.

Challenges: Not all project partners provided technical analysis of the project due to technical issues (e.g. unable to find country-level legislation that would mention adoption of sustainable technologies).

Literature and Inspiration:

Smart innovative system for recycling wastewater and creating closed loops in textile manufacturing industrial processes | Waste2Fresh Project | Fact Sheet | H2020 | CORDIS | European Commission. Retrieved May 24, 2023, from <https://cordis.europa.eu/project/id/958491>.

Waste2Fresh – Closed-loop waste water recycling. Retrieved May 24, 2023, from <https://waste2fresh.eu/>.

Pragmatic Action Research Developmental Evaluation and Intervention Case Studies (CES)

See [Developmental Evaluation Approach](#).

Problem Tree (WR)

[Tool for CBSD; Mapping; Shared Understanding]

Why: Getting insight into how barriers are related, and find 'root causes'. It is a technique that can be employed for the purpose of doing a Participatory Systems Mapping or analysing Community Based System Dynamics (CBSD).

How: Brainstorm on factors with positive and negative influence on issue at hand. Order and sort together.

Literature and Inspiration:

Barbrook-Johnson, P., & Penn, A. S. (2022). Systems Mapping. How to build and use causal model of systems. Springer International Publishing. <https://doi.org/10.1007/978-3-031-01919-7>.

Q

Qualitative Dynamic Analysis Methods (CES)

[Approach; Mapping; Situating Research in Complex Contexts]

Why: Qualitative Dynamic Analysis Methods may serve to capture change processes and dynamics in qualitative ways. It can be considered as part of Systems and Dynamic Mapping Methods.

How: Any longitudinal set of data that is discrete or that can be converted into ordinal variables (e.g. likert scale) or categorical. Graphics are crates which are coded in relation to the nature of the dynamics patterns that they reveal namely in terms of the degree of coordination between different reporters. Compared to CBSD, Qualitative Dynamic Analysis Methods are simpler because it merely involves choosing a set of categorical variables and a qualitatively analyse how they change through time (e.g. whether they fluctuate a lot or stabilise, whether they are coordinated across different reporters, etc.).

Challenges: Difficult to apply with many reporters.

Literature and Inspiration:

Melo, A. T. de, & Alarcão, M. (2016). Qualitative Methods for the Exploration of Complexity in Human Social Systems: Applications in Family Psychology. In S. Battiston, F. De Pellegrini, G. Caldarelli, & E. Merelli (Eds.), *Proceedings of ECCS 2014* (pp. 21–32). Springer International Publishing. https://doi.org/10.1007/978-3-319-29228-1_3.

Quantitative Research (UBB)

See [Questionnaires and Surveys](#).

Questionnaires and Surveys (UBB, MRU)

[Tools for Quantitative Research; Mapping; Situating Research in Complex Contexts]

Why: Quantitative research based on questionnaires and surveys, can be useful to gather reliable data about people's preferences, values, attitudes, knowledge, and behaviours that are representative to a

targeted population. Data can be used, for example, to identify relationships between variables, and identify determinants of certain variables. Quantitative research is a valuable because it provides a structured and systematic approach to data collection and analysis, allowing researchers to make evidence-based conclusions and recommendations. MRU researchers used questionnaires for example to explore possible psychological and social factors leading to different environmentally friendly practices in the family context.

How: UBB researchers analysed the data obtained with various statistical tests (e.g., correlations, regressions, PLS-SEM). MRU researchers visited households and asked adolescents and one of their parents / guardians to fill in paper questionnaires.

Challenge: UBB researchers found that the quality of data was lacking due to panellists' lack of interest. MRU researchers emphasize that it is important to carefully design the survey and think of everything that needs to be asked because once the study starts – usually no changes to the survey can be made, meaning that additional questions cannot be added. There are also some challenges considering participation. The first is that some people are more willing to participate and others are not, and this has an impact on the results. Also, there always has to be a balance between the number of questions that researchers want to get answers to and participants' capabilities to answer them. If there are too many questions participants might decide to drop out in the middle of the survey or respond to them insincerely.

Literature and Inspiration:

Petrescu, D. C., Vermeir, I., Burny, P., & Petrescu-Mag, R. M. (2022). Consumer evaluation of food quality and the role of environmental cues. A comprehensive cross-country study. *European Research on Management and Business Economics*, 28(2), 100178.

Sohail, M. T. (2022). A PLS-SEM approach to determine farmers' awareness about climate change mitigation and adaptation strategies: pathway toward sustainable environment and agricultural productivity. *Environmental Science and Pollution Research*, 1-14.

Žukauskienė, R., Truskauskaitė-Kunevičienė, I., Gabė, V., & Kaniušonytė, G. (2021). "My Words Matter": The Role of Adolescents in Changing Pro-environmental Habits in the Family. *Environment and Behavior*, 53(10), 1140–1162.

Project website of GoGreen: <http://gogreen.mruni.eu/>.

R

Reflexive Monitoring and Learning History (UT, WR)

[Approach; Reflection; Learning and Reflexivity]

Why: Reflexive monitoring is a method that takes a bottom-up approach to knowledge production that starts with the information needs of stakeholders in order to harness their learning, stimulate reflection, and assess their progress in achieving their goals. These can be about biophysical aspects (how is the area doing?), they can relate to the participatory or implementation process (how is the collaboration going, what about trust), or they can be policy/society oriented (are you making progress in overcoming obstacles and barriers). Reflexive monitoring is suitable in situations where change is required and involves complex social-ecological interactions with diverse actors, views and perspectives. The method has been developed for specific settings of social interaction and organizational change, but since it is a bottom-up approach, it can be adapted to diverse settings, and it can be complemented with biophysical monitoring approaches. How to apply the approach will differ in different settings and depends on complexity, historicity, and the knowledge needs of those involved.

Reflexive monitoring can be seen as an integral approach to understanding and catalysing change that consists of different interconnected parts. Each of these involves scientific as well as stakeholder input, but the relative importance of each can differ between phases and contexts of application.

- (1) The mapping of the social ecological system, including biodiversity, stakeholder values and perspectives, policy context and so on.
- (2) The identification of future imaginaries.
- (3) The selection of indicators to assess progress towards these futures. It is important to ensure sufficient diversity of indicators, including for example indicators on biodiversity outcomes, policy economic or cultural barriers and lock-ins, as well as the quality of the collaborative process such as trust, learning, adaptation.
- (4) The creation of methods to monitor each of the indicators. Here, it is important to recognize a variety of qualitative and quantitative methods, including not just counting species, but also for example journaling and deliberative mapping.

How: Different stakeholders in a transition process were interviewed during a 'transition process'. For example, they could be asked to document the things that gave energy, things that cost energy, things that you learned, new questions. This creates a learning history. Their experiences along with particular events that happened during a process were stored in a log. Eventually the process is reconstructed from different viewpoints to identify strategic tensions (between stakeholders) and tactical ways in which people dealt with those tensions.

Literature and Inspiration:

Mierlo, B. van, Regeer, B., Amstel, M. van, Arkesteijn, M., Beekman, V., Bunders, J., Cock Buning, T. de, Elzen, B., Hoes, A.-C., & Leeuwis, C. (2010). *Reflexive Monitoring in Action. A guide for monitoring system innovation projects* [Research Report]. <https://www.wur.nl/en/publication-details.htm?publicationId=publication-way-333935373332>.

Roth, G., & Kleiner, A. (1998). Developing organizational memory through learning histories. *Organizational Dynamics*, 27(2), 43–60. [https://doi.org/10.1016/S0090-2616\(98\)90023-7](https://doi.org/10.1016/S0090-2616(98)90023-7).

van Wessel, M. (2018). Narrative Assessment: A new approach to evaluation of advocacy for development. *Evaluation*, 24(4), 400–418. <https://doi.org/10.1177/1356389018796021>.

Relational Co-Design (UT, CER)

[Approach; Mapping; Reflection; Imagination; Dialogue Across Different Perspectives]

Why: UT researchers wanted to involve 'non-expert' users in the co-design of digital tools that could support their commoning activities.

