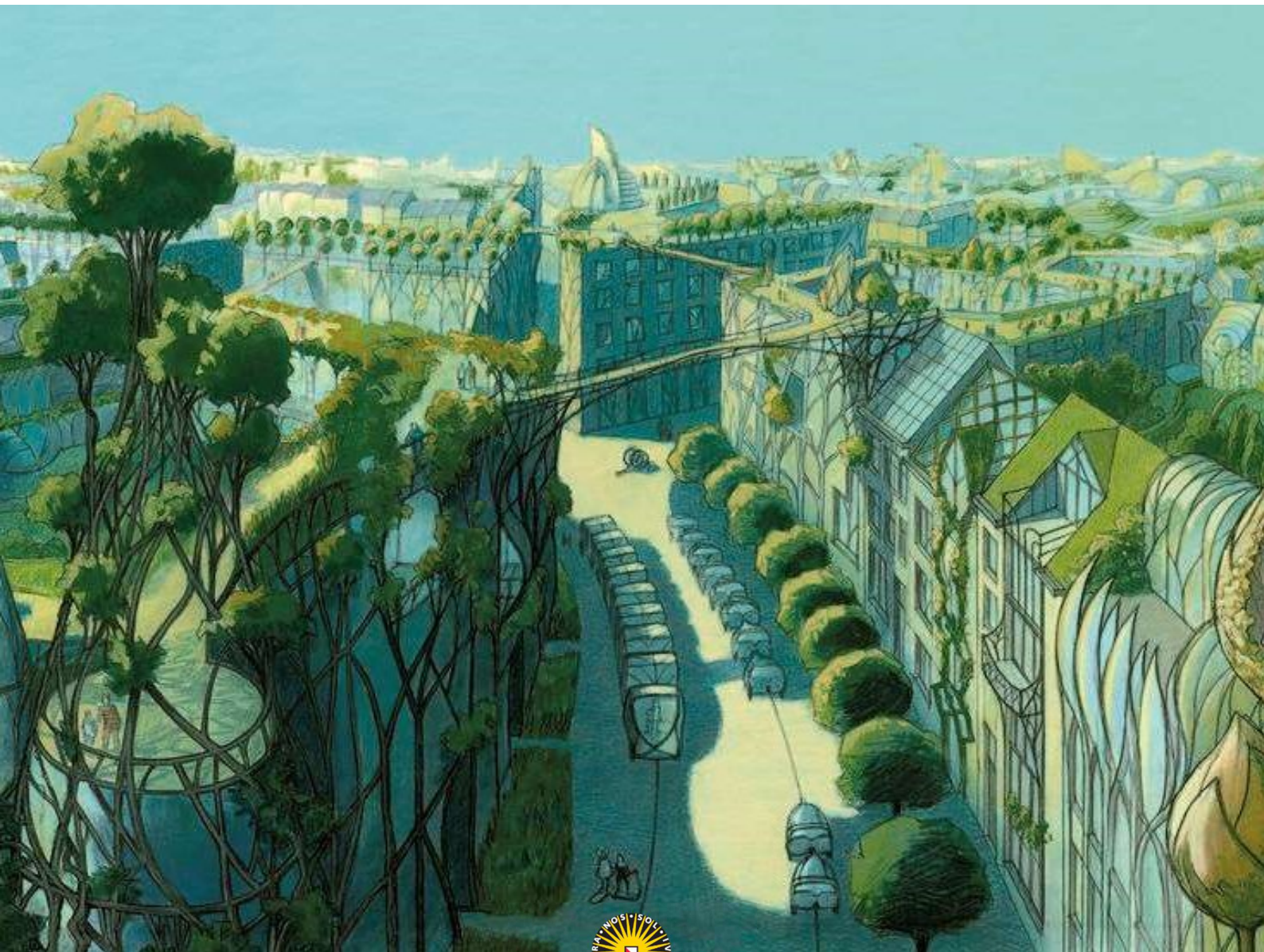# ENRICHING CO-GOVERNANCE WITH ARTISTIC EXPRESSION

THE POTENTIAL OF ART-BASED APPROACHES FOR THE COLLABORATIVE DEVELOPMENT OF URBAN NATURE-BASED SOLUTIONS

Universiteit Utrecht

# UTRECHT UNIVERSITY MASTER'S THESIS RESEARCH

## MSc SUSTAINABLE DEVELOPMENT – EARTH SYSTEM GOVERNANCE

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# ABBREVIATIONS

**ABA**: Art-based approaches

**IoN**: Images of Nature

**IPCC**: Intergovernmental Panel on Climate Change

**NBS**: Nature-based solutions

**SDG**: Sustainable Development Goal

**SQ**: Sub-Question

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# SUMMARY

Environmental value systems are dynamic and diverse among urban nature-based solutions (NBS) stakeholders, who often need to work in interdisciplinary co-governance arrangements to develop new multifunctional projects. Because value systems are not usually discussed explicitly, miscommunication, power imbalances, and professional bias arise and affect partnership discussions and agreements. This investigation explores the potential of art-based approaches (ABA) to address these governance challenges, enhancing knowledge sharing and the collective understanding of different or conflicting value systems surrounding urban nature's functionality. ABA are spaces of governance and possibility, where knowledge and imagination are shared, and the beliefs and values of participants become explicit through artistic and creative expression and reception. Drawing on the case study of Utrecht (The Netherlands), the potential contribution of ABA to inform NBS co-governance processes is investigated, and a guiding framework for such implementation of ABA is designed. The investigation unfolds with the development of a theoretical framework, followed by interviews with a range of NBS stakeholders and a document analysis. This data is in turn compared with additional literature to develop conclusive practical and theoretical implications. The thesis reveals that urban nature professionals not only have diverse value systems, but these are also in internal conflict at the level of single individuals, when comparing their personal and professional standpoints. This confirms the potential of ABA for an improved understanding and explication of different ways of understanding urban nature among co-governing stakeholders. Another important contribution of this thesis is a guiding framework for the effective implementation of ABA in NBS co-governance, which takes into account the risks and dangers that come with this 'out of the comfort zone' strategy. Further research can build upon these findings, experimenting on the field with such framework and seeking other practical strategies to raise awareness and openness among professional stakeholders in order to integrate personal experiences and emotions into their professional structure of values, value orientations, and beliefs.

# 1 INTRODUCTION

Science and the arts endure a history of opposition and antagonism. However, any innovation or scientific breakthrough requires an act of imagination that explores the unknown, standing outside of the comfort zone; similarly, any work of art needs a thorough analysis of reality and a meticulous method to express its message. Science and the arts could be thought of as two sides of the same coin. Their antagonism, however, leads to polarization of methods and strategies, which struggle to find compromises. 'Creativity' and 'governance', for example, are mostly thought of as a dualistic opposition by both businesspeople and artists (Healey, 2004). Conversely, in the current quest for sustainable development, disciplines increasingly merge to co-produce solutions. Inter- and trans-disciplinarity are buzzwords for problem-solving in sustainability and innovative modes of governance, particularly in urban environments (Lange et al., 2013). Embedded in such interdisciplinary research and in the context of the global Sustainable Development Goals (SDGs) (UN,n.a.), protection and conservation of the natural environment is one of the current political priorities for humanity. The concept of 'nature' has historically been the subject of both scientific and artistic disciplines, and is now at the top of global political agendas, suggesting opportunities for fully interdisciplinary research for sustainable development, where science and the arts could stimulate and benefit from each other much more than they currently do.

Due to increasing urbanization, nature in cities plays a central role in sustainable development (Da Rocha et al., 2017) and thus becomes the focus of this research. It is fundamental for climate change adaptation and mitigation, for example water buffering and mitigating urban temperature, and for the protection and conservation of biodiversity, otherwise compromised by the urban absence of habitat for flora and fauna (Faivre et al., 2017). Urban nature is highly multifunctional and has a variety of positive effects and added values for citizens as well as for local ecosystems. Studies of nature-based solutions (henceforth NBS) aim particularly to innovatively co-produce urban benefits by intertwining and optimizing synergies between nature, society, and the economy (Faivre et al., 2017). While safeguarding local ecological integrity and biodiversity, and representing a central climate adaptation strategy, urban nature proves to be fundamental for human health and wellbeing – both physical and psychological, for stress relief, social cohesion, recreation, spirituality, relaxation, education, and aesthetics – and for economic development, as it builds employment opportunities and adds value to properties (Bush, 2020; Coventry et al., 2019; Da Rocha et al., 2017; Faivre et al., 2017;  Raymond et al., 2017; Van Ham & Klimmek, 2017). Despite the multiplicity of positive effects of nature on the city, its highly multifunctional value has only recently been

recognized by citizens and policymakers. Consequently, interdisciplinarity has become key to all management strategies in the field of urban nature, adopting increasingly interactive, inclusive, and participatory decision-making processes in which numerous functions are in play and numerous fields of policy intertwine (Bush, 202; EC, 2015).

Urban green spaces represent highly emotional spaces where citizens experience the city, interact with each other, and spend their free time. They also allow for feelings of wonderment, awe, and fascination in the otherwise highly rationalized urban environment. Engaging with the emotional sphere of nature is thus argued to present unexplored opportunities for collaborative and interdisciplinary governance in urban sustainable development, where strategies to harmonize the discrepant stakes of actors are still under development (Bush, 2020; EC, 2015).

The Sustainable Development Goals (SDGs) framework developed by the United Nations manifest the importance and relevance of NBS for sustainable urban development, albeit only indirectly. The 11th SDG aims for 'Sustainable Cities and Communities', specifically including the need for natural, green, and multifunctional urban and public spaces, while the 15th SDG focuses on the overall protection and conservation of 'Life on Land' (UN, n.a.). The 17th, all-encompassing goal aims at working in partnership to achieve sustainability goals, not only at the international level, but within countries and cities in terms of multi-stakeholder engagement, knowledge sharing, and the promotion of interactive governance, through effective public, public-private and civil society partnerships (Lange et al., 2013; UN, n.a.), which are also the focus of this thesis, aiming for effective NBS development. However, neither the arts nor creativity are mentioned or supported in the SDGs. Moreover, "despite increasing interest in the 'human dimension' of global environmental change across a variety of disciplines, the arts are a forgotten dimension in IPCC [Intergovernmental Panel on Climate Change] reports" (Galafassi et al., 2018, p.2). As many scholars outline in academic research – with many examples reported in this paper, both in the introduction and in the theoretical framework (section 3), the arts conversely represent a novel, promising, yet largely unexplored field in co-governance of NBS, which may bring together a variety of disjointed sustainability goals.

*'Expanding communication from predominantly normative arguments to include also the emotional connotations of nature may contribute to a shared emotional connection with the public that can be a powerful tool to overcome resistance and build shared visions on conservation issues'* (Buijs & Elands, 2013, p.1).

## 1.1 Arts and nature: a special bond

The 'biophilia hypothesis' explains humans' special attachment to nature through evolutionary arguments. It defines it as a genetic heritage, claiming that, as we evolved in an uncivilized natural world, having sensory interactions and experiences in such an environment, even in today's urban settings, induces a sense of ease and stress relief (Browning et al., 2014). On top of this hypothesis, nature has been historically encircled by periodic phases of attachment, identity creation, and place- or sense-making, both positively and negatively, and has been one of the main subjects or sources of inspiration of the visual arts throughout many historic art movements (Buijs & Elands, 2013; De Vries, 2019; Redies, 2008). Drawing inspiration from nature has been a constant in human evolution. Visual and sonorous arts, including not only painting and music but also geometry (e.g. fractals and symmetry), architecture, and the study of proportions, have many of their roots in the observation of natural patterns (Joye, 2007; Redies, 2008). Natural patterns have been demonstrated to define a common ground of aesthetic judgement that all human beings share, across historical periods (Redies, 2008). They represent a human process of sensory coding, order, and sense-making in an otherwise chaotic surrounding environment. However, even though nature has been used to the advantage of humans throughout history, according to De Vries (2019), the role of nature shifted radically during Modernity, through a process of rationalization, from conceiving of nature as a 'divine work of art' to being a resource for exploitation and creation of the human world that we know today. Nature in an urban environment, of course, is not the same as the idealized nature of Romantic artworks. Nevertheless, urban planning processes run the risk of discarding such an intrinsic attachment in favor of rationalized attitudes towards nature, underestimating emotional bonds and the irrational realm that has always existed in the relationship between humans and nature (Buijs & Elands, 2013; De Vries, 2019). Cities are epicenters of innovation, experimentation, creativity, and artistic expression (Nkula-Wenz, 2019). De-romanticizing the emotional bond with nature while maintaining the artistic, irrational, and expressive elements of it may allow planners to introduce key aspects of the relationship between humans and nature in their work.

The multifunctionality of urban nature requires the integration of multiple disciplines and fields of expertise, and an interdisciplinary discussion and decision-making process in which stakeholders agree on strategies such as planning, funding, and managing. The relationship among stakeholders drives the effectiveness of this process: problems and solutions must be tackled from the foundations to avoid implicit and tacit assumptions that would otherwise hinder the results. In this context, the arts are

unconventional but effective forms of communication – and can even be considered languages in themselves (Grenni et al., 2019; Lavrinec, 2014). An art-based approach permits construction of a shared language that consists of subjectivity and direct sensations, rather than objectivity and rationalized notions. An expressive and emotional form of communication is ultimately argued to be valuable if integrated in urban nature management processes (Buijs & Elands, 2013).

Aside from their professional role, stakeholders are also dwellers of the city, with personal experiences and emotional attachment shaping their value systems. This attachment couples with their expertise and professional knowledge to inform and influence urban planning and NBS decisions. Ordinarily, stakeholders have competing ideas about the role of nature in the city (Bush, 2020). This conflict is rooted in the different stakes these actors have: every actor tells a different story about urban nature, focusing on different functions, benefits, and characteristics (Bush, 2020). Regardless of the story they tell, emotional or experiential attachment to these spaces is normally left out of professional narratives (Buijs & Elands, 2013). This leaves unspoken a number of central aspects, considered irrelevant, that potentially have consequences on management choices. Indirectly, leaving fascination, beauty, peace, or spiritual connection out of the discussion induces immediate implications for management while excluding a range of opportunities (Buijs & Elands, 2013). The proposition of this thesis is therefore to introduce art-based approaches (ABA) to tackle the need for an adaptive and accessible language in interdisciplinary and collaborative governance processes, where space is left for subjectivity and emotional or spiritual attachment to nature, to achieve the multifunctional goal of NBS. ABA, for example, allow stakeholders to express their standpoints and worldviews by drawing, listening, moving, etc., embracing the irrational realm to explain and understand each other's value systems (see Appendix 1 for practical ABA examples).

*'We shall never be able to understand and appreciate nature until we re-learn to see it as both 'spiritual' subject and 'natural' object'* (Curry, 2009, p.138).

## 1.2 Problem statement and relevance of the research

Subjectivity and the emotional sphere highly influence the way individuals experience, live, and act in a world that is, at the same time, objective and dependent on a universal order that we all experience in the same way (De Vries, 2019). As previously argued, nature simultaneously represents the objective environment surrounding us and a source of emotions, spiritual connection, and subjective experience.

This subjectivity of nature shapes the environmental value system of individuals and leads to an assortment of these among a group or in society, often unavoidably leading to misaligned or conflicting value systems. Furthermore, value systems are unstable, dynamic, and transform over time with social interaction, dialogue, and empathy among individuals (Edwards et al., 2016; Van Opstal & Hugé, 2013). These aspects must therefore be further integrated in research related to collaborative governance, partnership, and stakeholder engagement, but also to conflict and competition.

Co-governance and partnership among professionals tend to take a distant stance from subjectivity and emotion. Rather, the language used by nature management professionals is most often normative and apathic (Buijs & Elands, 2013). Governance strategies aiming at co-producing solutions should not underestimate the relevance of the diversity of environmental value systems among partners and should allow subjectivity and attachment to integrate decisional processes (Van Opstal & Hugé, 2013). A tacit diversity among actors who live and make choices in the same location and within the same policy field can easily lead to unequal power distributions, to misrepresentation or misunderstanding, to the constitution of niches and regimes, and to contrasting or conflicting framing and narratives (Edwards et al., 2016; Hall, 2005). Thus, a range of possible choices are rejected without consideration, and dominant value systems shape taken-for-granted assumptions, discourses, and social norms. Making these value systems explicit raises awareness about the very core of conflicts of interest, instead of scratching the surface. While this causal model may be generically applicable to all social issues, in a professional decision-making context, power hierarchies and bias have strong political consequences that affect the entire community (Bulkeley & Castàn Broto, 2013). Urban NBS represent an explicative case in which an approach that integrates environmental value systems in co-governance would benefit the outcomes, since, as will be discussed, they require collaborative and co-creative governance and interdisciplinary partnerships to be developed in respect of their multifunctional aim (Van der Jagt et al., 2020).

Franz (2005) highlights the need to develop strategies to enhance communicative and transformational learning in interdisciplinary co-governance, as well as analyzing the underlying assumptions behind each professional stance, by questioning, provoking, and promoting diversity, also with the use of symbols or metaphors. Van Opstal and Hugé (2013) argue that, within partnerships, there is an increasing need to develop frameworks and methodologies to embrace the role of worldviews and value systems and to make space for reflexivity and harmonization of conflicting perspectives. Bulkeley and Castàn Broto (2013) explain how governance and strategic experimentation have become central to climate change adaptation strategies in cities around the world, although research is needed to identify different

typologies of experimentation and how it takes shape in different urban and sectorial contexts. Experimentation allows us to test the effectiveness of innovative practices in sharing knowledge, questioning regimes, learning, and gaining experience (Bulkeley & Castàn Broto, 2013).

Art-based approaches (ABA) have been successfully explored and experimented as a niche governance strategy and are being applied in various fields of research to enhance the integration of subjective value systems in problem-solving practices (De Vries, 2019; McNiff, 2011; Metzger, 2011). These studies show how ABA create opportunities for dialogue where individuals express, exchange, question, and develop their views, while responding to the views of others (Edwards et al., 2016). Yet, they have not been academically matched with urban nature or NBS, despite the interdisciplinary, multifunctional, and experiential character of this field of innovation. Hence, this study narrows down to explore the potential of implementing ABA in the development of urban NBS through interdisciplinary co-governance. Furthermore, being a novel approach still under experimentation, a guiding framework for effective ABA implementation is not yet available for practitioners.

