# Storying Care with the Dommel

## A place-based engagement with more-than-human care ethics


Lea Graef

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# Preface

*"(…) despite the final work being attributed to a single writer, it is really produced through relationships – a co-construction based on human/nonhuman entanglements."*
*(Bayes, 2023, p.226)*

In starting off this thesis, I want to highlight some of the co-constructors of this thesis in words and drawing:

Kornelia Dimitrova who welcomed my interest with enthusiasm, introduced me to the Dommel, and enabled me to work on this project. Thank you so much for this opportunity and the truly inspiring and insightful conversations.

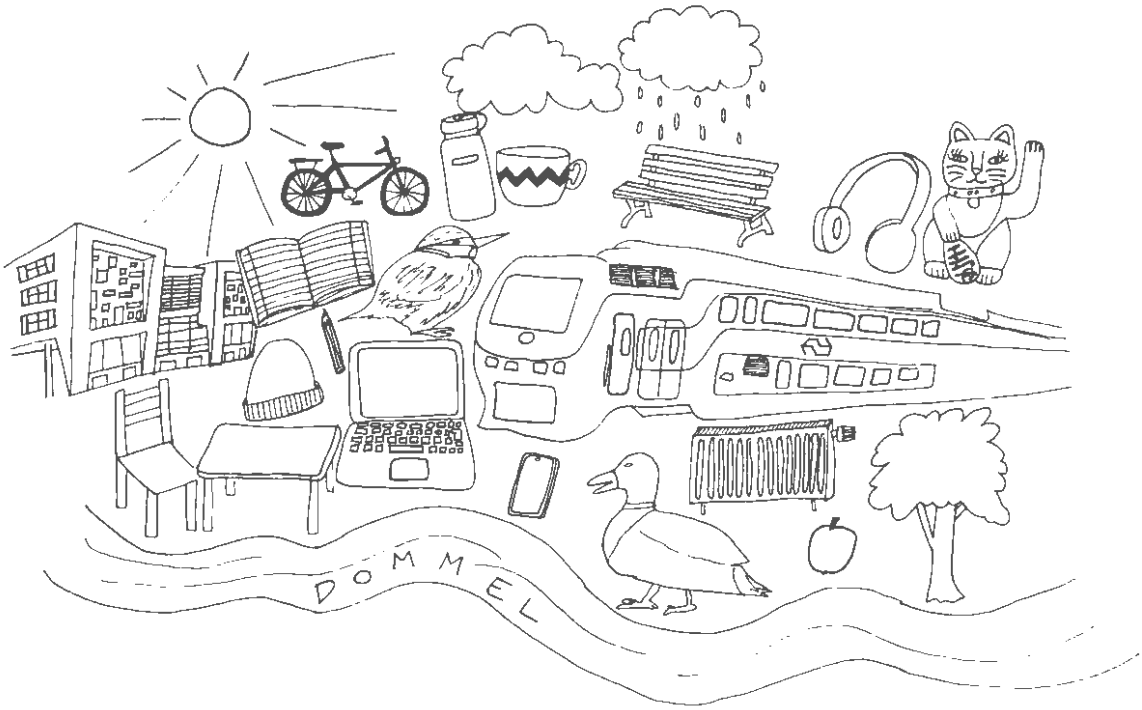
All the people who gifted their time to talk with me about their relationships with the Dommel. I enjoyed encountering and engaging with all your stories, hopefully I did them justice.

I want to thank Huib Ernste for his patient, relaxed, and reassuring supervision. I am grateful for the space and freedom you gave me in exploring this topic at my own pace despite a rather result-oriented academic environment.

Many thanks to Minke as well as the 'cave-gang', aka Kymé, Max, Fulvio, and Cleo. You all gave me much support, advice, and something to look forward to when going to university.

My family and friends. Thank you for all your love, support, and encouragement.

And of course, without the Dommel, I would have needed to write this thesis about something else.



# Abstract

During the last decades, the benefits of urban greenery and water have increasingly moved into focus as means to make cities more healthy, sustainable, and liveable. As a growing number of scholars sees the well-being of humans and nonhumans as intertwined, they demand urban planning to be more sensitised to diverse more-than-human needs in order to better respond to social and environmental conditions. Considering this demand, this research sets out to explore challenges and opportunities for spatial interventions in urban nature by focusing on a specific site along the river Dommel in Eindhoven. Integrating care ethics with theories of more-than-human storytelling, this ethnographic and narrative study explores how Eindhoven's capacities to care for biocultural diversity are facilitated and restricted by discerning the social, cultural, environmental, historical, and political stories that take place at and with the Dommel. Through this approach, it becomes apparent that the diverse stories that the Dommel affords can be both enabling and disabling for the city's caring capacities depending on their role in and relation with the material landscape.