How: UT researchers developed the co-design approach by combining three main stages (visioning, prototyping, dissemination & transfer). Similarly, CER researchers put emphasis on the co-production on the entire process from co-design to co-dissemination. Together with their societal partners, CER researchers prepared scientific papers, short and slow films and books together with traditional knowledge holders.

Challenges: UT researches found it challenging to follow the use and usefulness of the tools after the end of the project. For CER researchers, one of the challenges was that locals are often not well informed who will read/watch/use these materials, and what knowledge these people have about their social-ecological context. Another key challenge is the real and fair benefit sharing, which is easier said than done and very specific to each situation.

Literature and Inspiration:

Baibarac, C., & Petrescu, D. (2019). Co-design and urban resilience: Visioning tools for commoning resilience practices. *CoDesign*, 15(2), 91–109. <https://doi.org/10.1080/15710882.2017.1399145>.

Baibarac, C., Petrescu, D. & Langley, P. (2021). Prototyping open digital tools for urban commoning, *CoDesign*, 17(1), 83-100, DOI: [10.1080/15710882.2019.1580297](https://doi.org/10.1080/15710882.2019.1580297).

Babai, D., Jánó, B., & Molnár, Z. (2021). In the trap of interacting indirect and direct drivers: the disintegration of extensive, traditional grassland management in Central and Eastern Europe. *Ecology and Society*, 26(4). Paper written with key knowledge holders.

Molnár, Z., Kelemen, A., Kun, R., Máté, J., Sáfián, L., Provenza, F., ... & Vadász, C. (2020). Knowledge co-production with traditional herders on cattle grazing behaviour for better management of species-rich grasslands. *Journal of Applied Ecology*, 57(9), 1677-1687. Paper written with key knowledge holders.

Relatoscope (CES)

[Approach; Reflection; Dialogue Across Different Perspectives; Learning and Reflexivity]

Why: This method aims at the facilitation of relational dialogues and the scaffolding individual and collective complex thinking (Melo, 2020). This is relevant as participatory methods sometimes fall short in ensuring outcomes of collective processes that are sufficiently complex to ensure ecosystemically fit, positive, just and sustainable actions in relation to the complexity of the problems at hand. This is also especially important when there is strong disagreement about an issue. It may also serve to support the development of complex hypotheses, solutions and plans for action.

How: The method can be applied in the context of group events and workshops. It can be used to collaboratively formulate sufficiently complex critical questions of a problem to be addressed. The Relatoscope is a tool that supports the elicitation and exploration of relations between different ideas, to ensure depth as well as the exploration of a variety of perspectives, namely the consideration of the positions of different critical observers in a system. It guides relational movements and recursivity during a dialogue aiming to stimulate a process leading to the emergence and /or integration of novel ideas (not reduced to be base ones) solutions, implications for action and to guide decisions and interventions in conditions of uncertainty and high complexity. The discussion may be framed by a set of dimensions or boundaries for the discussion to ensure the consideration of fundamental dimensions of the complexity of target system or problem, supporting both “complexity thinking” and “complex thinking” (Melo et al., 2020; Melo, 2020).

Challenges: The method requires sufficiently long sessions or a minimally extended series of sessions in order to support proper emergence (e.g. truly novel, creative and insightful ideas, hypotheses, action plans, etc.). It requires a skilled and trained group facilitator, ideally one familiar with the method as well as its theoretical underpinnings. It benefits from a set of complementary strategies, namely enactive ones that allow an embodied, physical and spatial experimentation of ideas. The products are collective and it is important to have previous agreements about issues of authorship and possible usages of the outcomes achieved.

Literature and Inspiration

Melo, A. T. de (2020). Complex relational thinking method. A proposal for facilitating the emergence and integration of ideas in debates, round-table discussions and dialogical meetings. [Method] V3.EN.2020. Doi: 10.13140/RG.2.2.17185.02408.

Melo, A. T. (2020). *Managing complexity through the complexity of our thinking: Key research questions and challenges to the development of a meta-heuristic*. Poster presentation at the Conference on Complex Systems 2020 (CCS2020), online, 7 December 2020. Doi: 10.13140/RG.2.2.12676.14720.

Melo, A. T., & Campos, R. (2022). Facilitating scientific events guided by Complex Thinking: A case study of an online Inter/Transdisciplinary Advanced Training School. *Informing Science: The International Journal of an Emerging Transdiscipline*, 25, 089-110. <https://doi.org/10.28945/4934>. This is an example of a paper where it was used in the context of an advanced training/scientific event along with more enactive methods.

Melo, A. T. (2020). *Performing Complexity: Building Foundations for the Practice of Complex Thinking*. Springer Nature.

Melo, A. T. & Caves, L. S. (2020). *Relational thinking for emergence: A methodology for guided discussions*. V1.2019

Melo, A. T. de, Caves, L. S. D., Dewitt, A., Clutton, E., Macpherson, R., & Garnett, P. (2020). Thinking (in) complexity: (In) definitions and (mis)conceptions. *Systems Research and Behavioral Science*, 37(1), 154–169. <https://doi.org/10.1002/sres.2612>.

Round Table Discussion with Stakeholders (MRU)

[Technique for Relational Co-Design; Reflection; Learning and Reflexivity]

Why: Over the course of the project, researchers generated knowledge and ideas for future actions relevant to various stakeholders interested in fostering environmentally friendly actions.

How: researchers organized an online roundtable discussion with policy makers, NGOs, educators, and environmental activists to share their findings and knowledge as well as initiate and facilitate the discussion in this topic. It was transformational experience since people working in rather different areas and sectors were able to talk about how they see/interpret the outcomes of the project; also, whether they see value in the approach. Future collaborations were discussed.

Challenges: This might be related to cultural aspects, but one of the challenges was moderating the discussion. The participants were from different fields and were hesitant to talk freely. Therefore, it was important to plan and direct questions to specific participants to ensure the engagement and discussion facilitation.

Literature and Inspiration:

MRU Aplinkos psichologijos tyrimų centro mokslininkai pristatys projekto „Elkis tvariai“ tyrimo rezultatus. (n.d.). MRU. Retrieved May 25, 2023, from <https://www.mruni.eu/news/mru-aplinkos-psichologijos-tyrimu-centro-mokslininkai-pristatys-projekto-elkis-tvariai-tyrimo-rezultatus/>.

GoGreen. Retrieved May 23, 2023, from <http://gogreen.mruni.eu/>.

S

Scenario and Future Imagination Through Performing Arts (UNICT)

[Approach, Futuring; Imagination]

Imagination enables people to go beyond their experience, engaging emotion which has the potential to create motivation for change (Pereira et al. 2019). There are several attempts and examples of incorporating artistic practices into science-policy processes in order to foster both interdisciplinarity and stimulate the 'imagination gap' that often characterizes scenario analysis and forecasting approaches. These types of methods have also been used for addressing complex social-ecological challenges. Eisner (2008) identifies different genres and forms of arts-based research, including literary forms (e.g., creative non-fiction or storytelling), interpretative biography performances (e.g., applied theatre, dance and movement or performative inquiry), visual arts (e.g., painting, photography and social sculpture) and new media (e.g., video, podcasts, and radio).

Such techniques may involve the use of the performing arts to represent hypothetical future scenarios and assess the reactions and impact that such representations have. Or directly asking affected communities to initiate a representation (graphic or performing) on a relevant environmental future. These types of approaches can be accompanied by the collection of notes from participant observation and semi-structured interviews that can cover both the audience and the direct protagonists/artists involved.

Some examples start with the experience of the so-called *Theatre of the Oppressed*. Other examples include the *Museums of the Future*, project in which a series of speculative artworks and workshops are presented designed to engage people in an exploration of the environmental issues and challenges; or *The Radical Ocean Futures* project, which consists of four scientifically grounded science fiction short stories of potential ocean futures, each of which is supported by a visual and musical interpretation to

stimulate the imagination and discussions of participants through multiple entry points. Here below some of these possible methodologies are listed.

Literature and Inspiration

Eisner, E. (2008). Art and knowledge. In: Knowles, JG and Cole Ardra, L (eds.), *Handbook of the Arts in Qualitative Research*, 3–12. Thousand Oaks, California: SAGE Publications.