To date, both urban experimentation and research on NBS have focused primarily on technological and economic aspects (e.g. on material innovation, the integration of nature in the built environment, economic and business models, finance and policy outcomes), and are progressively highlighting the multi-level, cultural, and social added value of this innovation path (Bulkeley & Castàn Broto, 2013; Da Rocha et al., 2017). Effective governance of NBS is mostly based on networks and co-creation, but a range of barriers hinders such processes: short-term decision-making, lack of coordination among sectorial silos of knowledge, apathy, the ambiguous role of individual stakeholders, and unsupportive bureaucracy and legal frameworks (Egusquiza et al., 2019). The multifunctional character of NBS calls for new forms of participation and collaboration between actors in cities (i.e. engagement and empowerment), to educate and experiment (i.e. awareness and attitude), to integrate different types of knowledge and human capital (i.e. beliefs and values) as well as considering many place-based factors (i.e. the local environment, cultural norms and societal conditions) (Van der Jagt et al., 2020), which largely remain unexplored.

## 2 RESEARCH AIM AND QUESTION

*"Artistic interventions can […] set the stage for an estrangement of that which is familiar and taken-for-granted, thus shifting frames of references and creating a radical potential for planning in a way that can be very difficult for planners to achieve on their own"* (Borén & Young, 2017, p.7).

The aim of the research is to explore the potential contribution of the introduction of creative and art-based strategies in urban green development and nature-based solutions (NBS). Since the arts are argued to have a major impact on value systems of individuals, art-based approaches (ABA) are analyzed through the 'images of nature' framework (Buijs, 2009), framing mental images made up of beliefs, values, and value orientations regarding nature (Grenni et al., 2019). As outlined, ABA may be able to challenge a series of limitations of mainstream stakeholder discussion: power relations or hierarchies, disciplinary or professional biases and myopia, and straightforward solutions that fail to take into account the multiplicity of worldviews among stakeholders (Borén & Young, 2017; Grenni et al., 2019; Hall, 2005; Parsons & Boydell, 2012). This may be considered the proposition of the research: if correctly implemented, ABA can contribute to inclusive and conscious interdisciplinary co-governance related to NBS. They are thus a tool to expose power relationships and biases and to raise awareness. Exposing value systems and raising awareness are processes that involve the direct experiences and emotions of individuals (Lavrinec, 2014; Parsons & Boydell, 2012). To enhance public awareness, for example, the media communicates with the general public by making thorough use of the arts (picturesque images, music, poetry, etc.), establishing a wide-scale connection with emotions (Grenni et al., 2019). A similar process could be applied on a smaller scale within stakeholder meetings and decision-making processes. Here, the leverage potential could be even greater, since the content and message would be local and targeted (Grenni et al., 2019).

Certain rules must however be in place to ensure the effectiveness of ABA, as the approach comes with risks and dangers related to its 'out of the comfort zone' character. To avoid counterproductive results, a framework for the implementation of ABA must be in place. The research thus aims at solving a practical issue at the level of NBS stakeholder engagement and, potentially, harmonization of interests. The aim is to formulate recommendations for ABA, designing a guiding framework for their implementation. As such, the research can be defined as practice-based and design-oriented (Verschuren & Doorewaard, 2010).

This aim leads to the following research question:

*What are the value systems and images of nature among urban nature-based solutions stakeholders and how can art-based approaches inform and contribute to a greater understanding of these?*

The answer to this question is supported by and structured through a set of sub-questions (SQs), which guide the investigation, one step at the time:

- *SQ1: What are the dominant images of (urban) nature and do these align among stakeholders? In what way does this influence what is considered valuable nature in the city and what is not?*
- *SQ2: To what extent are art-based approaches already implemented in co-governance of urban nature-based solutions, and how do they contribute to the functioning of such co-governance processes?*
- *SQ3: What recommendations can be deduced from such an analysis, to effectively implement art-based approaches for improved co-governance of urban nature-based solutions?*

## 2.1 Research Framework

The research flows as illustrated in Fig.1. Building on the problem statement outlined in section 1.2, the aim, question, and sub-questions (SQs) of the research have been defined. From here, the literature is explored to provide a conceptual framework that ensures that the author and the reader have a common understanding of the main research concepts and the relationship among these. The literature also provides a basic introductory framework for the implementation of ABA in co-governance processes, highlighting the role of diverse value systems among stakeholders without yet focusing on NBS development. This theoretical framework proves to need further development for specific application in NBS co-governance, narrowing down the direction of the investigation. Such additional input for an ABA guiding framework is therefore generated by analyzing the data gathered in interviews with NBS stakeholders and the relevant documents and policies, within the city case study of Utrecht. Simultaneously, such data investigates the variety of beliefs, values, and value orientations among stakeholders, as theorized in the purposely created analytical framework. Indeed, data is gathered and analyzed through a framework which encompasses two main elements: the 'images of nature' framework developed by Buijs (2009) and a multi-level analysis. This investigation provides answers to SQ1 and SQ2 in the findings, where the misalignments among stakeholders' value systems related to nature are outlined and a framework for implementing ABA in NBS co-governance is produced. The discussion

develops reflections upon these findings and provides an answer to SQ3: the guiding ABA framework presented in the findings is integrated with additional literature to complete the picture and build recommendations, and thus a conclusive ABA guiding framework for NBS co-governance is illustrated. Finally, the main research question is straightforwardly answered. Departing from a broad problem statement, the research narrows down to specific conceptualizations, analytical tools and methods, and findings. Recalling the shape of an hourglass, it then expands again, with such findings, to discuss and provide theoretical and practical implications and generalizable conclusions.

Problem Statement:
Unexplored potential of ABA in realizing effective co-governance of NBS

Research Aim & Question

Theoretical Framework:

| Conceptual Framework | Theoretical directions for an ABA guiding framework | Analytical Framework |

Methods: Utrecht city case study: interviews & document analysis

Findings:

| Misalignment of 'images of nature' among stakeholders | Misalignment of 'images of nature' throughout levels of analysis | ABA framework: Input for the implementation of ABA in NBS co-governance |

Discussion:

| Theoretical Implications: Building theory & developing directions for future research | Practical Implications: Final ABA guiding framework for NBS co-governance, integrated with literature |

Conclusion: Answer to Research Question

*Fig.1: Research Framework.*

Henceforth, the thesis unfolds by developing the theoretical framework in section 3. This framework is inclusive of the conceptual and the analytical frameworks, as well as the theoretical directions for an ABA framework. Section 4 illustrates the research strategies and methods of data gathering and analysis, followed by the findings in section 5. Section 6 presents a discussion of the findings and integrates them with academic literature to develop practical and theoretical implications, as well as paths for further research. Ultimately, section 7 presents a conclusion which answers the main research question.

# 3 THEORETICAL FRAMEWORK

*'Urban planners need to have an open approach to collaborative governance of nature-based solutions that allows learning with and about new appealing designs, perceptions and images of nature from different urban actors, allows forming of new institutions for operating and maintaining nature-based solutions to ensure inclusivity, livability and resilience'* (Frantzeskaki, 2019, p.1).

## 3.1 Conceptual Framework

Defining the key concepts of the research is a necessary first step. Background on the academic literature is provided to support these conceptualizations. Fig.2 illustrates the conceptual model and the links between the key concepts of the research, defining their relationship and outlining the logical reasoning behind the proposition and the research question at hand. The concepts in green boxes describe the established strategy of NBS analyzed in this thesis for the management of urban nature and its multiple functions. This strategy is taken as a starting point to develop the proposal illustrated in the following boxes. Indeed, the concepts in yellow boxes represent supervening goals of NBS and are challenges in need of further research. The concepts in pink boxes represent the core of the proposition of this research: innovative elements that are argued to contribute and add value to the existing strategy and to previous research.

URBAN SUSTAINABLE DEVELOPMENT:

Development of Spatial Planning, Green Spaces & Urban Nature

| Existing Strategy | Additional Proposition |
|---|---|

**Existing Strategy**
- Nature-based Solutions & Innovation
- MULTIFUNCTIONAL AIM
- INTERDISCIPLINARY PARTNERSHIP & COLLABORATIVE GOVERNANCE

**Additional Proposition**

IMAGES OF NATURE
- AWARENESS OF MULTIPLE ENVIRONMENTAL VALUES SYSTEMS
- UNDERLYING ASSUMPTIONS & SUBJECTIVITY BECOME EXPLICIT
- ART-BASED APPROACHES

INTENSIFYING THE ENGAGEMENT WITH MULTIPLE DISCIPLINES, PROFESSIONS, OPINIONS & VALUE SYSTEMS

*Fig.2: Conceptual Model.*

The elements of this conceptual framework are tackled in the following paragraphs, to confer a common background supported by the literature. This framework establishes agreed and acknowledged grounds for the following analysis, which builds on these foundations to tackle the research question and aim.

### 3.1.1 Nature-based solutions and multifunctionality

Firstly, the concepts in green boxes in Fig.2 are clarified and defined. Urban green spaces present a range of different functions and can be managed in various ways, according to their goal (Bush, 2020). Given the increasing importance of the multiple functions of urban nature, many new related terms and concepts have appeared in urban planning (Da Rocha et al., 2017). According to Bush (2020), the concept of 'green

infrastructure', for example, arose in urban design and planning to develop a landscape approach to greenery, adding it as one of the elements of the composite urban infrastructure. 'Urban forestry', a term borrowed from the disciplines of forestry and natural resources management, has a greater focus on trees and vegetation and their ecological aspects. Parks and vegetable gardens have a greater focus on social cohesion and quality of life of city dwellers. The concept of nature-based solutions (NBS) then emerges as an umbrella concept that covers all these aims and functions and has the objective of combining them in integrated urban solutions and co-benefits (Da Rocha et al., 2017; EC, 2015). NBS seek multifunctional solutions to challenges that range from ecological and ecosystem-related to societal, political, and economic (Bush, 2020; Van der Jagt et al., 2020). 'Multidisciplinary and cross-cutting concepts such as NBS have the potential to facilitate cooperation between sectors and contribute to a more holistic approach to tackling socio-economic and environmental challenges' (Van Ham & Klimmek, 2017, p.2). NBS thus represent a novel form of urban innovation on the societal, ecological, and technological nexus, valuing nature, its processes, and services as resources for urban sustainable development (Van der Jagt et al., 2020). Common examples of NBS are all forms of 'living' infrastructure, such as urban forests, green roofs and façades, indoor and outdoor green spaces, etc. However, the definition is not limited to this: NBS can also be, for example, technological innovations, business models, urban planning strategies or designing activities in which ecological aspects are implemented together with technically innovative designs (Van der Jagt et al., 2020). NBS can thus be both innovative products and processes.

### 3.1.2 Interdisciplinarity and multi-level stakeholder engagement

*'Different actors necessarily tell different stories about the same place, resulting in a number of co-existing, and often competing, narratives'* (Grenni et al., 2019, p.2).

Given the aim of achieving multifunctionality, the level of engagement of multiple disciplines, professions, stakeholders, and mindsets in current urban nature development strategies must be enhanced (EC, 2015; Frantzeskaki, 2019). This represents the relationship between the defined concepts of NBS and multifunctionality and the ones of interdisciplinarity and engagement of multiple mindsets – in the yellow boxes of Fig.2. NBS require the investigation of novel tools and methods for engaging with multiple stakeholders, facilitating communication and co-creation of innovation (EC, 2015). Frantzeskaki (2019) and Van der Jagt et al. (2020) argue that NBS often require the establishment and engagement of new institutions and actor networks, embracing connections beyond those relevant for business-as-usual

technological research and development. This is necessary to move beyond knowledge 'silos' and engage with a multiplicity of disciplines and sectors, including stakeholders spanning diverse professions, ranging across practitioners, researchers, grass-root activists, citizens, policymakers, think-tanks, and businesses engaged in the design, creation and maintenance of nature (EC, 2015; Frantzeskaki, 2019). Many scholars and institutions such as the European Commission agree that the establishment of NBS requires an interdisciplinary approach, integrating different types of knowledge and actions with common objectives (EC, 2015; Frantzeskaki, 2019; Raymond et al., 2017; Van der Jagt et al., 2020). Partnerships and co-governance are thus needed for co-creation of NBS. Collaborative governance, or co-governance, is defined as a multi-actor and multi-level arrangement where authority and responsibility are shared by a broad set of stakeholders, and decisions and policymaking are oriented towards achieving a common goal (Yahia et al., 2019). Partnership is a working strategy embedded in co-governance that focuses on creating and catalyzing synergies, pooling together resources, knowledge, skills, and capacities of all partners, and for this reason also involves external collaborators which have different capacities (e.g. private organizations or citizens) (Van Ham & Klimmek, 2017). Stakeholders in partnership complement each other and are flexible and versatile in the role they cover as partners. Franz (2005) also argues that interdisciplinary co-governance stimulates various learning achievements for participants: along with instrumental learning, which relates directly to problem-solving skills, they also gain communicative and transformative learning. Communicative learning builds the capacity to understand each other and develop an interdisciplinary language; transformative learning results in a change of perspective and way of thinking of an issue (Franz, 2005). An interdisciplinary approach in which stakeholders cover all social, economic, and ecological interests in urban nature is the best way to advance in developing NBS. All related disciplines, such as urban planning, policymaking, architecture, design, but also ecology, biodiversity, and horticulture, should have the same space and voice in urban NBS partnerships. Partners then share and build common knowledge, learn instrumental, communicative, and transformative skills, and finally co-create solutions. Co-governance is thus an adaptive, flexible, and dynamic mode of governance (Yahia et al., 2019).

However, a lack of cooperation, exchange, and engagement exists and hinders the collaboration between sectors and stakeholders in NBS development, presenting a barrier to effective governance in the field (Van Ham & Klimmek, 2017). Involvement of multiple stakeholders has consequences: working in partnership should imply that the worldviews of all partners are clear to the entire group. The more inclusive and interdisciplinary a process is, the more value systems are held and represented at the table (Frantzeskaki, 2019). Environmental value systems are defined as combinations of values and beliefs of

individuals regarding the functioning of the environment they live in and decide upon (De Vries, 2019). These systems are knowledge-based, as they simultaneously depend on and affect the way of knowing the world, and they determine the basis upon which humans choose how to take actions (Van Opstal & Hugé, 2013). Values are typically defined as intrinsic or instrumental (Curry, 2009). However, relational values are also central when observing the way individuals relate to each other, to the environment, and to nature, and are thus key components of value systems (Chan et al., 2016). Value systems – similarly to collaborative governance processes – are flexible, dynamic, and in continuous evolution, partly due to exchange of opinions and social interactions. Furthermore, they are often hidden and unconsciously taken for granted, and for this reason they are gradually being recognized as constitutive elements that can negatively influence sustainable development if not explicitly discussed (Van Opstal & Hugé, 2013). Values, beliefs, but also norms and experiential emotions that compose them, underlie the language used by individuals (Van Opstal & Hugé, 2013). If not openly and explicitly discusses, with space reserved for subjectivity and divergence of opinions, these elements lead to bias and assumptions that hinder the effectiveness of co-governance process and the agreed solutions (Frantzeskaki, 2019; Hall, 2005). Social norms and passively accepted worldviews can easily dominate conversations and the mindset of the group, especially if some professions or stakeholder clusters have a leading voice, generating power hierarchies and a greater weight of one NBS function over the others (De Vries, 2019; Frantzeskaki, 2019; Hall, 2005). Instead, 'creating trust and learning to understand each other's language better can help to form the basis for joint action' (Van Ham & Klimmek, 2017, p.13).

The risk is not limited to the dominance of value systems related to certain professions or disciplines. Multiple levels of analysis may also compete and lead to dominance and hierarchies, even within a single individual. Individual stakeholders must gain awareness of established professional and institutional value systems and related worldviews and biases, and how their personal views may differ from the mainstream perspectives in their professional environment and in institutions (Frantzeskaki, 2019). According to Hall (2005) – who refers to the healthcare sector – each profession is built of common values and beliefs to which people become accustomed over time, which new professionals acquire during their education so that they become features of their sectorial culture. Specialization reinforces this mechanism, leading to clustered problem-solving approaches, narratives, and language niches (Frantzeskaki, 2019; Hall, 2005). Making use of a specialized language and underlying narratives is very useful to communicate with internal stakeholders and within a certain discipline: it is useful for urban planners to understand each other, for ecologists to tackle technicalities related to the natural sciences, and for workmen to explain an action to be taken. However, if all these actors need to communicate with each other to co-create

solutions, that benefit is lost (Bush, 2020). On the contrary, it can cause fragmentation, exclusion, disempowerment, and missed opportunities, reinforced by hierarchical power structures, in a positive feedback loop that makes it harder and harder to work in an interdisciplinary manner (Hall, 2005). Bush (2020) and Frantzeskaki (2019) also found this mismatch of narratives and forms of communication among diverse professional stakeholders in the context of policymaking for NBS. Because of their multifunctionality, divergent aims and processes are proposed and contended by different stakeholders, depending on their specialization and stake, but also on their value system (Bush, 2020). This causes competition between divergent priorities, and much effort is then spent arguing over minor choices, without tackling the original assumptions behind them (Bush, 2020). Interdisciplinary teamwork and partnership, cooperation, and participatory processes are currently implemented in the field of urban greening and NBS and can help to achieve these objectives, but are not exhaustive solutions in themselves (Lavrinec, 2014; Strubbe, 2013). Precisely because of this high degree of interdisciplinarity and multi-actor partnership required for NBS, communication needs to adapt to the mix of stories different stakeholders tell about nature: in order to be effective, communication must become inclusive, transparent, egalitarian, and accessible to all participants, regardless of their background and role as stakeholders. Whilst verbal language is argued to be insufficient for the achievement of this objective, artistic expression may be able to overcome its boundaries.

### 3.1.3 Proposition: Art-based approaches and explicit value systems

*'Creativity is an important key to changing points of view and ways of thought and to finding solutions by developing projects which stand some chance of being implemented using current technical research'*

(Schuiten & Labrique, 2009, p.12).

The proposition of this research is to introduce art-based approaches (ABA) to tackle the need for an adaptive and accessible language in interdisciplinary and collaborative governance processes, to raise awareness about multiple value systems among NBS stakeholders. Value systems are rarely openly discussed, as it is hard to narrow down such complex and dynamic arguments and avoid conflict. An alternative language such as artistic expression could make this process easier. By studying the literature, it became clear that there is under-explored potential in this approach. The following conceptualization, supported by the literature, permits development of a working definition of ABA, outlined at the end of the section.