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# 1. Introduction

## 1.1 Project Framework

Garden city, sanitary city, smart city, sustainable city or 15-minute city: throughout history there have been many attempts at conceptualising what the ideal and good city should entail - a city that supports its inhabitants in leading healthy and liveable lives (Sepe, 2022; Pincetl, 2010; Pozoukidou & Chatziyiannaki, 2021; Swensen & Berg, 2020). In 2015, the United Nations put this ambition on its agenda with its 11th Sustainable Development Goal that calls for making cities and human settlements inclusive, safe, resilient, and sustainable (United Nations, n.d.). In this target, a future is envisaged that provides "access to basic services, affordable housing, efficient transportation and green spaces for all" (United Nations, 2023, p. 34).

In the pursuit of healthy and liveable cities, bringing 'nature' back into cities has been on the agenda of many city councils (Bush et al., 2020). As the design of urban outdoor spaces moves into the focus for determining health inequalities in urban liveability frameworks (Cassarino et al., 2021), urban green and blue spaces are increasingly valued for their contribution to human well-being (World Health Organisation, 2016, 2021). For instance, 'ecosystem services' such as regulating temperature, air pollution or storm water management are some among many highlighted benefits. The need for and value of so-called 'urban green and blue infrastructure' becomes even more apparent through the advancing climate and ecological crises. Greenery and water are hence included in urban planning and design to enhance healthy, resilient, and sustainable living environments.

However, several scholars are pointing to the era of the Anthropocene and make an appeal to reconsider how we think about environmental sustainability (Forlano, 2016). It is argued that in the search for solutions to collective action problems such as climate and ecological crises, the focus has been too much on means rather than ends (Lövbrand et al., 2015).

> *Rather than maintaining the ideal of a 'natural' or 'sustainable' nature that can give us guidance on how to conduct our collective lives (...), it is important to ask critical questions about the kinds of environments we wish to inhabit and the kinds of societies we want to produce.* (Lövbrand et al., 2015, p. 216)

For a growing field of 'more-than-human'[1] scholars, this means to challenge assumptions about humans as autonomous and self-sufficient to recognise humanity's material dependence, embodiment, and fragility (Greenhough, 2014; Lövbrand et al., 2015). On the one hand, this entails acknowledging the "multiple and unequal social values, relations, and practices of power that accompany actual humans" (Baskin, 2015, p. 16). For instance, people's experiences and responses to urban green and blue are complex and diverse as their

[1] A more-than-human approach builds on biophilosophy, science studies and phenomenology to develop "an understanding of bodies, including 'human' bodies, as already an effect of their *composition* in and through their relations with the world." (Braun, 2004, p.1354, as cited in Greenhough, 2014)

relationships with nature develop through their understanding of place, values, current and past interactions, and associated cultural understandings and social relationships (de Kleyn et al., 2020). In this way, the benefits that 'nature' provides to city inhabitants are unevenly spread and only accessible to privileged groups that possess certain social capitals and characteristics (de Kleyn et al., 2020; McPhie, 2019).

On the other hand, more-than-human scholars argue for decentring the human as the primary focus of discourse (Flower & Hamington, 2022) and recognising that 'the' environment is not simply a background to 'our' daily lives (Jon, 2020). Instead, it is argued that the world should be viewed as constituted by 'more-than-human' relations (Robertson, 2018). From this understanding humans are seen as enmeshed with diverse materials, objects, living and non-living entities in assemblages and thus cannot be thought of as separate from their environment (Poe et al., 2014). Taking this perspective, cities are co-produced within networks of very different actors which may include humans, nonhumans, objects, and matter (Watson, 2019a). As de Kleyn et al. (2020, p. 207) argue, given this multiplicity and diversity of stakeholders, winners and losers emerge from outcomes of decisions and practices related to urban nature that can be people, plants, animals, or ecosystems. Hence, we should "begin to think of cities not in terms of needs we already know but in terms of diversities whose connections we do not know" (May, 2005, p.166, as cited in Steele et al., 2019).