Galafassi, D, Kagan, S, Milkoreit, M, Heras, M, Bilodeau, C, Bourke, SJ, Merrie, A, Guerrero, L, Pétursdóttir, G and Tàbara, JD. (2018). 'Raising the temperature': the arts in a warming planet. *Curr Opin Environ Sustain* 31: 71–79. Elsevier. DOI: <https://doi.org/10.1016/j.cosust.2017.12.01>.

Pereira, L, Sitas, N, Ravera, F, Jimenez-Aceituno, A and Merrie, A. (2019). Building capacities for transformative change towards sustainability: Imagination in Intergovernmental Science-Policy Scenario Processes. *Elem Sci Anth*, 7: 35. DOI: <https://doi.org/10.1525/elementa.374>.

Museumsofthefuturenow. Retrieved May 25, 2023, from <https://museumsofthefuturenow.org/>.

Radical Ocean Futures. Retrieved May 25, 2023, from <https://radicaloceanfutures.earth/>.

Science and Art Conversations (CES)

[Tool for (Focus) Group Interview; Mapping; Shared Understanding]

Why: Science and Art Conversations may help to discuss complex scientific concepts and relate it with impacts on biodiversity (humans and non-humans) with younger children, aged 2-6.

How: These conversations can be held by using prompts like toys, plasticized illustrations, textiles, the Earth globe, illustrated books to sparkle the conversation and then let the children express their opinions, knowledge, views using art-based methods like free drawing on different surfaces, painting, stamping, collages.

Challenges: One of the main challenges is the time needed to gain the trust of the children, the flexibility needed to accommodate children's unrelated interests.

Smell-Scapes (UNICT)

[Approach; Mapping; Experiential and Multi-Sensory]

Why: Among the approaches that aim at understanding and appreciating the peculiarities of specific environments in a participatory way we could also mention smellscapes. Scent has some unique qualities: it is ubiquitous, persistent and it has a strong connection to memory. Smellscapes, usually overlooked in discussions of sensory design, are incredibly important as they combine with other sensory information to construct the way people experience places.

How: Smell-scape research uses qualitative approaches to consider the social and psychological impacts of diverse smells from people's experiences or memories of specific sites. Methods such as smellwalks, interviews, observations and the scale rating of perceptual factors (i.e., like/dislike, familiar-unfamiliar) are commonly employed to collect data on people's experiences and subjective evaluations of the olfactory environment. Collection of olfactory storytelling is also an interesting method that can be used to add an important dimension to the definition of the historical context of a place. Smellmaps can be constructed using data collected through smellwalks or storytelling which are then transferred to a representational format. A strong relationship has been identified between smellscapes and the art world. Artists are often involved in conducting smellwalks, and artworks are constructed using data collected through the walks.

Smell-scape research can inspire specific policies such as those that address pollution caused by waste, traffic, industrial production and cooking fumes that can negatively affect the quality of life. However, a difficulty has been identified in establishing odor-impact levels. Also, it is interesting to notice the

absence of policy inspired by the positive elements of smells which have been identified in their capacity to bring distinct identities to places, connect people emotionally to their surroundings and positively influence human behaviour and emotions.

Literature and Inspiration:

Henshaw, V. (2013). *Urban Smellscapes: Understanding and Designing City Smell Environments* (1st ed.). Routledge. <https://doi.org/10.4324/9780203072776>.

Xiao, J., Aletta, F., Radicchi, A., McLean, K., Shiner, L. E., & Verbeek, C. (2021). Recent Advances in Smellscape Research for the Built Environment. *Frontiers in Psychology*, 12. doi:10.3389/fpsyg.2021.700514.

Sound-Scapes - Sounded Anthropology (UNICT)

[Approach; Mapping; Experiential and Multi-Sensory]

Why: Soundscape is a method for understanding and co-managing the acoustic environment of a place or space. It involves to collaboratively collect, analysing and interpreting the sounds present in a given environment, and considering their effect on human experiences and activities. This methodology recognizes that the sounds of a place are an important part of its overall character and can have a significant impact on the people who live, work, or visit there.

How: Soundscapes involve three key components: 1) Collecting sound sources: identifying and collecting the various sounds present in a given environment. Sound sources can include natural sounds (such as wind, water, and wildlife), human activities (such as traffic, construction, and industrial noise), and cultural sounds (such as music and religious rituals sounds). 2) Eliciting soundscapes: analysing the overall acoustic environment of a place or space, considering the relationships between different sound sources and how they interact to create a particular soundscape. This analysis can include measurements of sound levels and frequencies, as well as subjective evaluations of the perceived loudness, pitch, and other qualities of different sounds. 3) Analysing human responses: considering the ways in which people respond to the soundscape of a particular place, and can include both subjective responses (such as feelings of comfort, annoyance, or stress) and objective responses (such as changes in cognitive performance, physiological responses, or behavior).

The soundscape approach can be used in a variety of contexts, including urban planning, architectural design, and environmental research and management. Studying soundscapes can be a powerful tool for assessing biodiversity, as the sounds that humans and other animals make are an important indicator of their presence and relations in a particular habitat. Using soundscapes to study biodiversity has several advantages. First, soundscapes can be recorded and analysed non-invasively. Second, soundscapes can be used to detect a wide range of ecological entities, from birds and insects to frogs, mammals, water flowing, etc. Third, soundscapes can be used to track changes over time, providing valuable information about how ecosystems are responding to socio-ecological changes.

Literature and Inspiration:

Kumar, R. (2022). Sound Subjects and Hearing Cultures: Towards an Acoustic Ethnography. *Studies in Indian Politics*, 10(1), 138–144.

"Listening for the voice of the river: sound, memory and multispecies listening in the Murray-Darling Basin" is a project by Leah Gibbs and Jennifer Hamilton. They use sound ethnography to explore the complex relationships between humans and the environment in the Murray-Darling Basin in Australia. The authors use sound recordings and interviews to investigate the role of sound in shaping human perceptions of the environment and the ways in which humans and non-human species interact in the basin.

Another famous researcher who has used soundscapes is Steven Feld. In his book "The Singing Life of Plants and Flowers: The Dialogic Ethics of Field Recording," Feld describes his use of soundscapes to capture the voices of the forest and other more-than-human environments. He argues that by paying close attention to the sounds of the world, we can gain a deeper understanding of the relationships between humans and other living beings, and of the ethical implications of our actions. One of Feld's

most famous works is his recording of the Bosavi people of Papua New Guinea, which he documented in his book and CD set "Voices of the Rainforest." This project involved extensive field recordings of the Bosavi people's music and environmental sounds, as well as interviews and conversations with members of the community. Some of his recordings feature vocal and instrumental song by Kaluli musicians, while others focus on the more-than-human sounds of the rainforest. Here you can listen an example: https://youtu.be/XiuXXC_swGI. Here you can see a piece of his documentary: <https://youtu.be/QVon5-xQ2Zg>

Stakeholder Analysis (UNICT)

[Approach; Mapping; Situating Research in Complex Contexts]

Multi-stakeholder approaches have now become essential for analysing specific contexts and designing effective interventions to individual local needs. Stakeholder Analysis (SA) is a method that originated in the 1980s. Used primarily in the business sector, it has gradually become increasingly relevant for socio-ecological analyses as well. Despite the fact that various authors, such as Prell et al. (2008), provide an important methodological framework with respect to the use of SA in natural resource management, SA can be either a study conducted totally outside the process being analysed or an interpretive "action-research" process, with a large involvement of stakeholders and a strong participatory approach (Pomeroy & Douvere, 2008). Reconstructive methods through the participation of key players in the social-ecological system at study, analysis and drafting phases of the results can enable a better view of the arena in which converging or opposing interests form alliances or create conflicts.

Mapping criteria can be based either on *salience criteria* or on an *interest-influence matrix*, according to which stakeholders are placed and categorized in a matrix depending on their interests and influence in respect to the context of analysis, detectable either through focus groups or semi-structured interviews. However, in the more participatory and bottom-up methods of stakeholder mapping, the stakeholders self-classify themselves into categories that they create through their own semi-structured questionnaires or by other participatory techniques.