Providing a conceptualization of the arts themselves is not an easy task. The boundaries between art and non-art are constantly shifting (Beyes & Steyaert, 2011), but it is necessary to choose some to justify and understand the logic of this research. It must be clarified that the concept of 'arts' is not confined here to a traditional understanding (i.e. visual arts, music, poetry, architecture, etc.), but is broadened to include activities and practices that actively involve the imaginative and artistic input of all participants (i.e. workshops, laboratories, participatory experiments, contests, competitions, etc.), with the aim of freely exchanging ideas, thoughts, and feelings and providing material for reflection, discussion, and collective awareness (Duxbury, 2010). Thus, the final artwork need not be, for example, a painting or a musical composition, but it is the process of open communication itself with an engaged group of participants (Edwards et al., 2016). 'Creativity' and 'innovation' are similar concepts that are much more normalized and accepted in professional environments and businesses. Nevertheless, these terminologies are not interchangeable. There is a critical difference between creativity and the arts. In the economic and industrial vocabulary, creativity and innovation are commonly understood in a practical way: creative innovation is the production of novel and original ideas that are useful for the organization and its productivity (Styhre & Eriksson, 2008). Thus, these original ideas normally fit within the pre-existing worldviews and value systems of the organization. The arts, instead, also include sensory and aesthetic experiences, and do not necessarily produce a useful innovation matching a pre-existing professional mindset. They represent a sensory and emotional language and a form of communication among human beings and between humans and their surrounding environment aligned with the aim of the proposed approach. Aesthetic and artistic expression and reception trigger a deeper analysis, change of perspective, and a defamiliarization from normative and dominating beliefs, assumptions, and practices, and allow authentic insights to become explicit to ourselves and to others (Styhre & Eriksson, 2008). In this sense, the arts are a means and a vehicle for questioning and exploring issues and conflicts without necessarily seeking immediate practical solutions (Pinder, 2008). The arts and creativity do not exclude each other in ABA, but rather are complementary. In the arts, there is no predefined reality to adhere to: reality can be shaped by artistic engagement, invention, and intervention. The arts have the power to impact and reconfigure the understanding and sensitivity of any kind of issue, without seeking any immediate benefit (Beyes & Steyaert, 2011). Creativity, instead, works in a closer relationship with translatable benefits and generation of additional value for practical implementation. Both processes should be part of an art-based approach aimed at raising awareness and potentially harmonizing a multiplicity of value systems.

ABA are research, discussion, or decision-making activities and practices that introduce an artistic framework. It is such a framework that constitutes the approach, rather than the author of the arts, as it is not necessarily an artist who conducts it or performs it (Lavrinec, 2014). Artistic skills and sensibility are not required: the aim is not to produce fine works of art, but to achieve research and informative purposes through the active involvement of participants (Grenni et al., 2019). The approach is thus a tool for shaking off accustomed ways of thinking and opening up new images of the future. Galafassi et al. (2018) and Kagan (2015) define ABA as 'spaces of possibility', where transdisciplinary knowledge about the environment is shared, and they list a series of dimensions upon which these interventions can have an impact:

- Co-creation of creative imagination and experimentation, especially in exploring future scenarios and unconventional perspectives;
- Scientific communication, critical analysis and opening of possibilities for political engagement, overcoming the myth of value-free discourses;
- Engaging with values and beliefs;
- Transdisciplinary learning processes, social learning and knowledge integration;
- Creating awareness, connectedness and openness to more-than-human worlds;
- Coupling cultural systems with social and ecological change and understanding its complexity through a questioning approach, which does not seek quick, straightforward solutions.

Some examples of ABA can be found in Appendix 1. These examples (e.g. '_Drawing and collage_', '_Drawing over_', '_Soundscapes_', etc.) are composed of ideas provided in the literature, ideas the author of this thesis initially proposed, but also ideas developed by integrating the findings and the discussion and by talking to stakeholders. They are helpful to visualize ABA, which can otherwise remain an abstract concept, before moving further into the research.

It has been proven that ABA are successfully implemented in educational strategies and health treatments, especially for children, to evoke emotional responses and promote dialogue (Parsons & Boydell, 2012). The arts are in fact at the basis of practices such as art, music, and dance therapy which seek alternative forms of communication with people who cannot express or communicate verbally (Lazar et al., 2018). ABA are also implemented in various fields of research as forms of inquiry generating direct and comprehensive usable knowledge. Indeed, ABA minimize personal bias, enhance immediate and

unfiltered responses, and eliminate preconceptions about meanings (McNiff, 2011). ABA applied to urban planning specifically produce 'new conceptual spaces' or 'new spaces of governance', where "policymakers, planners and creative producers interact in different ways which allow for a 'creative planning' to emerge as part of a new planning imagination" (Borén & Young, 2017, p.2). They represent an experimental and imaginative planning method for the increase and enhancement of green spaces in the city, where the familiar becomes strange and strangeness becomes familiar (Metzger, 2011). Borén and Young (2017), for example, suggest approaches based on the experience of places, triggering emotional involvement and social bonds permitting analysis of intrinsic and relational values and openness toward the value systems of different participants. Urban planning, like any type of spatial planning, must draw upon local knowledge and perceived meanings experientially assigned to places (Grenni et al., 2019). Urban space should be defamiliarized and recontextualized to look at it differently. Metzger (2011) shows how ABA can contribute to spatial planning processes and co-governance through practical and experimental research. ABA proved to be creators of important communication channels between communities of stakeholders, and participants were positively surprised by the success of the workshops. All of them openly discussed planning processes, despite the different opinions, beliefs, and values, without necessarily seeking middle spots to agree upon (Metzger, 2011).

The highlighted risk in ABA practices is the excessive defamiliarization and distance from the comfort zone, which, instead of opening, can destabilize and alienate some participants (Metzger, 2011). This is a risk that must be taken into account. Nevertheless, as Grenni et al. (2019) argue, planning processes are being progressively renewed and are tackled in research through storytelling and narratives, considering the variety of value systems ranging from the perspectives of planners and politicians to those of residents, gardeners, and visitors. Planning processes are thus undertaking a process of innovation. If values are implicit in the way we describe the world and our place in it, and we unavoidably construct stories that embody them, individuals are now invited to defamiliarize themselves not only with urban space but also with their own value systems, to analyze them from a different perspective (Metzger, 2011). Gaining awareness and re-thinking frames and assumptions supporting stakeholders' mindsets can inform new and inclusive forms of spatial planning and design (Grenni et al., 2019). Finding a balance between defamiliarization and avoiding excessive feelings of discomfort is therefore the main challenge of ABA.

According to Beyes and Steyaert (2011), ABA create space to address social, economic, and environmental issues with an enhanced multifunctional approach – which corresponds with the definition and objectives of NBS. These approaches establish new ways of communicating, questioning, co-learning, raising

awareness, sharing knowledge, and building renewed relationships and networks at the societal and institutional levels (Beyes & Steyaert, 2011). They are spaces of possibility but also of doubt, where knowledge is not only built but also questioned and reshaped (Metzger, 2011). The arts and aesthetics are able to keep ambiguities, contradictions, subconscious and cultural aspects open, without needing to find straightforward answers: an interesting way of dealing with multifunctionality and interdisciplinary problem-solving (Kagan, 2015).

With the above input provided by scholars, art-based approaches are ultimately defined as spaces of governance and of possibility, where knowledge and imagination are shared and the beliefs and values of participants are made explicit through artistic and creative expression and reception.

> *'Artists are granted a mandate 'to be strange', to act in ways that are not afforded to other agents of governance in planning processes. As a consequence, artists can thus create an environment that is (temporarily) depoliticized, in which various stakeholders can test new narratives and interpretations and express them freely outside of the typical constraints of political discourse. We believe that research and researchers have the potential to play a similar role to that of artists when they adopt art-based methods as part of their tools'* (Grenni et al., 2019, p.7-8).

### 3.1.4 Art-based approaches: theoretical directions for effective implementation

The academic literature provides a guiding framework for ABA with the aim of raising awareness about value systems of partners in co-governance, for all interdisciplinary processes related to sustainability. Van Opstal and Hugé (2013) argue that, while there is a widespread idea that there is a 'superior' way of knowing, based on rationality, objectivity, materialism, and logic, people actually perceive reality in many different ways, leading to varying ways of knowing and learning. If governance for sustainability is an interdisciplinary discipline, it must embrace these forms of knowledge, and translate various forms of knowledge so that they are accessible to all (Parsons & Boydell, 2012). Van Opstal and Hugé (2013) present some key aspects that must compose knowledge-building and knowledge-sharing activities, in the field of sustainability sciences: knowledge needs to be interdisciplinary and co-produced; it is provisional and in continuous transformation; reflexive to incompleteness and normative expectations; it must present various alternatives; it must adopt awareness of subjectivity and must not claim to be absolute (Van

Opstel & Hugé, 2013). Furthermore, according to Van Opstel and Hugé (2013), an approach that focuses on value systems should:

- Respect all worldviews while simultaneously exploring, producing, and transforming them;
- Respect different forms of knowledge not backed by scientific reasoning (e.g. indigenous knowledge);
- Use novel forms of communication as the most fundamental aspect of knowledge sharing;
- Identify common denominators and shared goals among participants and use collaborative research to avoid bias.

The literature then provides a series of theoretical directions and ABA examples that are useful to start theorizing about a guiding framework for their implementation in actual practice. By collecting this literature, a set of inputs for the ABA framework have been selected and outlined below. This input is gathered visually in Fig.3 and is the point of departure for developing and designing an exhaustive ABA framework that narrows down into NBS co-governance.
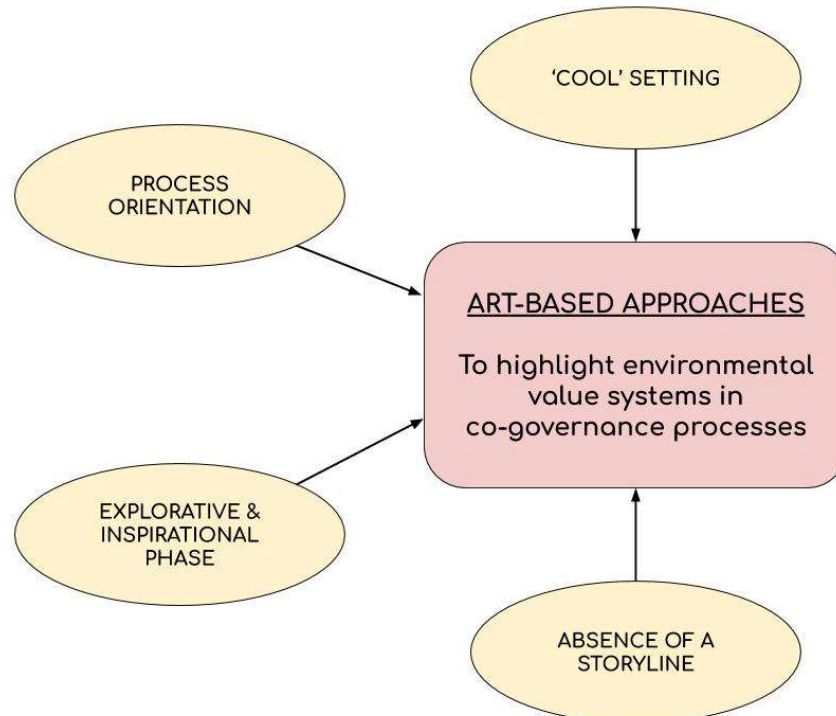


*Fig.3: Theoretical directions for effective ABA that highlight value systems in co-governance processes.*

*'Cool' setting*

Metzger (2011) explains that stakeholders normally need to collaborate and find agreements in politically 'hot' settings, where conflicts of interest are strong and clear to all participants. In this context, ABA are argued not to be effective. In a politically 'hot' setting, individual stakeholders are reluctant to welcome the worldviews and perspectives of conflicting actors. This happens not only because it would have an undesired effect on the conclusive agreement, but also because of the political loss of credibility this would cause and the conflictive emotional involvement in this form of co-governance (Metzger, 2011). Therefore, the setting of ABA should be 'cool', a space where stakeholders can lower their guard, as no political stakes are directly involved or being tackled in the meeting (Metzger, 2011). This creates a 'space of possibility and governance' where participants can listen, experiment, and question themselves with self-criticism, without perceiving any subsequent risk.

*Process orientation*

Strubbe (2013) states that, in the Netherlands, 'community art' is usually result-oriented, with the risk of neglecting the central objective of stimulating social change, whereas in other countries the focus tends to be on participation and on the process. Recalling the conceptualizations given in the above section, result-oriented approaches would better apply to creative practices, rather than to ABA. Creative innovation aims for the achievement of useful and productive ideas, and the result is the most important factor. If the approach is process-oriented, instead, artistic expression can connect people from very diverse backgrounds, instigating dialogue and debate among residents, social groups, professionals, and policymakers (Strubbe, 2013). Through process-oriented approaches, "artistic freedom is emphasized. The artists are not evaluated in terms of 'measurable output' but in terms of qualitative effects, for instance if the co-workers learned something about themselves or their work, or if they started to think in new terms" (Styhre & Eriksson, 2008, p. 7). Furthermore, participants develop both an individual and a collective identity, that become clearly visible in the resulting 'work of art' (Strubbe, 2013).

*Explorative and inspirational phase*

Plambech and Van den Bosch (2015) point out that a place immersive experience is particularly useful in a creative process during its initial phase, when curiosity and interest are induced and the senses and

imagination are triggered to unconsciously develop new attitudes and ideas. ABA in co-governance are thus especially useful in the initial phases of curiosity and imagination, when the subconscious is mostly at work. After ABA activities have ended, the process should be logically analyzed, so that value systems and management implications can be explicitly discussed and rationalized and substantial ideas, results, and solutions can be formulated and evaluated towards the achievement of NBS. Indeed, there can be no opening of 'spaces of possibility' and of exploration without a consecutive 'closing' in which agreements and decisions are formed (Metzger, 2011). The language can change in this phase, and 'hot' political settings may enter the discussion.

ABA should therefore constitute the first stimulating phase in a longer process of partnership, which should be continued immediately after this first phase to maintain the open and explorative mindset the approach provides. In this way, knowledge is produced together, with all participants as co-researchers. ABA allow co-research as an awareness-raising action that engages and empowers participants to remain active in the subsequent decision-making process and implementation phases (Grenni et al., 2019; Lavrinec, 2014).

*Absence of the storyline*

Schuiten was a Belgian architect and artist in the second half of the twentieth century who experimented with ABA, in particular with the visual and graphic arts, to imagine and create proposals for nature-based cities (see cover picture) (Schuiten & Labrique, 2009). Unlike previous theoretical inputs, the focus of his work is specifically on urban NBS. The artist worked in various ways and explored both the options of storytelling (e.g. through comic strips) and the absence of a storyline, through timeless images and frames, which he then argued best suit the dynamics of urban planning (Schuiten & Lambrique, 2009). He did not work in partnership with stakeholders, but provided them, as viewers, with artistic material for reflection. To allow as much space as possible for imagination of those who would look at his work, he would offer the viewers a so-called 'life space' with no story, so that the viewers could build on top of it with ideas from their personal experience and with their own imagination (Schuiten & Labrique, 2009). These 'life spaces' were images of futuristic nature-based cities, where architecture would fully incorporate the shapes and patterns of the natural environment and biomimicry would shape both the aesthetics and functionality of spaces. The aim was to avoid the illusion of an artistic and lawless utopian world, on the one hand, but also to avoid biases of pre-packaged views based on single, powerful truths. The artist

proposed urban designs that would combine scientific methods with artistic expression. As such the designs were challenging and 'renewable', continuously questioning and rethinking components that already existed in the landscape (Schuiten & Lambrique, 2009). This example shows how the absence of a storyline can allow space for the imagination and make space for viewers' participation and integration of ideas. In co-governance for NBS, where knowledge is co-produced, the removal of a storyline makes space for discussion; yet providing an initial 'life space' triggers imagination and functions as the motor for creative development of ideas.

These theoretical directions for effective implementation of ABA lay the foundations for a framework to introduce in NBS co-governance, but they are not exhaustive. Most of these directions (apart from the last one) are valid for any field of governance where worldviews are to be highlighted, whereas the goal here is to narrow down the application of ABA to co-governance in the field of urban NBS. While ABA certainly have a potential to contribute to many fields of governance, it is valuable to adapt them in strategies that suit the needs of specific groups of stakeholders and specific issues to be tackled. This theoretical framework presents a combination of literature references, each of which presents their direction for ABA. What is lacking is a comprehensive collection of these directions to have an overview for implementing ABA effectively. Furthermore, academic scholars need to talk to practitioners, and thus to the stakeholders who habitually work in co-governance and in partnership, as they would be directly involved as participants in ABA activities. NBS stakeholders themselves, in this case, who are familiar with the way NBS partnerships work, what shapes the main discussions and conflicts and how relationships develop, can provide practical directions to present a complete ABA framework for NBS co-governance.