Taking this into account, Houston et al. (2018, p. 203) argue that a 'good city' in the Anthropocene requires us to imagine it from a more-than-human frame which acknowledges new creative and queer alliances between biocultural diversities and multispecies environmental justice. Likewise, for a growing field of scholars, caring for the survival and well-being of humans means caring for the survival and well-being of nonhumans (Krzywoszynska, 2019). In this way, repair and renewal rely on a perspective of 'being-in-common'[2] that must include all the human and nonhuman others with whom we share the city (Fincher & Iveson, 2015; Popke, 2010). Following this perspective, possibilities can be opened up for the making of places that are more responsive to environmental and social conditions (Elands et al., 2019; Robertson, 2018).

As planners have the role and obligation to help reduce social problems, paying attention to social justice and diversity still appears to be limited by dominant scientific, technical, and economic discourses (de Kleyn et al., 2020). Thus far, planning and designing for 'good urban form' have often resulted in ideas which have been insensitive to human and nonhuman diversity and wellbeing (Imrie & Kullman, 2016). Therefore, it becomes relevant to ask, "what kinds of emotional, political and epistemic, frames orient our caring acts?" (Van Dooren, 2014, p. 293). As well as how we can build and maintain care-full relationships that recognise difference and interdependence across biocultural complexity (Steele et al., 2019, p. 411).

Against the background of such questions, I will examine a bioculturally complex case to gain knowledge on what facilitates and restricts careful relations and responses in urban nature planning that lead to more liveable cities for a diversity of bodies. The case takes us to the riverbanks of the Dommel that passes through the Dutch city of Eindhoven. Rivers are

[2] Being 'in-common' refers here to the argument that everything that exists, always exists in community with others (Popke, 2010). Hence, we always share our presence in timespace with others and are 'in-common' with them. Taking a more-than-human perspective, these 'others' can be both human and nonhuman. In this way, the 'in-common' can be conceptualised as a more-than-human sociality.

quoted as being "signifiers of human history, shapers of urban morphology, activators of urban public spaces and landscapes, connectors of nature and culture (...) [and] providing sustainable, liveable and high-quality places for people" (Mosler, 2021, p. 113). Rivers in cities matter therefore in many ways and make part of bioculturally diverse engagements (Watson, 2019a).

Just as there has been renewed interest in rivers as common goods in recent years (Mosler, 2021), the Dommel is no exception. With an industrial past that was marked by physical separation from the cityscape, the Dommel has received renewed attention during the last decades to enhance the ecological and sociocultural landscape of Eindhoven. Since the beginning of the 21st century, the Dommel has been officially part of the Dutch National Ecological Network[3], a network of natural areas throughout the whole country for the benefit of flora and fauna. Within this network, the Dommel is functioning as a so-called 'Ecological Connection Zone'[4], which means that it is serving as a bridge between different larger natural areas to support migration, as well as enlarging habitats. As part of becoming a connection zone, the Dommel was ecologically restored during the past two decades to host diverse sorts of fish, plants, mammals, amphibians, and others.

Apart from the recent effort to support biodiversity along the Dommel, the river also received renewed attention for its recreational potential. As the river passes right through the city centre of Eindhoven, it serves as a 'green wedge' along which people can walk, bike, do sports, and relax (Flux Landscape Architecture BV & Gemeente Eindhoven, 2022). Additionally, the municipality appreciates green and blue infrastructures for their ecosystem functions, their contribution to climate resilience, the potential for urban agriculture and as part of the city's history and identity (Gemeente Eindhoven, 2016). The Dommel is therefore incorporated in spatial plans to increase the liveability and health of the city's inhabitants (Flux Landscape Architecture BV & Gemeente Eindhoven, 2022).

As Eindhoven strives to be an "attractive, healthy, liveable, and climate adaptive city" (Gemeente Eindhoven, 2016, p. 11), combining these different ambitions and balancing between cultural and natural interests proves to be challenging in practice. Providing a good urban blue and green infrastructure for a growing population in a limited amount of space while preserving cultural heritage and biodiversity is not easily incorporated (Gemeente Eindhoven, 2016). Sharing a biologically and culturally diverse space means that there are many perspectives, values and relations that need to be considered. It therefore becomes relevant to "be attentive to the rich and creative variations in how the in-common is enacted and maintained in everyday spaces of community, and the ways in which ethical responsibility is lived and narrated" (Popke, 2010, p. 36) to strive for more socioecologically responsive solutions.

Accordingly, this thesis will trace bioculturally diverse relations to explore how a caring being-in-common at and with the Dommel is shaped. For this purpose, I use Emma Power's 'caring capacity' (2019) as a theoretical frame that focuses on the socio-material, spatial and temporal relations that make care possible. Furthermore, I make use of the notions 'storied places' (Van Dooren & Rose, 2012) and 'storied matter' (Iovino & Oppermann, 2014). In these theoretical conceptualisations natural-cultural interactions are approached as narratives (or stories) that co-emerge through the material and discursive making of places. In this way,

[3] '*Nationaal Ecologische Hoofdstructuur*'
[4] '*Ecologische Verbindingszone*'

stories are understood as more-than-human achievements which allows me as a researcher a way of attending to other-than-human ways of being.