In Card-Sorting, for instance, respondents have to sort representative cards of stakeholders into groups according to their own criteria and their own reading of reality, with the final aim to give a description of the context and relationships among actors according to their own point of view (Hare & Pahl-Wostl, 2002). Another bottom-up method is the so-called *Q-methodology*, used in policy studies, along with discourse analysis, as a method to identify stakeholder groups while capturing value proposition subjectivity. Discourse analysis indeed identifies the ways in which people think and talk about an issue and, in particular, the perceptions that individuals share and their problem identification. The basic distinctiveness of *Q-methodology* is its focus on establishing how different subjects perceive problems and potential solutions, attempting to infer the variety of discourses that develop around a particular issue, problem or topic (Cuppen et al., 2010). These different methodologies and technics could be described in more details in the final review.

Literature and Inspiration:

Cuppen, E., Breukers, S., Hisschemöller, M., & Bergsma, E. (2010). *Q methodology to select participants for a stakeholder dialogue on energy options from biomass in the Netherlands*. *Ecological Economics*, 69(3), 579–591. <https://doi.org/10.1016/j.ecolecon.2009.09.005>.

Hare M., & Pahl-Wostl C. (2002). *Stakeholder categorization in participatory integrated assessment*. *Integrated Assessment*, 3(1), 50–62.

Pomeroy, R., & Douvere, F. (2008). *The engagement of stakeholders in the marine spatial planning process*. *Marine Policy*, 32(5), 816–822. <https://doi.org/10.1016/j.marpol.2008.03.017>.

Prell, C., Hubacek, K., & Reed, M. (2009). *Stakeholder Analysis and Social Network Analysis in Natural Resource Management*. *Society & Natural Resources*, 22(6), 501–518. <https://doi.org/10.1080/08941920802199202>.

Starting Conversation (UT)

[Approach; Mapping; Entry]

Why: In order to have a good working collaboration, it is important to have an open conversation about how to work together and what the expectations are from both sides. For the types of research we will be doing, modes of collaboration go beyond the otherwise easily assumed scientific/theoretical knowledge vs. practical knowledge division. What collaboration means in such a context, needs extensive discussion. This is particularly important to avoid falling into patterns of what Watson (2021) calls 'parachute science', the research practice during which "foreign researchers swoop in, disregard people with on-ground experience and give little to no credit to local collaborators on published works. When the visitors depart, they are likely to take data with them, and perhaps biological samples, as well as career prospects denied to local researchers." As, within the BIOTraCes project, our research activities are often located very close to our institutional home, the colonial North-South dimension of this problem are less relevant, but also in the contact with our societal partners, it is relevant to be very alert to modes of extraction that are related to how we enter (and leave) a particular research context.

How: This involves asking a multiplicity of questions, such as: How do you relate to each other as co-creators of knowledge? What are your research needs? What are your indicators? What counts as success? What do you need to know in order to know that you are contributing to transformative change?

Challenges: As researchers and activists have different agendas, there might be practical difficulties. Working rhythms might vary and immediate goals might vary, which might complicate the practicalities of collaboration.

Further Remarks:

The importance of establishing a robust dialogue culture extends beyond the starting-up phase of the research collaboration, for this purpose, behavioural and psychology-informed perspectives might prove useful: From Whitney and Cooperrider on *Appreciative Inquiry*, we may learn on the potential of the communication style where the focus on communication for change lies on those processes that go well. Moreover, more solution-oriented conversation techniques that are grounded in transformative language may be found in *A Guide to Possibility Land Fifty-One Methods for Doing Brief, Respectful Therapy* (1999) by Bill O'Hanlon and Sandy Beadle and Kegan and Lahey (2002) *How the Way We Talk Can Change the Way We Work: Seven Languages for Transformation*.

Literature and Inspiration:

Kegan, R., & Lahey, L. L. (2002). *How the Way We Talk Can Change the Way We Work: Seven Languages for Transformation*. John Wiley & Sons.

O'Hanlon, W. H., Ohanlon, B., & Beadle, S. (1999). *Guide To Possibility Land: Fifty One Methods For Doing Brief Respectful Therapy*. WW Norton.

Watson, C. (2021). Parachute science falls to earth. *Nature Index*. Retrieved January 22, 2023, from <https://www.nature.com/nature-index/news-blog/parachute-science-falls-to-earth>

Whitney, D., & Cooperrider, D. (2005). *Appreciative Inquiry: A Positive Revolution in Change*. Berrett-Koehler Publishers.

Static Observation in Situ (CES)

[Approach; Mapping; Understanding a Specific Position]

Why: It is a common method among social sciences that helps to portray the diversity of ways and practices of a defined context of observation.

How: In contrast with dynamic observation, in this way, the researcher will be most of the time located in preselected spots.

Systems and Dynamic Mapping Methods

This may be seen as a larger umbrella for [Qualitative Dynamic Analysis Methods](#) and [Community Based System Dynamics](#).

System Analysis (WR)

Why: Systems analysis serves to get a joint overview of parts of the system that provide barriers and opportunities for change in a specific area or issue. It serves also to build a collective understanding of a target issue or system of interest.

How: The main research activity was to fill out canvas together (sectors x structural aspects), find relations, prioritise.

There are different ways in which this type of research could be done, e.g. soft systems methodologies or critical systems heuristics.

Literature and Inspiration:

Checkland, P., & Scholes, J. (1999). *Soft Systems Methodology in Action*. John Wiley & Sons.

Ulrich, W., & Reynolds, M. (2010). Critical Systems Heuristics. In M. Reynolds & S. Holwell (Eds.), *Systems Approaches to Managing Change: A Practical Guide* (pp. 243–292). Springer London. https://doi.org/10.1007/978-1-84882-809-4_6.

Melo, A. T. de, (2021). Reflections on Methodological Congruence in Systems and Complexity-Informed Research; Comment on “What Can Policy-Makers Get Out of Systems Thinking? Policy Partners’ Experiences of a Systems-Focused Research Collaboration in Preventive Health”. *International Journal of Health Policy and Management*, 10(6), 347-350. doi: 10.34172/ijhpm.2020.231.

Mierlo, B. van, Regeer, B., Amstel, M. van, Arkesteijn, M., Beekman, V., Bunders, J., Cock Buning, T. de, Elzen, B., Hoes, A.-C., & Leeuwis, C. (2010). *Reflexive Monitoring in Action. A guide for monitoring system innovation projects* [Research Report]. <https://www.wur.nl/en/publication-details.htm?publicationId=publication-way-333935373332>.

T

Theatre-Based Methods (BC3 & CES)

[Approach; Futuring; Understanding a Specific Position; Experiential and Multi-Sensory]

Why: Theatre-based methods may help to explore and understand dynamics and notions of power between different stakeholders. One of the most well-known methods is ‘theatre of the oppressed’, originally, developed by Augusto Boal in the 1970s, but today it is also adapted to many different contexts, for example, Meghna Guhathakurta (2008) writes about it in relation to Bangladeshi sweepers. Theatre of the Oppressed is used usually in work with marginalized communities to make structural injustice visible and create a channel through performances and theatre to understand the different

injustices members of these communities may face through embodying them and visualizing them performatively. Performing these injustices helps get another perspective on certain situation members of those communities are faced with on a daily basis, and the idea is to create scenarios and tools on stage on how to deal with these situations of injustice.

How: This may be done by making use of theatre techniques, games and exercises, etc. For example, on the topic of power, the following exercise could be done: Partner A has to take a pose that demonstrate power over partner B. For the second image, Partner B would change their body position (while A stays in the same position from before), to show that Partner B holds now power over partner A. The two partners would then continue to create so-called images and think how bodies can visualize power over one each other in multiple ways. This may be helpful in group processes to start thinking about problems and issues that affect the group. Theatre-based methods like Theatre of the Oppressed, do not necessarily end in performance. Parts of the exercises are already very helpful in workshops to start thinking about certain structural issues through using our own bodies and experiences.