## 3.2 Analytical Framework

The communicative, empathic, and emotional power of the arts can uncover the numerous value systems that may exist among the multiplicity of NBS stakeholders. For individuals, it may not be easy to acknowledge and appraise a change of perspective, looking at reality through the eyes of someone else, especially in a professional context. Constructivist theories take this as a standpoint and consider human knowledge a socially produced understanding of 'reality' and its components – such as nature – instead of being given *a priori* (Demeritt, 2002). 'What is nature' and 'What is urban nature' are questions related

to cognitive beliefs; judgmental questions such as 'What is good or bad nature' relate to normative and social values; 'what is beautiful in nature for you' raises thoughts about one's expressive and emotional experiences (Buijs, 2009). A framework that takes into account social representations of nature, therefore allows us to uncover, through questions of this type, implicit and underlying beliefs, assumptions, values, and potential biases around the concept of 'nature', making new space for sensitive dialogue (Buijs, 2009a). The following analytical framework is developed with the aim of exploring the pathway of ABA to make these underlying beliefs and values explicit to all stakeholders in an interdisciplinary professional environment. Fig.4 presents an overview to depart from, after which the rest of this section describes the framework in detail.
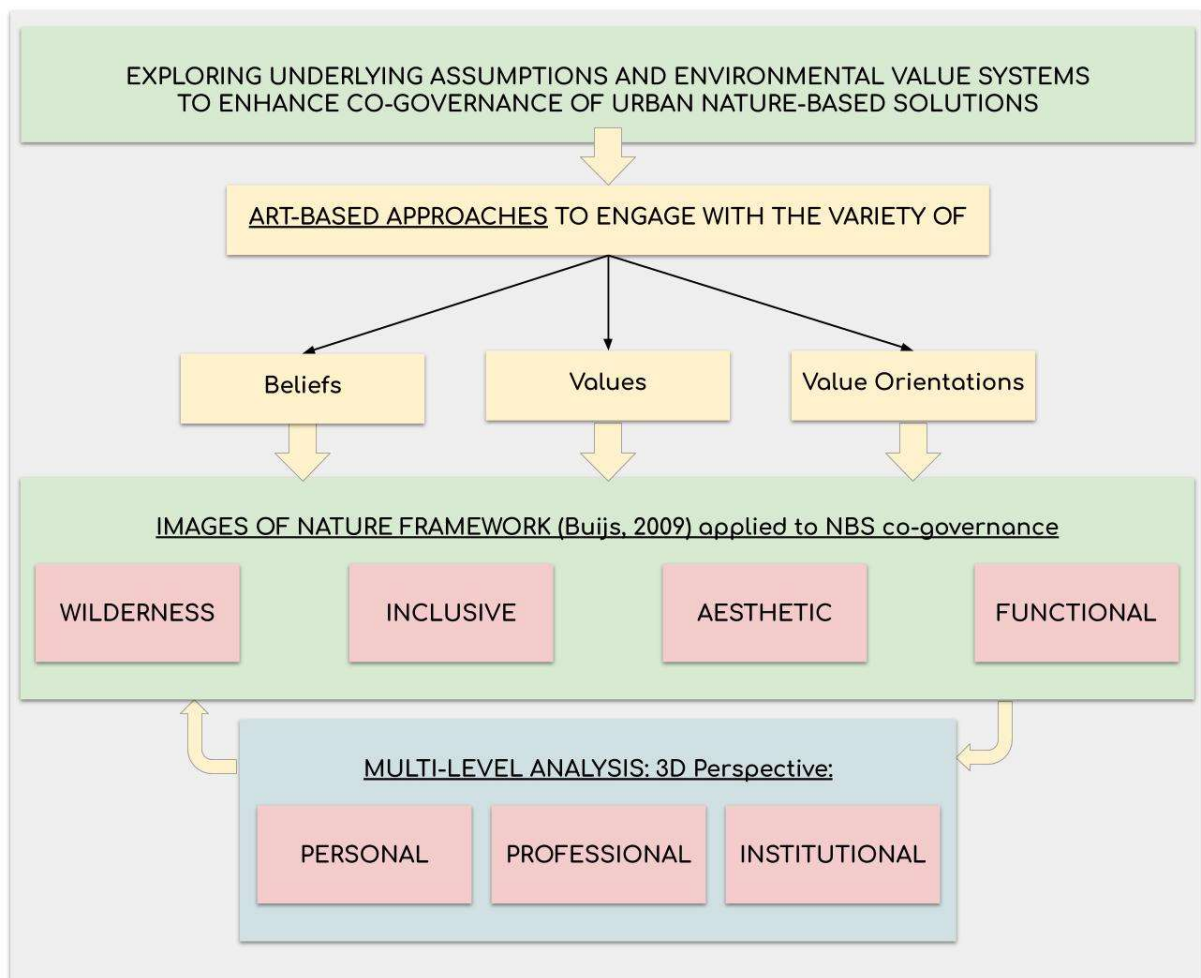


*Fig.4: Analytical Framework*

Diving into definitions and conceptualizations of beliefs, values, and norms, and the distinctions between them, is beyond the scope of this thesis, as they have vast bodies of literature and disciplines. This thesis instead draws upon the definitions provided by Buijs (2009). What is of interest is that answers to the question 'what is beautiful urban nature' can be extremely varied, not only among different urban professional actors but also on different levels of analysis of stakeholders as individuals (personal, professional, and institutional positions). There is in fact a considerable chance that answers will be contrasting or even conflicting depending on whether an individual thinks and speaks personally and confidentially about beliefs and values or speaks as an employee, a member, or a representative of a social group, company, or institution (Buijs & Elands, 2013; Hall, 2005). In interdisciplinary co-governance, a framework that highlights the existence of multiple environmental value systems and distinct 'images of nature' (henceforth IoN) among co-producers and at the individual level can inform, facilitate, and possibly influence debates and discussions between experts and between them and the lay public (Buijs, 2009). Based on this reasoning, the analytical framework unfolds as follows.

### 3.2.1 The IoN Framework

Buijs (2009) provides a framework that builds the analytical basis for this investigation: the images of nature (IoN) framework. '*Images of nature can be defined as enclosing frameworks that direct and structure the perception and appreciation of nature*' (Buijs, 2009a, p.121). They are embedded in the broader environmental value systems of individuals, with a specific focus on nature and on mental images of it. With theory developed through research in the Netherlands, the IoN framework is based on three dimensions: beliefs, values, and value orientations. The relationship among these is illustrated in Fig.5.
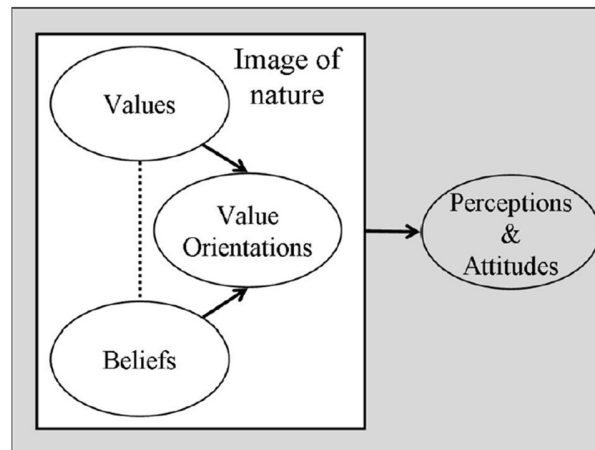
Fig.5: Relationship among beliefs, values and value orientations, composing the IoN framework (Buijs, 2009).

(1) According to the IoN framework, *beliefs* are associations established by people between nature and other relevant attributes of the system analyzed, such as human culture (Buijs, 2009). In this framework, the main source of information lies in the beliefs of individuals related to the human-nature relationship: whereas some believe that human culture is part of nature, others believe in an autonomous nature, with a strict divide between the two. In an urban environment, such a strict divide is hard to imagine, but one could appreciate natural spots in the city that are left to autonomously become wilderness. This is related to the belief that nature is fragile and vulnerable to human activities and should be left undisturbed. On the other hand, those who see human and nature in a closer relationship may believe in a fragile nature that needs our protection, but may also believe nature is resilient to the stress we put on it and will recover from any human action.

(2) *Values*, instead, have to do with judgements about nature, backed by moral principles. In this analysis, the main divide is between ecocentric and anthropocentric values, which respectively do or do not recognize the intrinsic value of nature. Buijs (2009) found that people with ecocentric values can be further divided between those who assign value to the integrity of ecosystems overall (e.g. it is worth eliminating single lives or species, in order to protect the ecosystem), and those who assign most importance to lives of single plants and animals (e.g. biocentrism: every living being has value and has the right to be protected). At the opposite extreme, anthropocentric values focus on economic or aesthetic functions of nature: humans gain advantage from natural

resources, regardless of the consequences for the ecosystem or the individual lives of flora and fauna.

(3) *Value orientations* move on a more concrete and practical level: they give direction to the conservation and management strategies applied to nature, given the analyzed beliefs and values. The orientation can be towards a hands-off management of nature, a limited management based on specific goals (e.g. protection of biodiversity, aesthetic diversity of the landscape), or a fully hands-on management aiming to satisfy human needs (e.g. agriculture and attractiveness for tourism). The object to be managed also varies among subjects: some see management of nature and its processes as useful for the beauty of the landscape or for agricultural purposes; others prefer a management strategy that might be less aesthetically pleasing but aims to protect biodiversity or certain species. These orientations represent the expression of values and beliefs of an individual, and they stand behind the structure of specific attitudes and perceptions of individuals, as previously outlined in Fig.5 (Buijs, 2009).

Through pattern matching methods, Buijs (2009) identifies four ideal types of IoN prevailing in the Netherlands: the wilderness, inclusive, aesthetic, and functional IoN. This allows us to simplify and grossly categorize the chaotic diversity of people's values and beliefs, creating opportunities for easy, structured discussions about these apparently difficult topics. It therefore allows us to observe the presence of different value systems regarding urban nature among stakeholders in a simplified manner. The IoN framework, as well as this analytical framework, does not aim to suggest 'right' or 'wrong' values, beliefs, or orientations, and so no one image is argued to be better than another. It rather aims to help identify and tackle conflicts or decisional struggles between actors who hold different IoN (Buijs, 2009a). IoN "provide a common vocabulary to discuss differences in beliefs, values and value orientations between stakeholders. Mutual understanding in participatory processes with different groups, with different backgrounds and knowledge, is only possible when a common vocabulary is established" (Buijs, 2009, p.15). Therefore, IoN are analytically used in this thesis as categories to narrow down the vastity of possible answers related to meanings and mental images of nature in an urban environment. Below, the four IoN, developed by Buijs (2009; 2009a), and reviewed by Buijs et al. (2011), are summarized (Table 1) and then described in detail. Under the description of each IoN, beliefs (1), values (2), and value orientations (3) are described separately.

*Table 1: 'Images of Nature' Framework.*

| | Values | View on management *(Value Orientation)* | Definition and boundaries of nature | Dominant beliefs |
|---|---|---|---|---|
| **Wilderness** | Intrinsic: Ecocentric | Hands-off | Narrow | Nature as fragile<br><br>Nature scientifically intelligible |
| **Inclusive** | Intrinsic: Biocentric | Limited management<br><br>*(Focus on plants and animals)* | Wide | Nature as fragile<br><br>Nature as dynamic<br><br>Nature as unpredictable |
| **Aesthetic** | Weak anthropo-centric | Limited management<br><br>*(Focus on scenic landscapes)* | Moderately wide | Nature as fragile<br><br>Nature in balance |
| **Functional** | Anthropo-centric | Active management of resources | Moderately wide | Nature as resilient<br><br>Nature as dynamic |
| *Shared elements* | *A general appreciation of nature and recognition of the importance of nature conservation.* | | *Nature as providing health and the basis of human life.* | |

## Wilderness Image of Nature

(1) Nature and culture are believed to be divided: naturalness is a Romantic icon, and it requires the absence of human influence. Nature can be experienced anywhere, including cities, roads, and private gardens, only if it is left undisturbed. Human influence has severe negative consequences, as nature is a fragile but autonomous system. Nature is beautiful when uncultivated and left to itself, delivering fascination and awe to the human visitor. This defines very narrowly what is nature and what is not.

(2) Holistic and ecocentric values of nature: safeguarding of natural processes, ecosystems, habitats, and biodiversity is essential. Nature is a stable system; each species of flora or fauna plays a role in maintaining overall balance.

(3) Hands-off orientation: nature needs no management, as ecosystems find their own balance when left alone and undisturbed. Not even actions aiming to protect biodiversity or ecosystems are desirable, as the ecosystem can take care of itself. At most, given the analysis in an urban environment, ecological sciences should be used to establish favorable circumstances for protecting or creating true wilderness in the city.

## Inclusive Image of Nature

(1) Nature and culture are believed to be fully integrated, as human beings are considered part of nature. Fascination with nature can originate both in a wild uncultivated setting and in a maintained park or urban garden, providing a wider and inclusive definition of the boundaries of nature.

(2) The values of this image are biocentric, and humans have no right to decide whether to kill or spare the life of plants and animals. Vitality is desired in all forms, including flora, fauna, and humans.

(3) Limited management orientation: nature-related management goals, such as protection of biodiversity, are desirable and provide support, since nature is fragile. However, nature is also considered a complex, dynamic, and unpredictable system, and therefore attempts to have full control over it are not desirable. Management should be minimized, and space and time should be left for nature's autonomous balancing processes.

_Aesthetic Image of Nature_

(1) Nature is believed to be instrumental to human culture, as it mainly has sensory, aesthetic, and recreational purposes. It is also a source of health, wellbeing, attachment, and place-making, overall enhancing humans' quality of life.

(2) Anthropocentric values are embedded in this image, although they are not as strong as in the functional image. Nature must be protected so that humans can benefit from it (e.g. from its aesthetics, peaceful space, recreational opportunities, etc.) and all nature should be accessible to humans. Human interference is (theoretically) not harmful for nature, as it mainly relates to humans' desire to be in contact with nature and benefit from its intrinsic benefits for human health. Nevertheless, in this image, the value of nature is embedded in human satisfaction, and consequently management orientations often disregard other values in favor of human wellbeing.

(3) Limited management orientation: management prioritizes recreation, visual aesthetics, experience, peacefulness, and human health. Human wellbeing is enhanced by nature, regardless of specific aesthetic preferences or choices made. Thus, beauty and accessibility are the main goals of management, even when ecological integrity is sacrificed. This management strategy is more hands-on than the one presented in the inclusive image, as it usually requires heavier maintenance.

_Functional Image of Nature_

(1) Wild nature is believed to be messy, useless, and undesirable. Managed nature is part of human culture. Furthermore, nature is believed to be resilient and resistant to human intervention, and changes imposed by humans are considered natural developments.

(2) Strong anthropocentric and utilitarian values: nature is valued as a productive resource for humans.

(3) Intensive hands-on orientation: management is aimed at utilitarian purposes (e.g. agriculture, forestry for wood production, and tourism), and well-managed green spaces are considered tidy and attractive, while weed spread or species infestations, for example, are strictly prevented, even when their treatment is harmful for the ecosystem.

As Buijs argues (2009a), deriving from ancient Arcadian IoN, the wilderness, inclusive, and aesthetic IoN are renewed by Romanticism as pictorial images emphasizing man's harmony with nature. The functional image is the only one that refuses this emotional attachment, seeing in nature a source of resources to exploit. It is thus the only fully utilitarian perspective, rooted in the division between science and spirituality:

*'Nature and God became separated and God's place was no longer within nature but above it. […] Scientific emphasis changed to the discovery of natural laws in nature. Nature was disenchanted. Humans became more detached from nature and started to look upon it as a complex system of forces that can be revealed only through scientific investigation'* (Buijs, 2009a, p.51).

Buijs's studies (2009a) based on the IoN framework revealed that the idea that nature is beautiful, healthy and enjoyable are dominant and stable elements of the value systems recognized in Dutch society, as well as Romantic and Arcadian worldviews that acknowledge the importance of experiencing the beauty of nature. This implies that the aesthetic image is the dominant one on the institutional level among Dutch lay people. Interestingly, however, 'experts tend to wrongfully disqualify the importance to lay people of the aesthetics and emotions related to the experience of nature' (Buijs, 2009a, p.227).

The use of the IoN framework in this research presents some elements of novelty, as the framework was developed by Buijs (2009) in a rural setting and with a greater focus on lay people than professional stakeholders. Furthermore, it has also been applied to the urban environment before, but mainly to observe the differences between cultures (e.g. a comparison of immigrants and Dutch people) (Buijs et al., 2009). Buijs and Elands (2013) applied the framework to the professional world, with a focus on bridging the mismatch of interests between sectorial professionals and the general public. The application to interdisciplinary planning processes and urban co-governance is therefore an element of novelty. Lay people are not directly included in this investigation, whilst actors with multiple professional backgrounds interact with a common aim.

The four identified IoN have been developed by Buijs (2009; 2009a) through multiple analyses in the Netherlands (Buijs et al., 2009). He argues that the same research, based on the same conceptualization of beliefs, values, and orientations, could lead to the creation of other images in other countries and in different cultures. Thus, while this research develops in a Dutch case study, by making the appropriate adaptations, the present investigation can be replicated in different geographical, cultural, and socio-political contexts. Environmental value systems and IoN are dynamic and change over space and time with

the emergence of new situations and events, such as new socio-political disputes (Buijs, 2009a). For this reason, it is important to take current institutional and political situations in the area into account.

## 3.2.2 Multi-level analysis

Integrating the IoN framework, a multi-level approach completes the analytical framework of this thesis. As mentioned, single stakeholders may have contrasting or conflicting IoN when approached personally or professionally (Hall, 2005). Personal beliefs and values may be charged with emotions and personal experiences, whereas professional values are influenced by working environments, values, and ethics. Institutional norms (formal and informal) are influenced by local politics and economics, as well as by the media and social experiences. As described earlier in this section, professional and institutional norms can deeply intertwine with individual understandings and worldviews, thus mixing cognitive and normative psychological processes (Buijs, 2009a). It is therefore argued that three levels of analysis compose the final picture of the IoN of one individual: the personal, professional, and institutional levels. This three-dimensionality of perspectives could allow co-governance practitioners to better understand the dynamism of individual value systems, allowing transformative learning and potentially an ultimate harmonization of interests. By gaining awareness of the co-existence of divergent value systems, stakeholders might better understand the core of their conflicts of interest and might find new ways of effectively communicating with each other. As suggested by Brickson (2005), individual traits, personality and personal experiences entail an analysis at the individual level; normative relationships with other professionals and observed interactions and behaviors compose the socio-professional level; institutionalized norms and regulations, formal or informal, constitute the institutional level. The existence of multiple levels of analysis of environmental value systems suggests that each level should be analyzed separately and then side-to-side.

> '*Incorporating the profession's value system into the individual professional's worldview is a subtle process and unfolds largely unspoken*. […] [It] *can create important obstacles that may actually be invisible to different team members struggling with a problem. For a solution to be reached, the professional values must be made apparent to all professionals involved'* (Hall, 2005, p. 3-4).

# 4 METHODS

## 4.1 Research Strategy

This investigation unfolds as a qualitative interpretative study, and, as previously mentioned, it is practice-based and design-oriented (Verschuren & Doorewaard, 2010). This form of research relies on linguistic data, and processes data through a meaning-based analysis (Elliott & Timulak, 2005). The research strategy is a single case study, within which data was gathered and analyzed. The researcher's interpretation integrated the coding results provided by Nvivo software, as further described below. The character of the inquiry is explorative and aims to ultimately suggests a prototypical design for an ABA framework to implement in NBS co-governance.

### 4.1.1 Case selection

The city of Utrecht, in the Netherlands, was chosen as a single case study for this research. Utrecht is directly involved in NBS projects, both locally (e.g. the Wonderwoods project) and as part of a European network project (e.g. NATURVATION, within Horizon 2020), and therefore represents a European frontrunner in urban nature-based research and innovation (Naturvation, n.a.; The Guardian, 2020; Wonderwoods, n.a.). The city produces a high level of satisfaction among its dwellers in relation to greenery, even though the amount of green space *per capita* in the city falls within the European average and could be improved (Gemeente Utrecht, 2007). In the context of NBS and the European network, the Municipality organizes stakeholder meetings and partnership work in which creative problem-solving strategies are introduced, such as the 'Urban-Regional Innovation Partnerships' (URIP) events by Naturvation (Naturvation, n.a.). This might present opportunities for openness as well as willingness to experiment with ABA, creating the 'spaces of possibility and governance' necessary for this type of exploration.