## 1.2 Thesis Outline

Having set the scene, I will elaborate in this chapter on the research aim, questions, and relevance and give a background on the project 'Stewards of the Dommel' that I collaborated with for this research. The second chapter will dive into the theoretical background of this thesis. Chapter three discusses the methodological strategies and processes I followed to collect data. Afterwards, in chapter four, I will present the results in the format of three (hi)stories. In chapter five, the conclusion, I will provide an answer to the research question, followed by recommendations, and finally a reflection on the whole research process. Overview of respondents, interview guide, and code book are found in the appendices I. II, and III.

## 1.3 Research Aim and Questions

The aim of this thesis is to make a place-based contribution to the discussion of how cities can plan for liveable and just cities in the Anthropocene, specifically what it means to negotiate diverse natural and cultural values around green-blue urban space. For this purpose, I explore how caring-with biocultural diversity from an 'in-common' perspective is facilitated or restricted at the river Dommel in Eindhoven. I conduct qualitative research at a specific site along the Dommel by observing spatial practices, interviewing citizens and professionals, and desk study to discern the social, cultural, environmental, historical, and political *stories* that take place at and with the Dommel. In doing so, I aim to reveal challenges and opportunities for spatial interventions in urban nature that are more environmentally and socially responsive to more-than-human needs. This is achieved by applying a caring lens to the narrations of perspectives, agencies, and capacities of different more-than-human bodies.

Furthermore, this research is intended as a contribution to the project 'Stewards of the Dommel' set up by Studio Kornelia Dimitrova. It aims to inform the initiative and relevant institutions and stakeholders such as the municipality of Eindhoven on how the Dommel riverbank can transform while considering its biocultural diversities. In this way, I strive to provide recommendations as to what a "healthy and green environment" (Gemeente Eindhoven, n.d.) at the Dommel in Eindhoven might look like from a more-than-human perspective.

To fulfil this aim, the main research question is the following:

*Taking a storied approach, to what extent is Eindhoven's capacity to care-with biocultural diversity at the Dommel made (im)possible?*

To answer this question, I have formulated the following sub-questions:

1. In what ways has the Dommel's riverscape been storied throughout time?

By answering this question, I can sketch a spatiotemporal account of the stories that mattered in the historicity and production of the Dommel's riverscape. These include stories told by different research participants as well as stories found online and in grey literature.

2. Which socio-material relations come to matter as care or concern in people's stories of the riverscape?

   Answering this question will give an account of the encounters that are made at the riverscape. By attending to how care and concern are storied, the socio-material relations that are perceived as (un)caring can be described.

3. Which stories matter in the city's negotiation of care for the Dommel's biocultural diversity?

   The answer to this question can reveal which discursive and material matters play a role in the city's negotiation of care. In this way, the politics of in- and exclusion as well as the relations that make or break the city's abilities to respond carefully to the ecologies of the Dommel will be discussed.

## 1.4 Relevance

**Societal Relevance**

With urban life being a large driver of planetary change, being attentive to diverse human-nonhuman relationships is a vital component of finding ethical, just, and inclusive forms of urban planning (Houston et al., 2018, p. 197). Scholars suggest that by paying attention to bioculturally diverse relations, new ways of developing receptive, responsive, inclusive, and connected forms of urban nature spaces can be found and help specialists to design strategies (de Kleyn et al., 2020; Alikhani et al., 2021).

By attending to material-discursive relations or 'stories' between the Dommel, humans, and nonhumans, this research can help to make visible the diverse ways people make sense of this blue-green urban environment and the ways these might conflict or friction with other humans' and other-than-human ways of being. By making these stories available, it can "encourage people to question their relationship with places and encourage the kinds of social values that drive alternative ways of living as ecological beings" (Bayes, 2023, p. 51).

Additionally, it can be useful to professionals and urban planners in the question of where opportunities and barriers might lay to negotiate diverse natural and cultural values and ultimately how to plan urban nature spaces for a material just, climate-adaptive, and sustainable city (Robertson, 2018; Houston et al., 2018). Hence, this research can support collaborative dialogue between diverse perspectives as a means for more successful environmental governance processes (Gearey, 2022).