Probably, the most known version/exercise of Theatre of the Oppressed is the Forum Theatre. The marginalized community selects a situation where they feel oppression (e.g. racist attacks). Then a whole play will be created where there are several oppressors enacting a situation of injustice over one or more oppressed. The play of 20 minutes builds up to this situation, situates the oppressor and the oppressed and leads to an escalation of the situation. Together with the audience, the actors and the audience then go through the whole play from beginning to end, to look for moments, tools, ways where oppressor and oppressed could have acted differently and improvise on spot new scenarios of how the situation could play out. It is simultaneously an opportunity to play in front of people that may be not so aware of struggles others may encounter. Depending on the theme and type of community, it can also serve as a way of collectively and creatively expressing injustices. It always involved the "oppressed" group, but depending of the context, conflicts, groups involved it could also be used to mediate between groups.

Challenges: It might be a challenge to create a safe and open environment where everybody feels invited to open up and talk about power dynamics, oppressions, and problems.

Literature and Inspiration:

Boal, A. (2002). *Games for actor and non-actors*. London: Routledge.

Boal, A. (1993). *Theatre of the Oppressed*. NY: Theatre Communications Group.

Guhathakurta, M. (2008). Theatre in Participatory Action Research: Experiences from Bangladesh. *The SAGE Handbook of Action Research: Participative Inquiry and Practice*. Reason, P., and H. Bradbury, eds. SAGE.

Picher, M.C. (2007), Democratic process and the theatre of the oppressed. *New Directions for Adult and Continuing Education*, 2007: 79-88. <https://doi.org/10.1002/ace.278>.

TO: Oppression (en) – KURINGA – Berlin. (n.d.). Retrieved May 17, 2023, from <https://kuringa.de/en/method-en/oppression-en/>. This website lists different forms of theatre, exercises, and public interventions that all fall under the category of Theatre of the Oppressed.

Theatre of the Oppressed (BC3)

See [Theatre-Based Methods](#).

Transition Pathways (WR)

[Approach; Futuring; Negotiated Action]

Why: Transition Pathways is a participatory method that aids in co-creating goal orientated actions plans.

How: Co-creating transition pathways may involve several steps: (1) Setting the scene: decide on urgency, significance and scope of a particular transition (2) Analysing the system: this can be done in any preferable way. The aim is to understand the system you want to transform (e.g. food system, housing system etc). Questions that can be answered in this step are: how does this system 'work' (e.g. make a structural display of the system)? Who is involved in this system (e.g. stakeholders, actors)? Who holds power in this system (e.g. political, monetary)? etc. (3) Co-create a desired future. What would be the 'perfect outcome' (can be set in a particular time, e.g. 2050). It's nice to have someone visualise this outcome if possible (4) Break down the 'big leap from the desired future to the present' (possibly use the system analysis: which links in the system are going to have to change in order to achieve the desired future?). Another question to pay attention to is whether certain 'changes' reinforce each other, in a beneficial way for building towards transitions (5) Make an action plan to start the desired change (6) Repeat and adjust based on results that were monitored. Paths and desires can change over time.

Challenges: It may be challenging to attract stakeholder engagement outside of coalition partners. Moreover, deciding whether the 'right people are at the table' may prove challenging. Lastly, it may be difficult to balance between different participatory groups that have different desires and ideas.

Literature and Inspiration:

[Exploring Transition Pathways to Support Food System Transitions \(wur.nl\)](#)

U, V

W

Walkthrough in Situ (CES)

[Interview technique; Mapping; Understanding a Specific Position]

Why: Walkthrough is a method of analysis that combines observation in situ with an interview simultaneously. It creates an accepting environment that puts a small number of participants at ease allowing them to thoughtfully answer questions in their own words and add meaning to their answers. It also identifies the negative and positive aspects of the analysed environments.

Literature and Inspiration:

Skinner, R. T. (2018). Walking, talking, remembering: an AfroSwedish critique of being-in-the-world, African and Black Diaspora: An International Journal, DOI: 10.1080/17528631.2018.1467747.

Walk-shops (BC3, UT, WR)

[Method; Mapping; Understanding a specific Position; Experiential and Multi-Sensory]

These three examples show, that walk-shops can be done in different ways, with different purposes. It can be about creating a shared understanding and bringing people together. It can be done open and broadly, or with a specific thematic focus.

Why: For the researchers at BC3, it was important to understand the necessities of participants regarding public space in their neighbourhoods during the pandemic. For WUR researchers that were involved with the research project of "Journey of Water", walking methods were employed to create public awareness and get different influential stakeholders interacting. Researchers at the UT wanted

to increase awareness of the presence of urban technologies (visible or invisible) and explore potential value frictions arising from the use of technology in the city.

How: BC3 researchers were using neighbourhoods walks, mental maps, and photos to engage participants in creative ways to “dream” about their local neighbourhoods, despite an online format during the pandemic. This was a method that was employed in various iterations. Researchers from the Journey of Water were primarily engaging in walking and talking and building relationships and understanding. Researchers at the UT combined experiential aspects (e.g. walking) with co-design methods (mapping values, identifying frictions).

Challenges: The researchers of the journey of water, found that there was a risk 'white saviourism' and need to pay careful attention to composition of team and framing. The most important challenges researchers at the UT came across was about involving people with limited knowledge and/or no predefined interests in issues concerning urban datafication and the use of urban technologies.

Literature and Inspiration:

Baibarac-Duignan, C., & de Lange, M. (2021). Controversing the datafied smart city: Conceptualising a 'making-controversial' approach to civic engagement. *Big Data & Society*, 8(2). <https://doi.org/10.1177/20539517211025557>.

Emler, K. (2019). *Go Your Gait! Artistic Research on Walking & Listening*.

Ingold, T. (2019). *Walking with dragons: An ecological anthropology for the Anthropocene*. Routledge.

Pink, S. & Leder Mackley, K. (2019). *Walking methodologies in a more-than-human world: WalkingLab*. Routledge.

Vergunst, J. L., & Ingold, T. (2016). *Ways of Walking: Ethnography and Practice on Foot*. Routledge. This may serve as a more ethnographic and philosophical account of walking.

Writing an Agreement & Budget (UT)

[Tool; Mapping; Entry]

Why: Makes agreements tangible and ensures that everybody is exactly on the same page.

How: Partners can be asked to write a proposal for the budget having an initial idea on what kind of activities and things the budget might be spent. It is important that the documents are created in mutual agreement, it does not necessarily need to be a contract that is signed if it is felt that this limits informal and principle agreements.

Challenges: In a project just beginning and still open to changing it is sometimes difficult to pin down all tangible agreements, therefore – flexibility and adaptability also need to be part of the agreement.

World Café for Dialogical Community Events (CES)

[Method; Reflection; Shared Understanding; Dialogue Across Different Perspectives]

Why: To facilitate collaborative dialogues amongst a diversity of people and stakeholders; to support emergence of new perspectives and collective organisation of different actors; to promote positive engagement with action and creative problem-solving solutions and positive actions.

How: The implementation of the world café follows recommendations from its original authors (Brown et al., 2025) and can be customised to particular contexts. A toolkit is available to support the organisation of the session (<https://theworldcafe.com>). It can be co-organised with communities and coupled with solution-focused and appreciative approaches (e.g. Whitney & Cooperrider, 2005) which

define questions capable of stimulating creative and productive dialogues; focused on possibilities. The outcomes of the meetings serve as a starting point for joint actions and planning

Challenges: Necessity of having skilled table hosts and facilitators to ensure creative outcomes. Moreover, it may prove challenging to sustaining engagement after the events.

Literature and Inspiration

Melo, A. T. de, & Alarcão, M. (2015). Building Future Communities: Strengthening Relational Bonds for a Positive Future. *Journal of Community Psychology*, 43(7), 878–884. <https://doi.org/10.1002/jcop.21718>.

Comunidades Maifianas: Encontros Comunitários de Reflexão Realizados No Contexto Da 3ª Edição (2012-2014) Da Implementação Do MAIFI." *Comunidades Maifianas* (blog), June 6, 2014. <http://comunidadesmaifianas.blogspot.com/2014/06/encontros-comunitarios-de-reflexao.html>.

Brown, J., Isaacs, D., & Cafe, W. (2005). *The World Café: Shaping Our Futures Through Conversations That Matter*. Berrett-Koehler.