## 4.2 Data collection

In this case study, data was gathered through two qualitative methods:

(1) Fifteen semi-structured interviews were conducted among various urban NBS stakeholders. These served to investigate the existing variety of IoN and attitudes towards ABA, particularly at the personal and professional levels. Some interviewees cover multiple roles as stakeholders, resulting in a sample that represents a relevant range of professional sectors and NBS stakes, and leading the sample to saturation (Elliott & Timulak, 2005). Many stakeholders could be involved in NBS, and so the sample does not aim to be fully representative, but rather to cover a sufficient sample to highlight the various IoN and outline the potential contribution of ABA. Table 2 outlines the profiles of the interviewees. They remain anonymous, but most of the names of companies or organizations they are part of are provided, on the condition that they explicitly allowed this publication through written consent via e-mail. Overall, the sample is composed of two ecological gardeners, three landscape architects, one policymaker, one lobbyist and manager, one real estate entrepreneur and fund director, two active citizens, two civil society activists, one researcher, one sustainability consultant, and three artists. Interviews were conducted in person until the 6th of March 2020, allowing the researcher to meet the interviewees, who would interactively share their work, on-the-spot, through pictures and other material they had at home. Due to the Covid-19 pandemic and the consequent legal restrictions on physical meetings, however, the remaining interviews were conducted online, via Zoom and Microsoft Teams platforms. All interviews were recorded and transcribed to text documents before the analysis. Questions were structured so that interviewees could speak separately about the three different levels of analysis: they were asked about their personal, professional, and then institutional worldviews and IoN. Finally, ABA were introduced in the conversation and tackled separately, as a second part of the interview. Interviewees were asked about their experience with ABA or similar approaches, then about the potential contribution of these, and finally practical inputs and suggestions were collected for their implementation in NBS partnership working. The structure of the interviews partly changed over time, as a result of changed circumstances due to the Covid-19 pandemic and the necessary adaptation of the research[1].

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[1] The aim of the research was originally to experiment with ABA in the field, implementing this type of approach in an interdisciplinary partnership event in Utrecht held by Naturvation and the Municipality. Interviewees were therefore initially approached with the intent of collaborating and participating in the event.

The sample was chosen based on datasets developed by other researchers who have conducted investigations on NBS in Utrecht. The collaboration between the municipality, other municipalities in the European Union, and local stakeholders was facilitated and developed through the European project NATURVATION. This permitted creation of a dataset of relevant actors and organizations involved in interdisciplinary partnerships with local stakeholders. Out of the dataset, interviewees were selected with the aim of representing a range of professional environments and backgrounds capable of highlighting the possible discrepancies in value systems and IoN and outlining the potential of ABA. Indeed, many interviewees had participated in interdisciplinary working and co-governance processes organized by researchers and institutions before, where, as mentioned above, creative problem-solving approaches were integrated to tackle the issues at hand – for example through puzzles, visual models and schemes, or strategic board games. Conducting interviews with these actors provided an understanding of the different reactions to such approaches and exploration of the potential and openness towards ABA. Finally, some additional interviewees were suggested by these stakeholders during or after their interview, creating a snowball effect in the selection.

| | Stakeholder's Profession | Organization/Company |
|---|---|---|
| 1 | Active Citizen and Gardener | *Eligenhof* communal garden |
| 2 | Ecological Gardener and Garden Architect | *Wilde Weelde* |
| 3 | Ecological Gardener, Garden Designer and Artist (sculpture) | Independent |
| 4 | Researcher and Creative Change Designer | - |
| 5 | Landscape Designer and Gardener | *Hemelse Natuur* & *Utrecht University Botanical Gardens* |
| 6 | Landscape Designer and Architect | *Hemelse Natuur* & *BoshSlabbers* |
| 7 | Civil Society Activist (Co-founder) | *The Tree Party Foundation* |
| 8 | Civil Society Activist (Respectively, founder and chairman) | *Vrienden van Amelisweerd* & *Milieucentrum Utrecht* |
| 9 | Active Citizen | *GroenmetjeDoen! Foundation* |
| 10 | Fund Director and Residential Developer | - |
| 11 | Landscape Architect, Artist (from education) and Urban Planning Consultant (Founder) | *AM Landskab* |
| 12 | Sustainability Consultancy Researcher and Biotechnologist | *Except Integrated Sustainability* |
| 13 | Senior Policy Advisor for Green Space | *Utrecht Municipality* |
| 14 | Independent Artist, Traveler, and Writer (specialized in the value of landscapes) | Independent |
| 15 | Managing Director and Lobbyist | *VHG & Dutch Landscape Contractors Association* |

(1) Twelve municipal documents were analyzed to investigate the institutional IoN more thoroughly and evaluate the existing integration of ABA at this level. Documents were intentionally selected among those available on the official municipal website Gemeente Utrecht, until saturation was reached (Elliott & Timulak, 2005). Documents relating to greenery were selected avoiding redundancies while at the same time ensuring that all relevant IoN expressed in them were included as research data. Examples of these documents include the Guidelines for careful action for management and maintenance of green spaces (Karels & Brekelmans, 2017), the Multi-year

Green program (Gemeente Utrecht, 2019), the Green Structure plan (Gemeente Utrecht, 2007), and the Tree Policy (Gemeente Utrecht, 2009). On top of the documents and policies directly linked to greenery, the main Spatial Strategy (Gemeente Utrecht, 2016) and a sample of neighborhood development plans were selected to understand how green spaces relate to the rest of the urban infrastructure and urban planning. Some of the selected neighborhood plans historically represented important city developments, whereas others were chosen for their recent publication date. Examples are the Leidsche Rijn master plan (Gemeente Utrecht, 1995) and the development vision and strategy for 2e Daalsedijk (Gemeente Utrecht, 2015).

On the one hand, interviewees provided key information about IoN at the personal and professional level; they also outlined how they relate to institutional value systems and how various stakeholders interact with them. On the other hand, municipal documents offered an objective understanding of IoN at the institutional level, integrating the opinions of interviewees outlined when asked about IoN at the institutional level. The combination of these two methods permitted triangulation of data and provided more reliable, accurate and complete findings, cross-checking the results from one data collection method through the other.

## 4.3 Data processing

All the data was analyzed through a coding process in Nvivo software. Eight nodes were created, as illustrated in Table 3, to align the method with the analytical framework presented in section 3.2. The four IoN were combined and overlapped with the three nodes of the multi-level analysis, categorizing the data as compositive of personal, professional or institutional IoN; the potential of ABA in tackling IoN was coded through a separate node, which often stood apart from the IoN and multi-level analysis, but sometimes overlapped. As a result, some sections of data were coded simultaneously under different nodes. The dominance of certain IoN over others could be deducted from each data source (interview or document), partly through the percentage of data coded under a specific IoN node, as calculated by Nvivo, and partly through interpretation, since certain sections and statements had greater weight than others in defining beliefs, values, and value orientations. The analysis of data focused on what was said and how, but also on what was not said (Bush, 2020). For example, the concept of 'dominance' in the findings is conceived in qualitative rather than quantitative terms. Interpretation helped to separate IoN dominance

on the different levels of analysis, but also to select overall dominating orientations and discourses for each interview or document.

*Table 3: Nodes created in Nvivo to code the dataset.*

| Images of Nature (IoN) | Multi-level Analysis | Art-based Approaches (ABA) |
|---|---|---|
| Wilderness image of nature | Personal Level | The potential of art-based approaches |
| Inclusive image of nature | Professional Level | |
| Aesthetic image of nature | Institutional Level | |
| Functional image of nature | | |

# 5 FINDINGS

*'You can teach awareness, but how are you going to teach citizens stamina to face institutions? How do you motivate people? […] In the end, you are not busy with 'nature' anymore, you study something else. You want to plant a tree and you end up managing conflict and building societal trust'* (Int 7).

In this section, the results of the interviews and the document analysis are collected. In the first two sub-sections SQ1 is tackled, exploring the extent to which IoN of different NBS stakeholders differ from each other in the case study, and the extent to which they differ in the multi-level analysis of single interviews and documents. Then SQ2 is explored, collecting the findings from data regarding ABA. In the discussion, these findings are integrated with the literature to discuss the potential of ABA and provide recommendations for their future implementation in the field of NBS co-governance (SQ3).

## 5.1 Dominant images of nature

To summarize the findings, the aesthetic and the inclusive IoN were found to dominate but compete with each other among stakeholders analyzed in the Utrecht case study. Indeed, stakeholders could be clustered into two large groups, one with a prevailing aesthetic image and one with a prevailing inclusive one, across levels of analysis. However, interesting variations were found within the multi-level analysis: most interviewees (14 out of 15) showed shifts from one image to another across levels of analysis, particularly from the personal to the professional level. The overall trend ranged from wilderness and inclusive IoN dominating at the personal and professional levels to aesthetic and functional IoN at the professional and institutional levels, as represented in Fig.6. It was thus found that multiple and divergent beliefs, values, and value orientations exist among stakeholders and across levels of analysis. As further described in the following sections, many interviewees outlined the importance of the intrinsic and ecocentric value they personally assigned to nature, while values overall became more instrumental and anthropocentric at the professional and institutional levels.
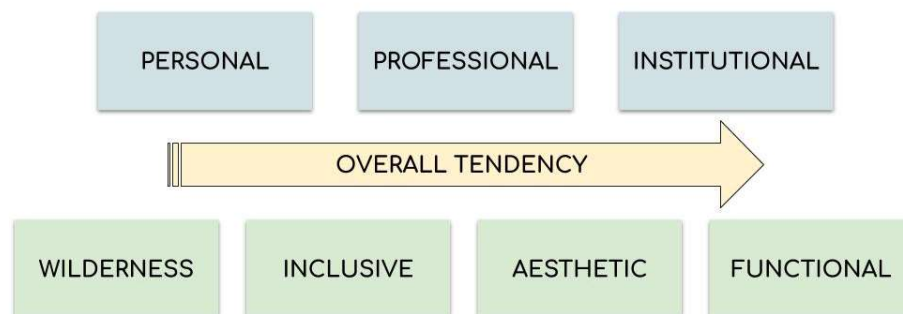
*Fig.6: Dominant trend in the relationship between IoN and the multi-level analysis.*

The analysis of documents and policies, on the other hand, highlighted a division into two dominant clusters, as illustrated in Fig.7. The documents produced by the greenspace department in cooperation with other departments, with a direct focus on managing greenery, displayed the highest number of statements reflective of an inclusive image of nature, recognizing both ecological and cultural values of nature, harmonizing and integrating one with the other. Some of these documents gave equal importance to the health of citizens, flora, and fauna, and acted as political spokesmen for all these 'urban dwellers'.

On the contrary, spatial development plans for the overall urban structure and for specific neighborhoods in the city, which were developed mostly by urban planners who do not have a focus on green space, showed the need to balance the multiplicity of aspects and factors that play a role in urban development along with nature. They had a much more aesthetic and sometimes functional image of nature: nature became a side-topic playing a predominantly aesthetic role to enhance the health and quality of life of human dwellers, including space for sports and stress relief, but also to enhance the attractiveness of businesses in the neighborhood. Accessibility and recreation became the keywords and key characteristics of greenery. Explanatory examples are provided in the following section, as the findings regarding misaligning IoN are analyzed more in detail before introducing the findings regarding the implementation of ABA.

*'The main values of urban green are the location factor for people and companies, the creative or user function, the socio-psychological function and the positive effect on people's health, the environment and nature'* (Gemeente Utrecht, 2007)*.*
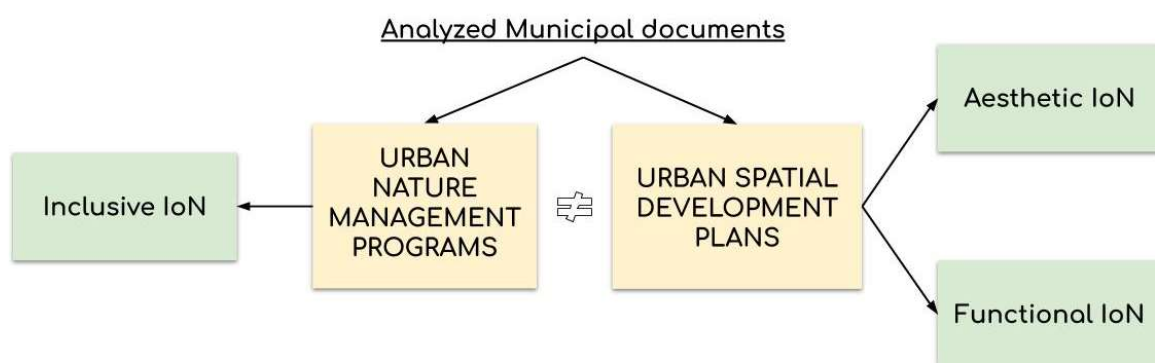


*Fig.7: Discrepancy between dominant IoN among Municipal documents.*

## 5.2 Analysis of the main mismatch between images of nature among different stakeholders

*'There is often a contradiction between people who make money out of buildings and those who develop high-quality green and public spaces. It is a very difficult struggle for municipalities to combine these two important targets' (Int 15).*

A main divide among stakeholders in the development of NBS was found to create two clusters. The first cluster had an aesthetic and sometimes functional image of nature, which was depicted especially among actors who work in direct contact with formal (policymaking) and informal (general public) institutions. A second cluster was found to have an inclusive and sometimes wilderness image of nature, predominant among those who have an ecological education, sensibility, or profession. The highest number of ecological gardeners, landscape architects, active citizens, and the sustainability consultant advanced an inclusive professional image of nature. Conversely, the policymaker, lobbyist, and residential developer and fund manager presented an aesthetic professional image of nature. The civil society activists were split between these two dominating IoN. In this sub-section, this mismatch is analyzed in its characterizing traits, providing input for structuring effective ABA.

The first cluster of stakeholders, having an aesthetic dominant image, tended to value nature as a 'facility', a service for people and for residents. Nature is not rigorously exploited, but it is shaped, adapted, and managed with the intention of protecting or enhancing people's lives, and is in some cases subject to 'intensive use' for recreation. Urban nature must therefore be entirely accessible to people. This is unlike the second cluster of stakeholders, who intrinsically valued urban nature as part of a living environment suitable both for people and other living beings. Biodiversity protection and conservation became the priorities of greenery here. These stakeholders argued that plants and animals have a right to a healthy life in the city, just like human inhabitants. Recreation of human dwellers is desirable as long as other species can also live healthily in the same space. Many of these stakeholders wish to ensure that the voices of animals and plants are also heard, that they are protected, and that greenery is comfortable and accessible for them as well. It was also claimed that biodiversity can be an indicator and leverage point for the overall performance of greenery: if the degree of biodiversity is positive, then aesthetic value, climate adaptation, and sometimes even economic value also tend to perform positively.

*'I think it is important for life of humans, animals, and plants to be connected. It is important for each of these species to have a connection from the city to the 'outside', and vice versa'* (Int 9).

*'If protected or Utrecht-based species are present in the project area, it will be assessed whether the species are adversely affected by the development. In the event of possible adverse consequences, it is examined whether the development can be carried out in another way so that adverse effects are prevented or minimized. If these adverse consequences cannot be prevented, the habitat must be compensated as close as possible to the project area, or if this is not possible at an alternative location within the municipality'* (Gemeente Utrecht, 2018).

Aesthetic taste for urban nature revealed to be mismatched between the two clusters, providing interesting material for reflection about the underlying value systems behind their preferences and for the introduction of ABA. In the first cluster (aesthetic IoN), gardens are neat; greenery is visibly well-managed; grass and hedges are tidily trimmed; concrete and grass do not coexist; trees are planted in the streets and closely surrounded by asphalt; choice of plants is directly related to desirable colors, smells, and proportions; the chosen plants attract desirable insects, such as butterflies; all these aesthetic choices prevail over the ecological functionality of the space. Private gardens are normally filled with bricks, concrete, and furniture, transforming them into 'outdoor rooms' (Int 15). According to various stakeholders, historically, Dutch private gardens have mainly been tidy and cozy 'spaces to look at' (Int 11), rather than to use. Many interviewees explained that these mindset elements compose the dominant demands of the clients they work with and develop greenery for, and that this is what the media advertises as beautiful gardens and outdoor space; stakeholders have consequently made it their design style and business model, not only in relation to private gardens but also to public greenery and urban NBS.

*'People want nature to look good without asking much attention and maintenance, so that is what we give them. It is very important that it doesn't require much work, that beautiful colors are there in all seasons, and that some animals, birds and insects such as butterflies are around'* (Int 10).

*'I talk a lot with people before the design, and they come to me saying: 'I want this flower or that type of tree'. But what is it that they really want, translated? Color, variation… They only named that specific flower because, maybe, it is the only one they know that has that shape or color (Int 11)'*.

Thus, despite the increasing importance placed on NBS's multifunctionality, lay people, social norms, and institutions struggle to detach from this aesthetic worldview, according to many stakeholders. Formal institutions, such as the municipality, aim to address the limitations of this image, with policy documents

that include exhaustive sections dedicated to the ecological integrity and health of flora and fauna next to the health and enjoyment of citizens, depicting an intrinsic value and an inclusive image of nature. Analysis of these documents demonstrates that the two aims can co-exist. Nevertheless, as the policymaker, together with other stakeholders, explained, institutions tend to mirror preferences and political opinions expressed societally, and so policies struggle with a transition that does not yet reflect the wishes of lay people. This was especially visible in the analyzed neighborhood development plans and in the description of formal institutional processes by interviewees, where nature retreated to be a fully accessible, decorative, and recreational facility. Safety hazards related to falling trees and dark bushes, where someone could hide, were found to be perceived as excessively dangerous by lay people and in policies, especially according to both the civil society activists. Other interviewees confirmed that the dominant institutional voice in urban development plans related to greenery was held by the maintenance and safety departments of the Municipality, as well as the health department, leaving ecologists as subordinate to them.

*'I can see why people prefer lawns and perfectly trimmed bushes: everything is neat, which is what most of us expect from society and from urban spaces. You do not find many types of salt in your supermarket, you have one easy option, and that is it.* […] *All fruit looks the same, and if one has a brown spot it's no good, we're not even sure we can eat it. It just has to do with our expectations, having come so far from any type of diversity, not just biodiversity. It gives people a feeling of familiarity and control' (Int 12).*

In the second cluster, composed mainly of stakeholders with an ecological background, experience, or with a strong interest in or sense of wonder at natural processes, aesthetics deeply intertwined with ecological functionality: a various and inclusive ecosystem, hosting great biodiversity and where multiple interesting natural processes are visible, was considered beautiful. This interpretation of what is beautiful and what is not has a potential that goes beyond simple aesthetic preferences: the satisfying sensation of ecologically functioning nature channels into aesthetic preferences. Spiderwebs, overgrown grass and a disorganized but balanced variety of flora and fauna were all found to be desired and beautiful elements of a green space.

*'It is a very stupid human flaw to have a perception of beauty that contrasts with what is natural: nature and its diversity' (Int 6).*

*'Urban nature is alright, but in some specific cases I ask myself: 'why?' When I see a nice tree, but it's not growing properly because it stands in the concrete, my opinion is that it should not even have been planted*

*there. At that point, stone would have been better, and maybe people would have liked it even more. People do not really like nature, if that is what they want. I think a tree in the middle of a concrete street is not beautiful, it is not growing well, you are missing something' (Int 5).*

This aesthetic mismatch represented an important finding. ABA take aesthetics as a basis for reflection upon value systems, thus these elements represent valuable input and for their effective contribution.

## 5.3 Multi-level analysis of images of nature of individuals

Whereas some of the interviewed actors demonstrated greater coherence between their professional and personal beliefs, values, and value orientations, others revealed incongruities, and sometimes even conflict, between levels of analysis. Furthermore, while some of them understood or were aware of this incongruity and spoke about it openly, others were not entirely aware of these underlying contradictions.

Some of those who showed greater coherence in IoN across levels were facilitated by the autonomous and independent character of their jobs and professions, which gave them the possibility to enjoy freedom, to some extent, in taking professional actions they personally value. However, these were also the actors who demonstrated the most divide and conflict with the institutional level, perceiving it as distant and incompatible with their personal and professional worldviews. These stakeholders did not personally feel aligned with prevailing institutional IoN. Indeed, these interviewees discussed that the preferences of lay people are aligned with these institutional images, mismatching with the preferences of many professional stakeholders of urban nature, in particular those who have knowledge and aesthetic sensitivity to ecologically inclusive aspects of nature. Some interviewees explained this with the consideration that lay people do not tend to have the knowledge to understand the ecological value of nature, and their preferences are the ones who become institutionalized, rather than those of insightful professional stakeholders. Lay people and formal institutions, including urban planners, are aware of the increasing importance of sustainable development, so from both sides an effort is made to follow this direction. Nevertheless, according to multiple interviewees, both groups often feel satisfied with any kind of 'green intervention', given that they do not fully understand their ecological value. As put by one of the interviewees:

*'I recognize the importance of the ecological function of nature, also in the city, but I think that it is something relevant only for those citizens who have knowledge about the ecological services of green spaces. For common inhabitants it is enough to think that it is nice to live in a green area' (Int 8).*

The municipality, as revealed by the document analysis, is quickly progressing in valorizing the ecological function of urban nature and the inclusive image of nature, despite the slow transition among the general public. Policymakers push strongly towards a more inclusive image within the municipal structure, although these worldviews are as yet present in practical spatial and neighborhood plans only to a limited extent.

*'Our city view is to also involve animals in our green plans: people, animals and plants. What I try to do during our meetings is to speak for animals and plants too, because otherwise they would not be involved. I always try to organize meetings so that every vision related to the place is represented' (Int 13).*

On the other hand, some stakeholders performed professional IoN that were aligned with institutional ones, but not with the personal ones. These actors aligned their professional values and beliefs with social norms and institutional demands, renouncing their personal value systems, sometimes completely. This was found to be primarily the case of those actors who professionally give most weight to the economic benefits of urban nature. These interviewees particularly acknowledged the barriers and the professional biases of their working sector and environment and claimed the need for more intrinsic value assigned to nature. In other cases, stakeholders showed that they are professionally attempting to take actions to 'upscale' their personal IoN to the other levels, despite the institutional barriers: for example, some actors outlined their interest in the ecological processes of urban nature and their wish to give more value to the importance and protection of ecosystems. They explained that this is not yet a priority within their professional environment and in institutions, where the aesthetic image dominates. In many cases, individuals began to shift towards aesthetic and exogenous institutional value orientations at the professional level, e.g. heavier hands-on management strategies, feeling obliged to act in accordance with these to meet the demands of the general public, economic and market demands, and institutional regulations.

*'At work we mainly talk about returns on our investments, so mostly it is about the money and the financial aspects of the projects. That makes it quite difficult sometimes, because, as I told you, I believe in more value, especially in the long-term. I think this is one important shortfall we have. […] There are a lot of discussions about what is reality and what is the dream, and to what extent they match. […] What I feel is*

*that everyone likes green and likes the idea, but then, in the next steps, they get more and more critical and negative about it'* (Int 10)*.*

The sustainability consultant demonstrated the greatest variety of IoN. Whilst the aesthetic image was present at all levels, all the other images were simultaneously present at each level (wilderness, inclusive, and functional, respectively). It could be argued that working in a very interdisciplinary environment, in contact with a variety of professionals, and acquiring knowledge from multiple disciplines, allowed this interviewee to be critical of every image and take them all into account, with their strengths and weaknesses. Interestingly, this stakeholder was particularly accustomed to creative problem-solving approaches in his workplace, suggesting that there could be a correlation between his broad and aware perspective on value systems and his creative working background.

## 5.4 The potential of creative and art-based approaches in urban NBS

*'The arts leave space for the liminal and for the potential: for things that you cannot express exactly, but that you can hint at. […] The arts come in to describe a poetic world, that cannot be quantified. It is not against science, it is an addition; otherwise, you look at only half of the world! It looks deeper into relations, which define our lives'* (Int 14)*.*

Many interviewed stakeholders confirmed that miscommunication is a common problem in NBS projects, and it exists mainly in the relationship among them, as professionals and as institutions. Communication regarding regulations in place and how they can affect the project under development was often found to be an issue between initiators such as civil society activists or active citizens, and formal institutions. 'Rules for emergencies, firemen, and access to wheelchairs' (Int 1), for example, often affect the spatial possibilities for urban nature, but only become clear at a late stage of the plan. Similarly, both interviews and documents highlighted the important presence of cables and pipes underground, and the way they affect the possibility of planting trees or large plants, due to the interference between underground infrastructure and roots. Stakeholders argued that the underground network was historically developed in a disorganized manner and is now impossible to rearrange. They also argued that the institutions and actors responsible for checking this infrastructure do not make such limitations clear at an early stage, but rather call for design changes when this stage has already been finished, leading to dissatisfaction and complaints on the side of initiators and project developers who find themselves forced to downscale their

expectations. Overall, all interviewees agreed that the combination of numerous and unclear regulations and a slow evaluative process hinder the possibilities for development of green space and NBS.

*'Urban planners make plans and drawings of their projects, but if they decide to keep a seedling, someone will tell them that they didn't do a good job, because it's not on the planned design. How can you give designers the responsibility for this, when they are part of a greater institutional structure? Landscape architects and artists are those who can look for connections' (Int 3).*

While the planning process was considered too slow, stakeholders with an inclusive image of nature argued that lay people and institutions wish to see the implementation and the results of a green project too quickly. Natural processes happen at a slow pace, and beauty in nature develops over time, but citizens demand to have beautiful green spaces in the short term.

*'Working with nature requires a lot of observation and listening. We must work with nature, see what is already there, and make the best out of it. Sometimes we tend to go too fast and find quick solutions – but with nature this is not the way to go. […] In Western culture, it's difficult for people to wait. But this is very important for ecological projects: to wait and to give it time to evolve. We also need to take the time to be together and discuss things: social time'* (Int 2).

Ecologists also explained how urban natural spaces are one of the rare places providing space for emotion and intuition in the very rationalized urban environment. These actors perceive the closest relationship between nature and artistic expression, out of the sample, even before introducing the idea of ABA.

When the proposal of ABA was introduced in conversations with the various interviewees, their initial reactions were very diverse. Some reacted with surprise and perplexity, whereas others replied with excitement:

*'An art-based approach?! Is it scientific? What is art-based?'* (Int 6).

*'Cool! We also had poetry workshops under trees in the past! And I think I indirectly use this type of approach all the time'* (Int 7).

Other interviewees provided very little reactions and data, possibly uncertain of their thoughts about an approach they had no familiarity with. Indeed, these interviewees stated that they had not had any experience with such an approach. Similarly, not much material was gathered and coded from the municipal documents as relevant for ABA, suggesting that such approaches have not yet been institutionalized or introduced at the policy-making level. The policymaker and the lobbyist interviewed

explained they have had little or no experience with it, although they are both seeking new creative strategies to deal with problem-solving and interdisciplinary governance. They both showed interest in and curiosity about the proposal.

Regardless of these initial reactions, most interviewees then allowed the idea of applying the arts in NBS planning processes to build in their mind. After listening to a few examples of ABA (e.g. sensory experiences, drawing workshops, emotional associations, etc.), they adopted an open mindset towards this possibility, even if some still provided brief and fragmented responses. All of them recognized the potential of such approaches as communication tools in participatory processes and interdisciplinary co-governance.

*'I think shaping the discussion in terms of values is a very good approach: it makes it more feasible and objective, if everyone outlines their values, to figure out what is really important. The arts can contribute to this approach because participants would then feel like they are in a more relaxed environment and they would feel free to express in a more 'irregular' way. It would definitely be more exciting to come to a real ending plan together'* (Int 9).

*'The arts aim to sidestep conventional thought, in some way. […] In a process, getting outside of the comfort zone helps to put everyone on the same page. At that point, everyone will have already taken that sidestep. Each of them has the same experience, each of them finds their own perspective regarding that change or experience and will go on from there. Art has a mental function in the process, but it also has an aesthetic value. It is hard to say no to something beautiful. If someone presents you a stack of paper, as a business model for a new park in the city, it is just a massive stack of paper and you will be thinking 'oh, no!'. Any type of inspirational art can offset that significantly! Of course, if the report is still 200 pages long, you still have the issue, but it still helps to sell, it always has! It helps people envision the result of a decision'* (Int 12).

Interviewees value ABA mainly for their ability to overcome conventional and normative narratives, introducing values, beliefs, feelings and spirituality to the discussion, bringing all participants to the same level, and leading to the abandonment of power relationships and hierarchies as drivers in the partnership, thus validating the proposition of the research. Not only does it allow stakeholders to understand and relate to each other, but it also permits insight within the individual, encouraging reflection on what is genuinely important and valuable. This favors a multi-level self-analysis that can

deeply influence single participants' overall value systems, questioning aspects that are normally taken for granted.

Along with the strengths of ABA, stakeholders outlined the main risks and dangers that concerned them. According to the interviewees, a remarkable language barrier exists in the very word 'arts', as opposing, conflicting, or contrasting with scientific approaches. The distinction between 'arts' and 'creativity' was interesting to discuss during the interviews: the former faced several biases and resistance, whereas the latter was considered professional and reliable. This is argued to relate to institutional norms and societal constructs. The distinction between the words 'arts' and 'creativity' was described in the theoretical framework: whereas the arts have a questioning and communicative character, creativity focuses on quantifiable and valuable innovation within the boundaries of professional worldviews and narratives, and is most often translatable in economic and profitable terms (e.g. product or service innovation).

*'Be careful with the word 'art'. In the Netherlands we live on a model that doesn't recognize the value of certain words, that are not scientific. It makes a huge difference if you call it 'art' or 'creativity'. If you say 'art', one third of the people will see it as a waste of time and money. […] On a micro and meso level, where you and me are focusing, it would be great to find a way to work with art because, secretly, most people love art, but, professionally, arts are just a 'leftist hobby'. The strategy, therefore, is to not call it art, but call it creative involvement, recreation, fun. Then there is no problem'* (Int 7).

*'You are talking right now with someone in the field that is very positive about green and experimental discussions, but if you were to interview other funding managers you would probably encounter a greater barrier. I think we should be more open to green projects and innovation, in the context of climate change: I feel like we don't have a choice! And by 'we' I also mean political parties, the risk management departments, all kinds of investors that invest in opportunities for the future'* (Int 10).

*'If you use the word 'art' in a decision-making process, you will probably have less response and a rather negative response, in general, compared to the word 'creativity'. If you then replace the word 'creativity' with 'design', suddenly everyone thinks it is very professional'* (Int 12).

As mentioned, not much data on ABA could be collected from the municipal documents. However, on various occasions, the documents highlighted the need for more effective communication with stakeholders and the importance of creative innovation. Interestingly, in some development plans, nature, art, and the creative sector were grouped and tackled jointly: greenery and visual arts (such as sculptures or murals) were recommended together as aesthetic improvements for neighborhoods.

## 5.5 Practical implementation of art-based approaches in NBS development: input from interviewees

'*The connection is in the wonderment. An artist sees things that others do not see, although we walk in the same world. I think that's because artists have nourished the ability for wonderment, which means not having preconceived concepts.* [...] *The arts allow this feeling of connection, without quantifying it. It keeps you close to the experience without analyzing it'* (Int 14).

Having recognized the potential contribution and risks of ABA, many interviewees outlined how they envision the implementation in interdisciplinary co-governance for NBS in more practical terms, providing ideas and suggestions for an effective result that can overcome the weaknesses and maximize the strengths. Some of the interviewees have experience with similar approaches and describe the activities they have organized or taken part in, as practical examples of ABA. Fig.8 illustrates all the input that interviewees gave to develop effective ABA.
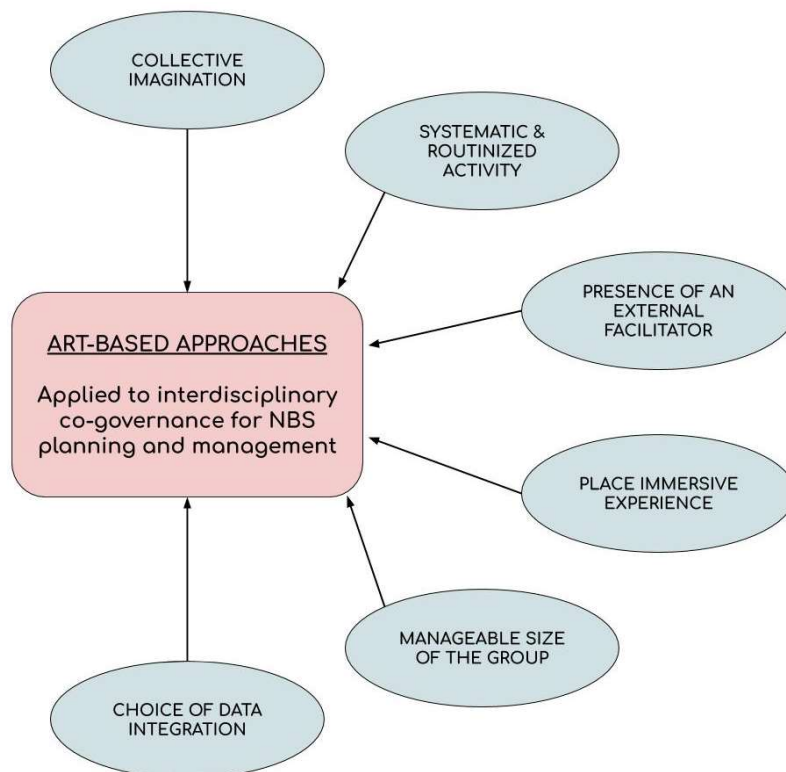


*Fig.8: Practical input from interviews for effective ABA in NBS governance.*

*Collective imagination*

A landscape designer pointed out that the imagination of single individuals is limited by mental and societal constructs, routines, and patterns. This leads people to exclude some possibilities which they might even prefer over their own choices, without realizing it. For this reason, an interdisciplinary process has more potential than a specialized one: imagination is broader because one individual can fill the imaginative gaps of another. No discipline or professional context should therefore take the lead, but equal space for imagination should be ensured to all participants. It would thus be ideal if all relevant disciplines and stakes are equally represented in the group, also avoiding power relationships and hierarchies.

'[Participants] *start having a chain reaction of new ideas, going beyond the boundaries of their initial imagination. This opens so much space for new options, new opportunities! You don't have any rules anymore. Isn't this the same process you often go through in the arts?*' (Int 5).

*Systematic and routinized activity*

Another landscape designer recommended the approach to be made systematic, not an occasional workshop, for it to be effective. This would allow participants to gain familiarity with the approach over time and become more open to its unusual and unsettling 'out of the comfort zone' character. To do this, the designer suggested having an external formal actor organizing and leading these sessions. This proves to be necessary because, as described by the interviewee, most professionals would not have the time and skills to organize routinized ABA within the usually tight deadlines of urban planning projects. An external actor who can entirely focus on organizing ABA would overcome this time constraint.

*Presence of an external facilitator*

Various interviewees also recommended having an external facilitator to lead the discussion – a role that can be combined with the preceding suggestion but was in this case claimed to be important for a different reason. Whereas the previous point was linked with time constraints and the need for systematism, this suggestion is related to the impartial character of an external actor. Indeed, the facilitator should be an individual that does not have a stake in the project and does not directly work in the field of NBS, as the person should have an impartial yet creative and artistic mindset, and thus would ideally be a professional

artist. The role of the artist would be to make sure that nobody monopolizes the conversation and ensure an equal voice for all. An artist also has the capacity to lead participants out of their professional silos and into an out-of-the-box environment where every thought is allowed (e.g. an artist can trigger a discussion in the shape of storytelling or theatrical communication; he/she can make use of metaphors and imagination, temporarily ignoring the limitations that legal, political, or economic frameworks may impose). However, an interviewed artist explained that, in her experience, professional artists tend to use a language that does not match that of professionals in other fields, and particularly that of the decision-makers and policymakers. In the context of co-governance, this miscomprehension between stakeholders and artists could even lead to undesired behaviors, for example in the case where NBS professionals feel forced to demonstrate an attitude that is not intuitive or authentic, to comply with the activities proposed by the artist – compromising the very aim of ABA. The external facilitator should therefore specialize in developing a form of communication that bridges this gap. The same interviewed artist explained she has been creating coalitions to do this, collaborating with an 'advisory board of people from the corporate world' (Int 14) who give her backing and credibility in ABA related to landscape planning. She outlined how a continuous search for balance is necessary to gain the trust and reliability from NBS stakeholders without compromising the fun and originality of the arts, linking to previous input regarding systematism.