Whitney, D., & Cooperrider, D. (2005). *Appreciative Inquiry: A Positive Revolution in Change*. Berrett-Koehler Publishers.

X, Y, Z

2120 (WR)

See [Participatory Scenario Development and Discussion](#).

Bibliography

*This list includes academic works cited and recommended literature of all partners. Non-academic websites that are not listed here.

- Abma, T. (2020). Ethics work for good participatory action research. *Beleidsonderzoek Online*, 0(6). <https://doi.org/10.5553/BO/221335502020000006001>.
- Appadurai, A. (2013). *The Future as Cultural Fact: Essays on the Global Condition*, Verso Books.
- Babai, D., Molnár, Á. P., & Molnár, Z. (2014). "Ahogy gondozza, úgy veszi hasznát" Hagymányos ökológiai tudás és gazdálkodás Gyimesben. (Traditional ecological knowledge and land use in Gyimes (Eastern Carpathians)).
- Babai, D., Jánó, B., & Molnár, Z. (2021). In the trap of interacting indirect and direct drivers: the disintegration of extensive, traditional grassland management in Central and Eastern Europe. *Ecology and Society*, 26(4). Paper written with key knowledge holders.
- Bacchi, C. (2012). Introducing the 'what is the problem represented to be' approach. In Bletsas, A. & Beasley, C. eds. *Engaging with Carol Bacchi*. Adelaide: University of Adelaide Press. 34-37.
- Baibarac, C. (2015). Spatial-technological experiments in the environment: eliciting and representing experiences of urban space, *Digital Creativity*, 26:3-4, 263-278, DOI: [10.1080/14626268.2015.1090454](https://doi.org/10.1080/14626268.2015.1090454).
- Baibarac, C., & Petrescu, D. (2019). Co-design and urban resilience: Visioning tools for commoning resilience practices. *CoDesign*, 15(2), 91–109. <https://doi.org/10.1080/15710882.2017.1399145>.
- Baibarac, C., Petrescu, D. & Langley, P. (2021). Prototyping open digital tools for urban commoning, *CoDesign*, 17(1). 83-100, DOI: [10.1080/15710882.2019.1580297](https://doi.org/10.1080/15710882.2019.1580297).
- Baibarac-Duignan, C., & de Lange, M. (2021). Controversing the datafied smart city: Conceptualising a 'making-controversial' approach to civic engagement. *Big Data & Society*, 8(2), 20539517211025556. <https://doi.org/10.1177/20539517211025557>.
- Barbrook-Johnson, P., & Penn, A. S. (2022). Systems Mapping. How to build and use causal model of systems. Springer International Publishing. <https://doi.org/10.1007/978-3-031-01919-7>.
- Boal, A. (2002). *Games for actor and non-actors*. London: Routledge.
- Boal, A. (1993). *Theatre of the Oppressed*. NY: Theatre Communications Group.
- Bodenhamer, D.J., Corrigan, J. & Harris T.M. (Eds.). (2015). *Deep Maps and Spatial Narratives*, Bloomington: Indiana University Press.
- Borgatti, SP. (1998). Elicitation Techniques for Cultural Domain Analysis: *The Ethnographer's Toolkit*. Vol 3. Creek, W. (Ed.). CA: Altimira Press. [elicitation.pdf \(analytictech.com\)](https://www.analytictech.com/elicitation.pdf).
- Bridge, G. McCarthy, J., & Perreault, T. (Eds) (2015). *The Routledge Handbook of Political Ecology*. London; New York: Routledge.
- Bussu, S., Lalani, M., Pattison, S., & Marshall, M. (2021). Engaging with care: Ethical issues in Participatory Research. *Qualitative Research*, 21(5), 667–685. <https://doi.org/10.1177/1468794120904883>.
- Canlas, I. P., & Karpudewan, M. (2020). Blending the Principles of Participatory Action Research Approach and Elements of Grounded Theory in a Disaster Risk Reduction Education Case Study. *International Journal of Qualitative Methods*, 19, 1609406920958964. <https://doi.org/10.1177/1609406920958964>.
- Campos, R. (2022). Including younger children in science-related issues using participatory and collaborative strategies: A pilot project on urban biodiversity. *Journal of Science Communication*, 21(2), N07. <https://doi.org/10.22323/2.21020807>.
- Cadena, M. d. I., & Blaser, M. (Eds.). (2018). *A World of Many Worlds*. Durham, NC: Duke University Press.

- Caniglia, G., Freeth, R., Luederitz, C., Leventon, J., West, S. P., John, B., Peukert, D., Lang, D. J., von Wehrden, H., Martín-López, B., Fazey, I., Russo, F., von Wirth, T., Schlüter, M., & Vogel, C. (2023). Practical wisdom and virtue ethics for knowledge co-production in sustainability science. *Nature Sustainability*, 1–9. <https://doi.org/10.1038/s41893-022-01040-1>.
- Castro, E. V. d. (1998). Cosmological Deixis and Amerindian Perspectivism. *The Journal of the Royal Anthropological Institute* 4(3): 469–88. <https://doi.org/10.2307/3034157>.
- Chambers, J. M., Wyborn, C., Ryan, M. E., Reid, R. S., Riechers, M., Serban, A., Bennett, N. J., Cvitanovic, C., Fernández-Giménez, M. E., Galvin, K. A., Goldstein, B. E., Klenk, N. L., Tengö, M., Brennan, R., Cockburn, J. J., Hill, R., Munera, C., Nel, J. L., Österblom, H., ... Pickering, T. (2021). Six modes of co-production for sustainability. *Nature Sustainability*, 4(11), Article 11. <https://doi.org/10.1038/s41893-021-00755-x>
- Charmaz, K. (2006). *Constructing Grounded Theory*. SAGE.
- Checkland, P., & Scholes, J. (1999). *Soft Systems Methodology in Action*. John Wiley & Sons.
- Ulrich, W., & Reynolds, M. (2010). Critical Systems Heuristics. In M. Reynolds & S. Holwell (Eds.), *Systems Approaches to Managing Change: A Practical Guide* (pp. 243–292). Springer London. https://doi.org/10.1007/978-1-84882-809-4_6.
- Cooperrider, D., & Whitney, D. D. (2005). *Appreciative Inquiry: A Positive Revolution in Change*. Berrett-Koehler Publishers.
- Cuppen, E., Breukers, S., Hisschemöller, M., & Bergsma, E. (2010). Q methodology to select participants for a stakeholder dialogue on energy options from biomass in the Netherlands. *Ecological Economics*, 69(3), 579–591. <https://doi.org/10.1016/j.ecolecon.2009.09.005>.
- Earley-Spadoni, T. (2017). Spatial history, deep mapping and digital storytelling. Archaeology's future imagined through an engagement with the Digital Humanities. *Journal of Archaeological Science* 30, 95-102.
- Eijnden, T. van den, Baibarac-Duignan, C., Lange, M. de & Goede, M. de. (2022). Materials and Modes of Translation: Re-Imagining Inclusive 'Zero'-Waste Futures. *Frontiers in Sustainable Cities* 4. <https://www.frontiersin.org/articles/10.3389/frsc.2022.958423>.
- Eisner, E. (2008). Art and knowledge. In: Knowles, JG and Cole Ardra, L (eds.), *Handbook of the Arts in Qualitative Research*, 3–12. Thousand Oaks, California: SAGE Publications.
- Emler, K. (2019). Go Your Gait! Artistic Research on Walking & Listening.
- English-Lueck J.A, Avery, M. (2020). *Futures Research in Anticipatory Anthropology*, <https://doi.org/10.1093/acrefore/9780190854584.013.14>.
- Escobar, A. (2018). *Designs for the Pluriverse: Radical Interdependence, Autonomy, and the Making of Worlds*. Duke University Pres
- Fals Borda, O. (1979). Investigating reality in order to transform it: The Colombian experience. *Dialectical Anthropology* 4: 33-55.
- Fals Borda, O. (2001). Participatory (action) research in social theory: Origins and challenges. In P. Reason and H. Bradbury (Eds.), *Handbook of Action Research: Participative Inquiry and Practice* London: Sage. pp. 27–37.
- Galafassi, D, Kagan, S, Milkoreit, M, Heras, M, Bilodeau, C, Bourke, SJ, Merrie, A, Guerrero, L, Pétursdóttir, G and Tàbara, JD. (2018). 'Raising the temperature': the arts in a warming planet. *Curr Opin Environ Sustain* 31: 71–79. Elsevier. DOI: <https://doi.org/10.1016/j.cosust.2017.12.01>.
- Grace-McCaskey, C. A., Iatarola, B., Manda, A. K., & Etheridge, J. R. (2019). Eco-Ethnography and Citizen Science: Lessons from Within. *Society & Natural Resources*, 32(10), 1123–1138. <https://doi.org/10.1080/08941920.2019.1584343>.