*'I did the arts school myself, so I think it is inside me to apply the arts in every context. I introduce games or cards as tools to organize and lead the workshops, and this helps to explore the questions at hand. There is always an out-of-the-box component, and I oblige participants to think and discuss about things that they don't normally discuss. […] I see uncomfortable feelings among them all the time! I expect that to happen. I always ask them to try and go beyond that and leave their comfort zone. I also make sure to mix people, not letting them sit next to the people they already know or to their colleagues'* (Int 10).

*'I took part in a project where people would be exposed to different landscape views and I would ask them in which direction they would prefer to walk and why. I give them a list of choices to start with, and of course they can add more points. Each of them perceived nature in a different way! If you walk around and start paying attention to where you go and where you do not like to go, you will start to find coded messages. We do not read it anymore because we lost the language for that. If you start helping people to listen to the environment, the birds, etc., you start adding imagination'* (Int 14).

*Place immersive experience*

Many interviewees recommended being *in loco*, in the place to be developed, therefore in the green space or in the neighborhood under development, during the ABA activity. They argued that involving the senses in addition to the logical mind can maximize imaginative and creative potential. This is particularly true of spatial and urban planning, where decisions are place-based and experiential.

*'People will socialize, experience, sense the place... And if during the walk you give them a few instructions and elements to focus upon, you can get participants very involved, you can gather a lot of useful information!'* (Int 13).

*'The arts in our projects do not have an object but lay in the very action of getting people to think about how to make use of nature fully. Examples are eating, tasting, touching, going with your hands in the soil, having fun, but also just seeing the beauty in nature, in a garden. These tools and processes are what we call art'* (Int 5).

*Manageable size of the group*

The interviewed researcher, who has experience with artistic interventions applied to place-making, landscape value, and local community building, explained that the interacting group can potentially become very large, especially if the sample aims to be inclusive and representative. If local lay people are also involved, the situation may become unmanageable. He therefore recommended, in these cases, to hold multiple sessions, dividing the group into smaller representative groups of no more than 25 individuals. With a larger group, the risk of depersonalizing the environment emerges, losing the expression and value of individual identities. The individual level of analysis would therefore be compromised, and the institutional level with its norms and biases would take over.

*Choice of data integration*

The consultant, who often works in interdisciplinary and creative teamwork, highlighted the role of data in orienting and giving a direction to the process. He argued that even if it is art-based, the approach should remain 'scientific', in the sense that it is supported by some kind of data. As a rule, the entire approach should be at least goal-oriented: the goal is the main information that all participants should

have at the start of ABA. The goal can be, for example, to understand the diversity of components that make nature beautiful according to individuals among the group, to take choices related to an urban space that involve sensory experience and irrational attachment, or to understand and evaluate why an NBS is or is not successful after its implementation. Acknowledging the purpose of an activity in ABA can incentivize willingness to participate and commit to it.

*'When you show someone a design, people expect that design to have scientific grounds, or at least some data behind it: certain rules are in place. If you show someone a piece of art, they could say 'oh, but there were no rules, everyone could have made that!' So, data is what makes the difference, or at least the perception of the data behind it'* (Int 12).

The consultant then expanded by illustrating that, within a goal-oriented approach, various processes are possible. The amount of data to make available at the beginning of the discussion or workshop defines the rules of the game of ABA. Providing all the boundaries of the project (e.g. legal, financial, etc.) encourages participants to think logically, though narrowing down the imagination of participants. Nevertheless, clear and explicit boundaries make the process quicker and more focused. There is a trade-off in play here. The consultant explained that, within his organization, two options for imaginative approaches are adopted: bottom-up or top-down. In a bottom-up approach, no rules and thus limited data are shared with the group, except for the goal. Participants are then given the 'space to dream' and create ideas with no limiting rules. Through this approach, concrete project plans are not yet developed, but, after collecting all the 'dreams', the underlying assumptions, beliefs, and value systems of participants are analyzed. The group can then discuss why participants thought those were desirable and valuable plans.

*'We literally went crazy, thinking of the weirdest solutions we could find. You want to grow lettuce on the back of a camel? Sure, why not! Then, we try to figure out why you thought that would be a good solution, and from there we deduce reasons or rules behind potential solutions. This is what we call a bottom-up approach'* (Int 12)*.*

In a top-down approach, instead, as much data as possible is provided from the beginning of the process, defining the rules-of-the-game.

*'I think the top-down method will scare less people away in a first instance, whereas I have learned that the bottom-up method sometimes generates solutions that you would have never considered as a realistic option otherwise. The fact is in top-down methods it is really easy to make assumptions without even*

*realizing, whereas in bottom-up approaches you can do everything you like, only later figuring out what rules you had in mind. That can certainly add value to decision-making processes, as long as it is done right'* (Int 12).

According to an interviewed artist, the content of the discussion should not be abstract: the topic should not be centered on values, beliefs, or emotions (e.g. 'What emotions does this natural space evoke to you?'). Instead of a philosophic debate, artistic expression should be practical, interactive, and applied. Beliefs and values are only tackled at a later stage, when participants observe and analyze what previously happened, especially when a bottom-up approach is applied. This approach allows participants to work in a spontaneous, unbiased, and purely instinctive manner in a first phase, moving on to a rational analysis only later. This corresponds to the theoretical direction provided in section 3.1.4: ABA should be introduced during an initial and 'inspirational' phase of a larger partnership working project.

# 6 DISCUSSION

The findings explored the emergence of misalignments in IoN among professional stakeholders in urban NBS development, and across levels of analysis of individual IoN – from the personal to the professional and institutional levels. This analysis highlighted the need for interventions to reflect, raise awareness, and potentially shape and harmonize IoN of participants in stakeholders' partnership working. As a proposal to tackle this problem, the opportunities raised by introducing ABA were explored, with the goal of designing a framework for their practical implementation in NBS development.

In this section, the findings are interpreted and discussed, and confronted with the relevant literature, in order to build practical and theoretical implications and recommendations. Like the shape of an hourglass, this research began with a broad problem statement and unexplored field of research, then narrowed in scope to a specific case study, a set of stakeholders, and a specific analytical framework; now, it takes a further stance to broaden the picture and develop a few generalizable implications, both practical and theoretical, and directions for future research.

## 6.1 Theoretical Implications

*'The most unbridled imagination, the most improbable invention, can help the person responsible for it to perceive a hidden aspect of the real and open up a window on a completely different reality'* (Schuiten & Labrique, p.19).

### 6.1.1 The effect of misaligning IoN on NBS development and co-governance

This thesis revealed two main clusters of value orientations in urban NBS stakeholders, which misalign with each other. The main misalignment among professional NBS stakeholders, between aesthetic and inclusive IoN, related to the ecological value of nature. Whilst one cluster was found to be mostly unconcerned about it, the other strived for it to be prioritized in nature-based urban development agendas. The former cluster of stakeholders perceived nature as a recreative and attractive facility to be used by city dwellers and visitors; all stakeholders agreed that this is also the dominant image of nature at the institutional level, i.e. among formal and informal institutions and among the general public of the city. According to various interviewees, and as affirmed by Gobster et al. (2007), while management of landscapes has been historically guided by decorative preferences and infrastructural functionality, ecological aspects and the wider multifunctionality of nature related to social opportunities, human health, and climate change have only recently entered the debate and are gradually gaining priority. These urban IoN are however polarizing in the two conflicting directions of ecocentrism and anthropocentrism. If harmonizing worldviews is an excessively ambitious goal, raising awareness and ensuring that all stakeholders reflect and understand the mix of beliefs, values, and orientations that is expressed at the table can positively influence the agreements and the results of the NBS partnership.

Ecological professionals were found to have different environmental value orientations compared to other NBS stakeholders, who have stakes related more directly to socio-cultural and economic values of NBS. This finding is in agreement with previous research demonstrating that ecological professionals express different desires for urban nature compared to lay people, with a greater focus on ecological integrity and the health of the ecosystem (Buijs & Elands, 2013; Qiu et al., 2013). Ecological knowledge, background, and education are known to be key causes of this IoN difference (Tyrväinen et al., 2003). These professionals tend to express their value systems in more normative terms, acquired with their education, whereas lay people prioritize the experiential and emotional value of nature (Buijs & Elands,

2013). The analyzed stakeholders with a dominating aesthetic image of nature, instead, rationalized the emotional value expressed by citizens, transforming it in normative and descriptive IoN of attractiveness and recreation. Thus, all professionals tend to use normative language and knowledge to tackle NBS, but not all have the same IoN. Nevertheless, a number of professional stakeholders who were not ecological experts also expressed values and beliefs that favored ecological integrity and functionality over purely aesthetic and recreational considerations. These actors demonstrated a personal interest in and curiosity about ecology, natural processes, and ecosystem services: this was, for example, because they lived in rural and natural areas as children or somehow developed a spiritual or intrinsic attachment to nature and wilderness through encounters with it, either personally or professionally. Thus, while expertise or specialized knowledge of ecological functions and processes are already recognized as leaders of a sense for an inclusive and ecological image of nature, they are not the only possible preconditions: an emotional attachment or a genuine curiosity about nature can be sufficient to greatly influence the beliefs, values, and orientations of any individual. This highlights the fact that experiential and emotional values play a central role in personal IoN, for both lay people and professional stakeholders.

The literature regarding 'ecological aesthetics' is relevant to these findings. The findings revealed that the cluster of stakeholders with inclusive IoN find ecologically functional NBS also aesthetically pleasing, contrasting with another cluster that prefers tidy and highly maintained urban nature, even when this tidiness is at the expense of ecological functionality. Gobster et al. (2007) confirm that the relationship between aesthetics and ecology is related to nature-society interactions, and that it should be considered much more important than it currently is by urban stakeholders for the implications it can have on NBS management choices. Aesthetic experiences are composed of the sum of perceptions and sensations that an individual is subject to, in a specific space and time (Toadvine, 2009). As human beings, we relate to the environment we live in through our sensory system and through emotions, seeking pleasurable emotions and stimuli and avoiding unpleasurable ones (Gobster et al., 2007). As a result of these demands, landscapes are continuously changed according to their attractiveness for people who visit and live in them, through renewed policies and management strategies that translate their preferences (Tyrväinen et al., 2003). However, these aesthetic drivers of change do not easily coincide with the goals of protecting and enhancing the ecological integrity of the landscape (Gobster et al., 2007). Scholars argue that ecological processes are not qualities of a landscape that humans instinctively react to: they do not inherently make a space beautiful and pleasurable. They are only indirectly embraced as such when their value is rationalized, as it is by ecological experts (Gobster et al., 2007; Tyrväinen et al., 2003). Through acknowledgement, therefore, scientific notions translate into aesthetic and sensory preferences,

integrated into the IoN of individuals. On the other hand, Tyrväinen et al. (2003) illustrate how verbal information and discussion offers limited urban nature management solutions, and how emotional and psycho-physiological responses can enrich the ability to evaluate a landscape. Thus, if it is true that scientific knowledge can inform a sense and taste for 'ecological aesthetics', the opposite process in which aesthetic taste leads to management choices that preserve ecological integrity also proves to be true.

### 6.1.2 Multi-level analysis: IoN dynamism

Parallel to the misalignment of IoN found across NBS stakeholders, incongruencies were also found regarding IoN across different levels of analysis. The multi-level analysis is argued to represent the main strength of the analytical framework and an important finding. Indeed, in the findings, the same individual would often reveal different IoN when asked about personal, professional, and institutional opinions. Overall, whereas greater alignment was found between institutional IoN and professional IoN, personal IoN were often discrepant and sometimes conflicting with the other two levels, unless professionals worked independently and were free to integrate personal views at the professional level. Furthermore, while some stakeholders were aware of this internal conflict, others did not fully realize that this ambivalence existed. This finding matches with the concepts outlined in Section 3.1.2, where value systems were theorized as dynamic and in continuous transformation (Van Opstal & Hugé, 2013). However, adding to this theory, IoN were found not only to be dynamic over time, but in the same time frame one individual could hold multiple IoN on multiple levels of analysis: an important finding for the effectiveness of future interdisciplinary co-governance in any field. Overall, the institutional level was often referred to in terms of 'they think that…' or 'they don't understand that…' by stakeholders, who would thus assign conflicting IoN at this level and consider institutions as external to their personal value systems. The professional level was mostly perceived as the space for compromise between institutional norms and demands and personal beliefs and values. Finally, at the personal level, stakeholders would lower their professional barriers to add to the conversation aspects related to intrinsic values, emotions, personal experiences, spiritual connections, irrational thoughts, and imagination. It was frequently found that individuals would sacrifice most of these aspects when the conversation would shift to the professional level, and they would disappear entirely at the institutional level. Grant and McGhee (2017) previously showed the existence of discrepancies between personal values and business value orientations, which has consequences for the ethical behavior of actors within corporate governance. Pre-

crafted moral constructs impose themselves on business actors, and whenever ethical arguments are brought up in professional discussions, they are referred to as intimate and intuitive feelings that should only be taken into account to a limited extent (Grant & McGhee, 2017). The existing multi-level incongruence may be one of the problems at the root of professional bias, misrepresentation, and power imbalances in NBS co-governance, leading to the dominance of certain functions of nature over others (Heynen, 2003). If NBS are discussed solely at the level of institutional or professional IoN, many aspects are automatically excluded from the debate, and are thus left out of the agreements and solutions developed. Reflecting on such dynamism and allowing personal IoN to be part of the discussion can unlock ethical and trustful decisions, build integrity within organizations and cooperative partnerships, and open up additional problem-solving opportunities (Grant & McGhee, 2017). Professionals might find that their personal beliefs and values are closer than would normally appear, whilst acknowledging the reasons behind conflicting ones. Hence, deadlock situations may turn into new pathways for discussion, and additional solutions may become achievable. This theoretical implication has important potential for further research and can evolve and promote practical implications for partnership working.

Because of the described variation of IoN both across stakeholders and across levels of analysis of single individuals, there is potential for ABA applied to NBS co-governance processes to deliver and inform awareness and potentially harmonize divergent environmental value systems, before the phases of decision- and policymaking.

### 6.1.3 The contribution of the ABA framework for NBS development

During the investigation, interviewees confirmed that miscommunication and language barriers existed in NBS interdisciplinary co-governance, as theorized in Section 3.1.2. The proposal of introducing ABA to tackle this issue was embraced differently by each interviewee, while they all agreed in seeing it as a novel, unexplored pathway which could potentially have a contribution to make but also comes with risks and dangers. ABA were considered promising communication tools for NBS partnerships, capable of overcoming conventional and mainstream thought. Intrinsic value, experience, spirituality, and emotion are instead introduced to the debate. Most interviewees were concerned about the terminology 'art-based approach'. Whilst 'creativity', 'innovation', and 'design' were all terms they felt comfortable with, the word 'arts' had an unsettling and defamiliarizing effect that was often perceived as dangerous. Some argued that an art-based approach would have effective content but should be 'sold' as a 'creative

session', 'collective design process', or in similar alternative terms, to gain attractiveness and professionality. It is interesting to reflect on the way language matters to effectively deliver an innovative and engaging approach. In the literature, interpretation and conceptualization of the terms 'arts' and 'creativity' are not uniform, which is most probably the root of this misconception. For example, Triantafyllaki and Burnard (2010) argued that creativity is the process in which the artist or creator undertakes to reach a result, which is the artwork. Applied to co-governance processes, however, the artwork does not have to be the final solution or NBS the group develops, as this requires further steps in the partnership; rather, the artwork is the process of opening and harmonizing different standpoints. Creativity is also involved in this process, as participants seek methods of expression alternative to verbal expression, but the act of engagement, new knowledge creation, and the opening of new spaces of possibility emerge subconsciously and in parallel to the actual creative activity the participants have undertaken (Triantafyllaki & Burnard, 2010).

A relevant finding is also the fact that, just like global SDGs and the IPCC, municipal documents never referred to either the arts or creativity, nor to the need for innovative interventions to enhance partnerships for the development of urban greenery. It may be deducted from this that the municipality does not recognize the potential contribution of such approaches or interventions, although the need to harmonize many stakeholders and trade-offs is evident in policies and documents. Simultaneously, however, the documents perform well in balancing the multifunctionality of urban nature. Most documents reserve equal attention and text space to all the main functions and goals of nature, with either an aesthetic or an inclusive image of nature. The municipality thus allows the majority of stakes and environmental value systems to integrate and outlines and justifies the prevailing reasons that support each of them. The city is aware of the multiplicity of IoN among stakeholders and of the multifunctionality of nature and sets the stage for inclusive and interdisciplinary partnerships and co-governance, without defining a preferred value system for nature management.

## 6.1.4 Strengths and limitations of the analytical framework: directions for future research

As previously mentioned, Buijs's IoN framework (2009) is mainly based on research in rural environments: what is considered 'nature' in his analysis is the natural environment typical of the Dutch countryside and villages. Thus, IoN may need to be adapted and re-interpreted for an urban environment to have comparable value. Some issues that are currently typical in an urban environment are not mentioned in

the IoN framework. For example, it is uncertain whether the prioritization of urban nature and NBS as climate adaptation strategies would qualify as aesthetic or inclusive IoN or fit with anthropocentric or ecocentric values. It likely depends on whether the strategy aims solely to defend humans from climate hazards, or to protect flora and fauna as well. Because of this, climate adaptation strategies resulted in specific attitudes, management choices, and strategies that do not immediately fall into specific IoN. Buijs et al. (2011) only briefly hint at the topic, identifying climate adaptation as a weakly anthropocentric value and an aesthetic IoN, a viewpoint that was also adopted in this research. In some occasional cases, however, it was interpreted as a functional image, due to the strong anthropocentric context some sections of the text were embedded in. Other examples of uncertainty during data processing were found in text related to healthcare and safety issues. As an example, trees are often trimmed and guided to grow in a way that safeguards streets and houses, implying a heavily hands-on management strategy, and actors disagree as to the fairness of this and its impact on the wellbeing of the plant itself. Whereas in some cases the safety of citizens was weighed against the wellbeing of flora and fauna, in other cases safety strategies resulted in an entirely human-centered approach. Once again, this was classified as either an aesthetic or a functional IoN, depending on how these concerns were weighed. Overall, classifying these statements was not at all straightforward or easy to do. Not all values, beliefs, and value orientations related to climate adaptation, safety, and healthcare could be clustered under a single image of nature. Despite this, the IoN framework proved to be very useful to simplify the apparent complexity of value systems and has been successfully used in an urban context before, albeit with different aims. To address this limitation, one suggested direction is to integrate the IoN framework with analytical indicators that belong to the well-known New Ecological Paradigm framework developed by Dunlap et al. (2000), which focuses specifically on ecological and climate-related issues that underlie the worldviews of individuals. It evaluates beliefs and values regarding humans' ability to dismiss the balance of nature, the perception of limits to growth for society, and the right to rule over nature (Dunlap et al., 2000). Further research could attempt to join these theories to identify new clustered IoN to add to the existing ones, expanding the IoN framework and its potential applications.

A second limitation that emerged was linked to the interpretation of data. The IoN framework identified fairly broad clusters, and, in some cases, stakeholders demonstrated that they had, for example, beliefs about nature that belonged to one image, and values belonging to another. Some distinctions between IoN, within the same level of analysis, were very subtle and required much interpretation of the researcher. It was not easy for interviewees themselves to clearly define their value systems. This finding highlights the dynamic character of individuals' worldviews, and the fact that they are often unfinished

and in a continuous process of review (Van Opstal & Hugé, 2013). In this context, once again, the multi-level analysis proved to be very helpful, giving additional structure to an otherwise abstract and elusive field of research.

Finally, in close relation to the previous remark, it was not always easy to categorize and distinguish between IoN at the individual, social, and institutional levels. As previously discussed, social constructions grow jointly with personal identities, and professional and personal opinions tend to converge with time. It was sometimes hard to interpret the way interviewees expressed themselves in this sense. Are they really outlining their personal beliefs, or are they deeply influenced by their societal and institutional role as professionals? Further interdisciplinary research is necessary to tackle this question, as well as seeking additional pathways to raise awareness among professionals about this subconscious issue. Regardless, investigating their beliefs and forms of expression was an exciting challenge, and may have highlighted aspects that they themselves were not aware of.

As previously outlined, and in light of all these theoretical implications and directions for future research, the multi-level analysis turned out to be the strength of the analytical framework, presenting the most interesting and relevant findings of the research. It is therefore recommended to integrate this method of analysis with the IoN framework when applied in interdisciplinary co-governance strategies, where many stakeholders with various professional backgrounds collaborate and work in partnership on nature management.

Finally, further research could build upon the guiding ABA framework – completed in the following section – by applying and testing it in practice. This would allow an evaluation of each input added to the framework and maybe expand or provide further specifications for each of them. This would provide co-governance practitioners with a verified guideline for a systematic implementation of ABA in NBS co-governance.

## 6.2 Practical Implications: The ABA framework for NBS development

The suggestions and practical input brought up by interviewees regarding the implementation of ABA can be briefly discussed by combining these findings with the literature. This allows some narrower and more specific choices about ABA applied to NBS co-governance, with final development of a complete ABA guiding framework, shown in Fig.9. Indeed, after collecting the theoretical directions from the theoretical framework section (see Section 3.1.4), the inputs from the findings (see Section 5.5), and the discussion of these (below), a final design for an ABA framework to apply to interdisciplinary co-governance of urban NBS development is obtained. In Fig.9 the theoretical directions are reported in yellow, while the findings, integrated by the discussion, are illustrated in blue.
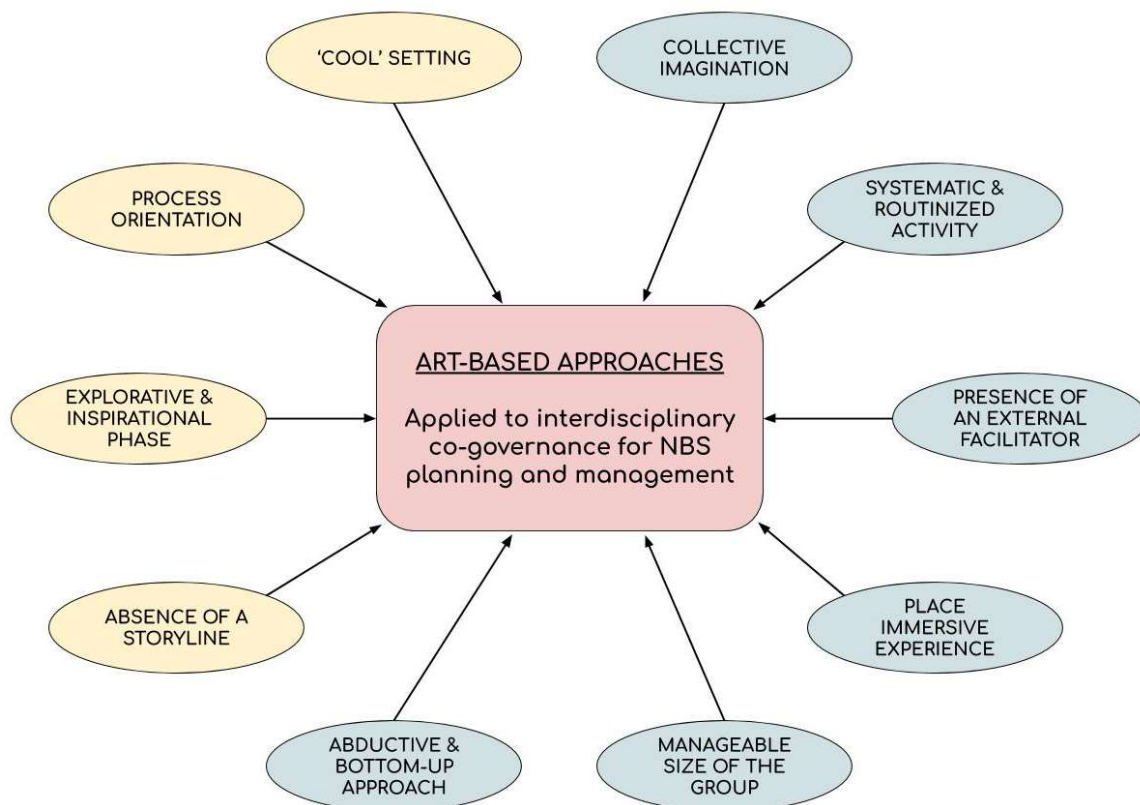


*Fig.9: Complete ABA framework for NBS co-governance.*

Hargadon and Bechky (2006) confirm that individuals' imagination is limited and collective creativity enhances effective problem-solving processes, supporting the found element of 'collective imagination'. Each individual draws on personal experiences to match professional situations in which similar problems and solutions are encountered, through a process in which imagination and personal experience complement each other (Hargadon & Bechky, 2006; Steen, 2013). In ABA, each professional can make use of specific imaginative tools, skills, and perspectives that relate to their professional experience, but can also evoke imaginative skills from their personal lives, unrelated to their profession. Participants should familiarize with each other during ABA, and freely choose how to distribute roles amongst themselves within the partnership, taking into account each other's personal and professional skills.

In relation to their time span, ABA were found to develop effectiveness through 'systematic and routinized experience'. Repetition, which can cover various days and but can also shape a long-term project, in which participants meet regularly for a longer period, is also argued to open up many more opportunities (Metzger, 2011). With a systematic approach, participants gradually build trust and find 'comfort out of the comfort zone'. In a long-term project, participants also perceive and grasp the objective, the creation of a joint project which will lead them to a final and cooperative NBS (Metzger, 2011). These routinized activities could take place either with the same group every time or with alternating and dynamic groups. New participants can also emerge as relevant over time, even by choice of the group itself.

The 'presence of an external facilitator' in mediating activities and debates turned out to be very important. The facilitator may be one person or a group of people, for example an artistic collective, class, or organization. Many interviewees recommended facilitation by an artist or group of artists, as they would be able to keep an impartial stance and are skilled in seeking alternatives to verbal language for the expression of IoN. Bulkeley and Castàn Broto (2013), Edwards et al. (2016), and Metzger (2011) also illustrate how such artistic mediation positively impacts the outcomes of the approach. An innovative business concept for the artistic sector arises from this proposal, along the edge between the arts and governance disciplines. Indeed, the facilitator should be 'specialized' in guiding NBS stakeholders out of their comfort zone without alienating them, as this would compromise the entire approach; conversely, their aim is to build trust between the artist(s) and the group, and among the group itself, through a fun and stimulating environment that is similarly out of the comfort zone for all of them (Metzger, 2011). At this point, the facilitator must ensure that no participant monopolizes the activity and the subsequent discussion and, instead, all participants feel on the same level and power imbalances are temporarily broke down (Edwards et al., 2016).

Spatially, interviewees highlighted the positive effects of experience of the landscape and of the physical area where NBS are being developed. This allows sensory experience and reception to inform the discussion and the choices made, along with rational and conceptual arguments. A study by Plambech and Van den Bosch (2015) supports this suggestion and adds other elements to a fully immersive experience. Nature has the capacity to enhance creativity and artistic expression: the sensory stimuli of natural environments lead to a greater acceptance by participants of ideas that are out of the norm or 'wild' (Plambech & Van den Bosch, 2015). A positive mood change is also triggered in a natural environment, which allows ideas to be combined in new ways, making new associations, and thus enhancing the process of creative problem-solving (Plambech & Van den Bosch, 2015). Playfulness is a fundamental component in enhancing mood, stimulating creativity, and thinking differently, as it allows people to establish curiosity, reflection, and exploration of new mindsets and forms of expression (Tyrväinen et al., 2003). Activities in ABA should playfully add to participants' overall experience and knowledge, and have a positive effect on mood, providing new material for value systems. Peacefulness, quietness, fascination, and beauty help the sensory and mental process, as well as mental health. All these traits commonly avoid the feeling of dictated or forced behavior, which is a quality that, on the contrary, hinders creative mental processes (Plambech & Van den Bosch, 2015). Though strongly manipulated and functional landscapes can have this counterproductive effect, this thesis argues that manipulated landscapes can also stimulate a feeling of need for change, especially when the group reflects upon NBS projects to develop in underdeveloped spaces. As one of the interviewees suggested, contrast can be material for ABA: paying attention to the difference between the sensory experience (e.g. auditive) of a traffic street and of an urban forest can stimulate emotional and aesthetic reactions that build into re-thought values, not only at the personal level. Hence, 'place immersive experiences' in urban spaces where nature and NBS are not yet present is also constructive for NBS partnership working and should be included in ABA.

On the organizational level, it was found that keeping participation in ABA numerically limited avoids the risk of depersonalizing the experience and losing perception of the individual value system. If the total number of stakeholders exceeds this capacity, activities can be repeated with other groups of participants. It is important to make sure that the diversity of actors, stakes, conflicts, and IoN is spread homogeneously throughout each group, to attempt to ensure equal or proportional representation in each group. While the findings suggest maintaining a 'manageable size of the group' to avoid depersonalizing effects, Franz (2005) additionally suggests reflecting upon the role of friendship in co-governance. With a small group, participants have more opportunities to build trust and friendship, which may have relevant consequences on the way individuals learn, share, and collaborate (Franz, 2005).

Finally, the role of data integration was found to be relevant for the effectiveness of ABA. While in the findings both a top-down and a bottom-up approach were suggested, it is here argued that a bottom-up approach, as described in the findings, is more appropriate to ABA than a top-down approach. For this reason, Fig.9 reports that ABA require a 'bottom-up and abductive approach'. Hence, in ABA no predefined rules-of-the-game should be 'imposed' on participants – related, for example, to legal or bureaucratic boundaries of NBS development – but that these should be integrated at a later stage of co-governance. In the conceptual framework, ABA were defined as 'spaces of possibility' where imagination is shared with other stakeholders. A top-down approach, defining all the rules, would hinder the imaginative capacity of participants, and would be better suited to a result-oriented creative approach than process-oriented ABA. As the aim of ABA is to tackle beliefs and values of stakeholders, and not to complete a design for NBS, it is not yet important to obtain an implementable result, at this stage. The space should be kept as empty as possible to leave the range of creative possibilities uncontaminated. Only defining a clear aim of the process from the start helps and is necessary for participants to channel creativity and imagination towards a practical and stimulating objective. Thus, the goal must be clear, whereas the way to get there should be free of rules. In other words, Steen (2013) explains how effectively co-creating design and solutions is an abductive process where problems and solutions are explored, developed, and evaluated at the same time, in an iterative process of co-evolution. In abductive processes, participants start by only knowing the desired outcome, the goal, and throughout the process develop both the object ('what') and the working principle ('how') (Steen, 2013). Through this abductive process, participants can debate the assumptions, values, and beliefs that stand behind each choice or proposal that is made. Before discussing 'what' and 'how' to create a solution, during ABA the group can explore and understand 'why' questions related to choices for NBS.

# 7 CONCLUSION

This research investigated the capacity of ABA to contribute to interdisciplinary co-governance related to urban nature and NBS. The findings show that ABA has clear potential to contribute in improving decision-making during the initial, explorative, and opening phase of NBS interdisciplinary co-governance. ABA allows individuals to broaden their value systems as they reflect on their beliefs, values, and value orientations, before moving on to the stage of making decisions regarding agreements and compromises. The thesis initially argued that the arts have a special bond with nature, and during the investigation many stakeholders recognized and highlighted this unique relationship. The research also shows that ABA can only be effective if applied correctly, avoiding the risks and dangers involved in professional bias towards artistic disciplines applied to urban governance, and excessively 'out of the comfort zone' situations for participants. Therefore, one of the aims of this research was to develop a guiding framework for the effective implementation of ABA in NBS interdisciplinary partnerships and co-governance, to support and incentivize interdisciplinarity and multifunctional solutions. This was achieved by first exploring the variety of IoN among NBS stakeholders, and then exploring the necessary input and directions for a well-functioning art-based approach to raise awareness and inform partners about co-existent value systems.

Urban NBS stakeholders were found to have different images and value systems of nature and could be clustered into two large groups. The first group comprised stakeholders assigning value to urban nature for its aesthetic qualities, related to attractiveness, accessibility, and recreational functionality. In antagonism, the second group of stakeholders recognized urban nature as valuable for its ecological integrity and the harmonized health of humans, flora, and fauna. Such 'misalignment' is largely a result of whether or not people recognize the ecological value of nature, which potentially affects the achievement of multifunctionality of NBS and the different weight of each function.

A series of constitutive elements was identified for effective implementation of ABA in NBS co-governance, summarized in the guiding framework presented in Fig.9. While this provides an overview of recommendations based on existing theory ('cool' setting; process orientation; explorative and inspirational phase; absence of a storyline), more practical input was provided by interviewees and further developed and targeted through practical implications in the discussion (collective imagination; systematic and routinized activity; presence of an external facilitator; place immersive experience; manageable size of the group; abductive and bottom-up approach). The application of this framework to

ABA allows the opening of 'spaces of possibility and governance' where participants playfully challenge and question themselves and others, and leave their comfort zone, minimizing bias and power hierarchies. The precautionary character of some of the input provided and theorized in the framework helps to avoid situations where participants feel pushed away or uncomfortable, challenging the common belief and perception of the arts as something 'unprofessional' or inappropriate.

The ultimate aim of this investigation is perhaps to challenge preconceptions and present unconventional and explorative opportunities for an innovative field of study such as NBS. Hopefully, this research can contribute to the opening of new 'spaces of possibility and governance' and creativity, not only for future stakeholder partnership working, but also for future academic research and for the imagination of the readers of this thesis.

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# APPENDIX 1

**Practical examples of ABA that can be effectively implemented in NBS partnership working**

After gathering ideas and suggestions from interviewees, after interpreting the data, and with the inspiration of the researcher enriched by conversations with stakeholders, the following exemplary ABA practices were envisioned:

## *Drawing and collage*

The 'collage' tool is considered by Butler-Kisber and Poldma (2010) as a powerful tool in partnership working. Participants are given blank pages to express, for example, by drawing or creatively writing what appears in their mind when they think of attractive and beautiful natural settings. The same can be done to represent their mental images of unattractive nature, or a natural space they would absolutely avoid. The pages, which can remain anonymous, are then collected and attached to one large poster, which will then depict a collective image of nature, either attractive or unattractive. This first phase is led with no rules. After the collage is completed, participants can discuss the reasons behind the result and rationalize choices that have been made instinctively.

Some participants may not feel comfortable with drawing or writing creatively (e.g. many people do not feel skilled in drawing). The possibility to let someone draw for them is thus kept open: if artists are involved, they can 'be the hands' of stakeholders who wish to be helped, as long as they do not reinterpret the ideas of the person they are helping. Regardless, the work of art itself is not of importance, as the aim is to have a simple sketch of the IoN of the participant.

## *Drawing over*

*W*ith the clear aim of developing the urban space in which the workshop takes place, participants are given photos of the area they are sitting in. They then draw on top of the photos, adding and hiding whatever they wish to change. Not only is their imagination triggered by the photos, but they can stand up and experience the space, observe it from any perspective, and take into account the experience of all the senses. The activity is heavily affected by the choice of data released, as is discussed in the findings: if participants are given no rules, not many of their visions will be implementable, but a clear picture of their

value systems will be available to the group for discussion. On the other hand, if many or all rules are initially shared (e.g. 'cables and pipes do not allow trees to be placed in these spots'; 'the Municipality has already chosen to develop a residential area here'), the activity will be less explicative of the preferences of participants, but the resulting designs will stand a greater chance of being implementable.

*Soundscapes*

Within a place-immersive experience, the eyes of all participants are covered by facilitator(s), who will then keep watch on the now blind group. Participants can remain still and sitting, or they can move around with the attentive assistance of the facilitators. Participants remain quiet and are thus fully immersed in the sounds and smells of the place. If this activity is done in motion, fears may become preponderant (e.g. traffic noises, fear of falling, obstacles, etc.) and are thus highlighted in the discussion that follows. By discussing the experience, participants may find that the soundscape needs to be protected and preserved, or that it needs to be changed. Experiencing certain fears may clarify and highlight the problems of the place that need to be tackled.

*Subjective mapping*

This activity has been carried out in an investigation of ABA implemented by Metzger (2011) to reflect with participants on the meanings that individuals assigned to places, and consequently the meaning of 'attractiveness'. Mapping is a problem-solving activity based on cause-effect models which is often implemented in stakeholders' meetings and therefore has a component of familiarity to the group. Professionals are familiar with mapping activities that follow a logical flow of reasoning on a blackboard, with boxes and arrows and with the aid of post-its and colors. However, this ABA has a central out-of-the-box aspect: instead of mapping, for example, goals, scenarios, and data, which have an objective and fixed character for the group, Metzger (2011) suggests letting participants map their personal experiences and routines. By doing this, participants are encouraged to look at their personal mindsets from the outside, and find patterns and irrational habits, while drawing them in a logical map. This process leads individuals to an 'estrangement' and defamiliarization with themselves and encourages them to blend objective reasoning with subjective experience, accepting their interconnectedness. Participants can undergo this process alone or in small groups, and then confront with each other regarding the result.