- Hajer, M., & Versteeg, W. (2005). A decade of discourse analysis of environmental politics: achievements, challenges, perspectives. *Journal of Environmental Policy & Planning*, 7(3), 175–184. <https://doi.org/10.1080/15239080500339646>.
- Hare M., & Pahl-Wostl C. (2002). *Stakeholder categorization in participatory integrated assessment*. *Integrated Assessment*, 3(1), 50–62.
- Henshaw, V. (2013). *Urban Smellscapes: Understanding and Designing City Smell Environments* (1st ed.). Routledge. <https://doi.org/10.4324/9780203072776>.
- Heynen, N., Kaika, M., & Swyngedouw, E. (2006). *In the Nature of Cities : Urban Political Ecology and the Politics of Urban Metabolism*. London; New York: Routledge.
- Hovmand, P. (2013). Community Based System Dynamics. In *Community Based System Dynamics* (p. 104). <https://doi.org/10.1007/978-1-4614-8763-0>
- Kaniušonytė, G., & Truskauskaitė-Kunevičienė, I. (2021). The Trajectories of Positive Youth Development Youth Development (YD) in LithuaniaLithuania: EvidenceEvidence from CommunityCommunities and Intervention SettingsIntervention settings. In R. Dimitrova & N. Wiium (Eds.), *Handbook of Positive Youth Development: Advancing Research, Policy, and Practice in Global Contexts* (pp. 343–360). Springer International Publishing. https://doi.org/10.1007/978-3-030-70262-5_23
- Kegan, R., & Lahey, L. L. (2002). *How the Way We Talk Can Change the Way We Work: Seven Languages for Transformation*. John Wiley & Sons.
- Kirksey, S. E., & Helmreich, S. (Eds.). (2010). *The emergence of multispecies ethnography*. *Cultural anthropology*, 25(4), 545-576.
- Kohn, E. (2013). *How Forests Think: Toward an Anthropology Beyond the Human*. Univ of California Press.
- Krause, F. (2019). Hydro-perspectivism: Terrestrial life from a watery angle. *Anthropological Notebooks*, 25(2), 93–101.
- Kumar, R. (2022). Sound Subjects and Hearing Cultures: Towards an Acoustic Ethnography. *Studies in Indian Politics*, 10(1), 138–144.
- Lassiter, L. E. (2005). *The Chicago Guide to Collaborative Ethnography*. University of Chicago Press. <https://press.uchicago.edu/ucp/books/book/chicago/C/bo3632872.html>.
- Lenette, C. (2022). *Participatory Action Research: Ethics and Decolonization*. Oxford University Press.
- Liboiron, M. (2021). *Pollution Is Colonialism*. Duke University Press.
- Maleki, R., Nooripoor, M., Sharifi, Z., & Petrescu, D. C. (2022). Application of community-based system dynamics for the management of rural households' vulnerability to the drying of Urmia Lake. *Systems Research and Behavioral Science*, 40(3), 573–585. <https://doi.org/10.1002/sres.2848>.
- Matos Castaño, J., Baibarac-Duignan, C., & Geenen, A. (2022). *Towards Responsible Smart Cities: Cook-it Book by responsiblecities - Issuu*. <https://issuu.com/responsiblecities/docs/22009-boekjeet-digitaal-final>.
- Melo, A. T. de, (2020). Complex relational thinking method. A proposal for facilitating the emergence and integration of ideas in debates, round-table discussions and dialogical meetings. [Method] V3.EN.2020. Doi: 10.13140/RG.2.2.17185.02408.
- Melo, A. T. (2020). *Managing complexity through the complexity of our thinking: Key research questions and challenges to the development of a meta-heuristic*. Poster presentation at the Conference on Complex Systems 2020 (CCS2020), online, 7 December 2020. Doi: 10.13140/RG.2.2.12676.14720.
- Melo, A. T. de, (2021). Reflections on Methodological Congruence in Systems and Complexity-Informed Research; Comment on “What Can Policy-Makers Get Out of Systems Thinking? Policy Partners’ Experiences of a Systems-Focused Research Collaboration in Preventive Health”. *International Journal of Health Policy and Management*, 10(6), 347–350. <https://doi.org/10.34172/ijhpm.2020.231>.

- Melo, A. T. de, & Alarcão, M. (2015). Building Future Communities: Strengthening Relational Bonds for a Positive Future. *Journal of Community Psychology*, 43(7), 878–884. <https://doi.org/10.1002/jcop.21718>.
- Melo, A. T. de., & Alarcão, M. (2016). Qualitative Methods for the Exploration of Complexity in Human Social Systems: Applications in Family Psychology. In S. Battiston, F. De Pellegrini, G. Caldarelli, & E. Merelli (Eds.), *Proceedings of ECCS 2014* (pp. 21–32). Springer International Publishing. https://doi.org/10.1007/978-3-319-29228-1_3.
- Melo, A. T., & Campos. R. (2022). Facilitating scientific events guided by Complex Thinking: A case study of an online Inter/Transdisciplinary Advanced Training School. *Informing Science: The International Journal of an Emerging Transdiscipline*, 25, 089-110. <https://doi.org/10.28945/4934>. This is an example of a paper where it was use in the context an advanced training/scientific event along with more enactive methods.
- Melo, A. T. & Caves, L. S. (2020). *Relational thinking for emergence: A methodology for guided discussions. V1.2019*.
- Melo, A. T. de, Caves, L. S. D., Dewitt, A., Clutton, E., Macpherson, R., & Garnett, P. (2020). Thinking (in) complexity: (In) definitions and (mis)conceptions. *Systems Research and Behavioral Science*, 37(1), 154–169. <https://doi.org/10.1002/sres.2612>.
- Melo, A. T. de, Leticia, R. (2022), ""Complexigraphies: Une méthodologie d'analyse qualitative des mouvements d'une pensée complexe" [Complexigraphies: A qualitative methodology for analysing the movements of a complex thinking]", paper presented at Congrès Scientifc International "Comprendre les processus de changement: Apports des méthodes qualitatives et mixtes", Université de Liège, Liège, Belgium, 13 to 14 October.
- Melo, A. T. de & Leticia, R. (2023). Complexigraphy: Theoretical Foundations And Methodological Challenges Of Mapping Complex Thinking. Paper submitted to publication.
- Mierlo, B. van, Regeer, B., Amstel, M. van, Arkesteijn, M., Beekman, V., Bunders, J., Cock Buning, T. de, Elzen, B., Hoes, A.-C., & Leeuwis, C. (2010). *Reflexive Monitoring in Action. A guide for monitoring system innovation projects* [Reserach Report]. <https://www.wur.nl/en/publication-details.htm?publicationId=publication-way-333935373332>.
- Molnár Zs. (2012): A Hortobágy pásztorszemmel. A puszta növényvilága. (Traditional ecological knowledge of herders on the flora and vegetation of the Hortobágy) Hortobágy Természetvédelmi Közalapítvány, Debrecen.
- Molnár, Zs., & Babai, D. (2021). Inviting ecologists to delve deeper into traditional ecological knowledge. *Trends in Ecology & Evolution*, 36(8), 679–690. <https://doi.org/10.1016/j.tree.2021.04.006>.
- Molnár, Z., Kelemen, A., Kun, R., Máté, J., Sáfián, L., Provenza, F., ... & Vadász, C. (2020). Knowledge co-production with traditional herders on cattle grazing behaviour for better management of species-rich grasslands. *Journal of Applied Ecology*, 57(9), 1677-1687. Paper written with key knowledge holders.
- O’Gorman, E., & Gaynor, A. (2020). More-than-human histories. *Environmental History*, 25(4), 711–735. <https://doi.org/10.1093/envhis/ema027>.
- Nederland in 2120*. (2020, January 30). WUR. <https://www.wur.nl/nl/dossiers/dossier/nederland-in-2120.htm>
- O’Hanlon, W. H., Ohanlon, B., & Beadle, S. (1999). *Guide To Possibility Land: Fifty One Methods For Doing Brief Respectful Therapy*. WW Norton.
- Pereira, L, Sitas, N, Ravera, F, Jimenez-Aceituno, A and Merrie, A. (2019). Building capacities for transformative change towards sustainability: Imagination in Intergovernmental Science-Policy Scenario Processes. *Elem Sci Anth*, 7: 35. DOI: <https://doi.org/10.1525/elementa.374>.
- Picher, M.C. (2007), Democratic process and the theatre of the oppressed. *New Directions for Adult and Continuing Education*, 2007: 79-88. <https://doi.org/10.1002/ace.278>.

- Pink, S., & Leder Mackley, K. (2019). *Walking methodologies in a more-than-human world*: WalkingLab. Routledge.
- Pomeroy, R., & Douvère, F. (2008). *The engagement of stakeholders in the marine spatial planning process*. *Marine Policy*, 32(5), 816–822. <https://doi.org/10.1016/j.marpol.2008.03.017>.
- Prell, C., Hubacek, K., & Reed, M. (2009). *Stakeholder Analysis and Social Network Analysis in Natural Resource Management*. *Society & Natural Resources*, 22(6), 501–518. <https://doi.org/10.1080/08941920802199202>.
- Quintiliani, L. M., Campbell, M. K., Haines, P. S., & Webber, K. H. (2008). The Use of the Pile Sort Method in Identifying Groups of Healthful Lifestyle Behaviors among Female Community College Students. *Journal of the American Dietetic Association*, 108(9), 1503–1507. <https://doi.org/10.1016/j.jada.2008.06.428>
- Reason, P., & Bradbury, H. (Eds.). (2013). *The SAGE Handbook of Action Research: Participative Inquiry and Practice*. SAGE.
- Reason, P. (2004). Critical Design Ethnography as Action Research. *Anthropology & Education Quarterly*, 35(2), 269–276.
- Research Methods in Anthropology: Qualitative and Quantitative Approaches, Sixth Edition*. Retrieved March 19, 2023, from <https://rowman.com/ISBN/9781442268883/Research-Methods-in-Anthropology-Qualitative-and-Quantitative-Approaches-Sixth-Edition>.
- Roberts, L. (Ed.). (2016). Special Issue “Deep Mapping.” *Humanities*, 5(1). https://www.mdpi.com/journal/humanities/special_issues/DeepMapping.
- Robbins, P. (2020). *Political Ecology*. Oxford: Blackwell.
- Roth, G., & Kleiner, A. (1998). Developing organizational memory through learning histories. *Organizational Dynamics*, 27(2), 43–60. [https://doi.org/10.1016/S0090-2616\(98\)90023-7](https://doi.org/10.1016/S0090-2616(98)90023-7).
- Schensul, J. J., & LeCompte, M. D. (2016). *Ethnography in Action: A Mixed Methods Approach*. Rowman & Littlefield.
- Skinner, R. T. (2018). Walking, talking, remembering: an AfroSwedish critique of being-in-the-world, African and Black Diaspora: An International Journal, DOI: 10.1080/17528631.2018.1467747.
- Stanfield, R. B. (2000). *The Art of Focused Conversation: 100 Ways to Access Group Wisdom in the Workplace*. New Society Publishers.
- Stewart Pamela, J., Andrew Strathern. (2003). *Landscape, Memory and History: Anthropological Perspectives*, Pluto Press.
- Stone, D. A. (1989). Causal Stories and the Formation of Policy Agendas. *Political Science Quarterly*, 104(2), 281–300.
- Teram, E., Schachter, C. L., & Stalker, C. A. (2005). The Case for Integrating Grounded Theory and Participatory Action Research: Empowering Clients to Inform Professional Practice. *Qualitative Health Research*, 15(8), 1129–1140. <https://doi.org/10.1177/1049732305275882>.
- Trujillo, C. M., & Long, T. M. (2018). Document co-citation analysis to enhance transdisciplinary research. *Science Advances*, 4(1), <https://doi.org/10.1126/sciadv.1701130>.
- Thornberg, R. (2012). Informed Grounded Theory. *Scandinavian Journal of Educational Research*, 56(3), 243–259. <https://doi.org/10.1080/00313831.2011.581686>.
- Truskauskaitė-Kunevičienė, I., Kaniušonytė, G., Poškus, M. S., Balundė, A., Gabė, V., Jovarauskaitė, L., & Özdemir, M. (2021). Reducing Bottled Water Use among Adolescents: A Factorial Experimental Approach to Testing the Components of the “Aquatic” Program. *Sustainability*, 13(12), Article 12. <https://doi.org/10.3390/su13126758>.

- Tsing, A. L. (2015). *The mushroom at the end of the world: On the possibility of life in capitalist ruins*. Princeton University Press.
- Tsing, A. L., Swanson, H. A., Gan, E., & Bubandt, N. (Eds.). (2017). *Arts of Living on a Damaged Planet: Ghosts and Monsters of the Anthropocene*. Univ of Minnesota Press.
- Turnhout, E., Tuinstra, W., & Halffman, W. (2019). *Environmental Expertise: Connecting Science, Policy and Society*. Cambridge: Cambridge University Press. doi:10.1017/9781316162514.
- Turnhout, E., Metze, T., Wyborn, C., Klenk, N., & Louder, E. (2020). The politics of co-production: Participation, power, and transformation. *Current Opinion in Environmental Sustainability*, 42, 15–21. <https://doi.org/10.1016/j.cosust.2019.11.009>.
- Vergunst, J. L., & Ingold, T. (2016). *Ways of Walking: Ethnography and Practice on Foot*. Routledge.
- Wadsworth, Y. (1998). What is Participatory Action Research? *Action Research International*, Paper 2. Available online: <http://www.aral.com.au/ari/p-ywadsworth98.html>.
- Watson, C. (2021). Parachute science falls to earth. *Nature Index*. Retrieved January 22, 2023, from <https://www.nature.com/nature-index/news-blog/parachute-science-falls-to-earth>.
- Wessel, M. van (2018). Narrative Assessment: A new approach to evaluation of advocacy for development. *Evaluation*, 24(4), 400–418. <https://doi.org/10.1177/1356389018796021>.
- Whitney, D., & Cooperrider, D. (2005). *Appreciative Inquiry: A Positive Revolution in Change*. Berrett-Koehler Publishers.
- Wright, K. (Ed.). (2017). *Transdisciplinary Journeys in the Anthropocene: More-than-human encounters*. Routledge. <https://www.routledge.com/Transdisciplinary-Journeys-in-the-Anthropocene-More-than-human-encounters/Wright/p/book/9781138615199>.
- Wright, D., Finn, R., Gellert, R., Gutwirth, S., Schütz, P., Friedewald, M., Venier, S., & Mordini, E. (2014). Ethical dilemma scenarios and emerging technologies. *Technological Forecasting and Social Change*, 87, 325–336. <https://doi.org/10.1016/j.techfore.2013.12.008>.
- Xiao, J., Aletta, F., Radicchi, A., McLean, K., Shiner, L. E., & Verbeek, C. (2021). Recent Advances in Smellscape Research for the Built Environment. *Frontiers in Psychology*, 12. doi:10.3389/fpsyg.2021.700514.
- Žukauskienė, R., Truskauskaitė-Kunevičienė, I., Gabė, V., & Kaniušonytė, G. (2021). “My Words Matter”: The Role of Adolescents in Changing Pro-environmental Habits in the Family. *Environment and Behavior*, 53(10), 1140–1162. <https://doi.org/10.1177/0013916520953150>