**Scientific Relevance**

Urban nature and waterscapes are stated to be often framed in ways that undercut differences and diversities and that allow them to be consumed and appropriated by certain (human) users (Acharya, 2015; Pitt, 2018; Phillips & Atchison, 2020). Attending more-than-human ways

of co-producing places and meaning becomes increasingly emphasised as relevant for constructing more viable multispecies urban futures (Turner & Morrison, 2021; Robertson, 2018). Similarly, a reframing of urban planning that develops more ethical relationships with nonhuman species is stated as necessary (Jon, 2020). Yet, a practical question remains "as to how such co-identification with the environment, and the reconnection with other living things that it allows, might be articulated and embedded in ethical decision making" (Strang, 2020, p. 205). Also, challenges remain of how to attend to more-than-human beings.

In this regard, the notions of 'stories' and 'care' may serve as promising lenses. As stories are proposed as a means to attend to nonhuman placemaking, they can give voice to the complexities of collective worlds (Van Dooren & Rose, 2016). However, as McCormack (2019) argues, there is no neutral way of imagining the more-than-human in place. Here, 'care' might be a valuable addition as an ethical frame. Care is thought to serve as a utopian ideal for envisioning how to best facilitate care for people, planet, animals, and future generations, and Power and Williams (2020) urge geographers to ask "is this a city that cares?" (p.9) in their approach to the urban. Additionally, care can serve as a way of engaging with more-than-human worlds in terms of what matters and what is excluded from mattering (Petersmann, 2021).

As both care and stories are viewed as emergent from intra-actions, combining both into stories of care enables a way to lay open the politics of inclusion and exclusion at the Dommel. Merging a care lens with stories might enable to acknowledge the existing cultural and ecological historicity of places (Jon, 2020) while respecting "individuals' and collectives' agencies as imagined, perceived, and experienced by/for themselves" (Choi et al., 2023, p. 33). In turn, stories can help attend to more-than-human care relations. In these ways, this research can contribute to discussions of urban care ethics as well as nonhuman storying and test whether combining both approaches is suitable for studying multispecies geographies.

Lastly, while there has been increasing interest in wet places, inland watercourses have generally received less attention so far (Pitt, 2018). In this way, this research can generate valuable insights and contribute to waterscape scholarship.

## 1.5 About the Project 'Stewards of the Dommel'

This thesis research is in collaboration with the design research project 'Stewards of the Dommel' established by architect and social designer Kornelia Dimitrova and spatial designer Felix Bell. 'Stewards of the Dommel' came forth out of the project 'Stadsoever Eindhoven' (translates to 'city shore Eindhoven') which focussed on stimulating mental and physical health as well as a sense of community in a public green space in the city centre of Eindhoven (Dimitrova, 2022). The 'Stadsoever' project was supported by the municipality of Eindhoven as part of their health policy and by organisation 'Nature for Health'. It was guided by the question: how can small green spaces in the city contribute to building individual and collective wellbeing and resilience? The project entailed a programme of activities such as mindfulness, sketching, poetry, and nature meditation that took place in the summer of 2022 at a location next to the Dommel's banks and opposite the Van Abbemuseum for contemporary art. Apart from the workshops that were given, the project was also supposed to entail a spatial intervention in the form of temporary decks. Those were envisioned to be placed at the Dommel's riverbank to give people more space where they could enjoy what the river has to

offer. However, the intervention proved to be difficult because of ecological concerns such as the breeding season of local birds. Hence, it was decided to delay the physical intervention.

Due to the restrictions encountered with the spatial intervention, it became apparent that social and ecological interests at the site were closely intertwined, making a multilateral dialogue necessary. A new question was posed: how can the Dommel river remain an ecological pillar while evolving into a landmark for the community? In this vein, the project was seen as an opportunity to experiment with a dialogue across different stakeholders such as ecologists, citizens, and policymakers about the future of the Dommel. A new project evolved called 'Stewards of the Dommel.'

This adaption was also the starting point of my thesis research. I first came into contact with the project in November 2022 and started collaborating. From spring to autumn 2023, the project entailed an explorative spatial design research on 'temporary spaces of care', conducted by Kornelia Dimitrova and spatial designer Felix Bell. Based on the conception that the Dommel's riverbank is defined by multiple care relations from different actors of which some are formal, personal, spontaneous, and so on, the idea was to make these different 'stewards' of the Dommel visible to each other. For this purpose, Dimitrova and Bell asked different individuals, amongst experts, professionals, inhabitants and also myself to create 'incomplete maps' of care and concern of the site. These maps were overlaid and analysed to create an atlas of care and concern entitled "Stewards of the Dommel: A gentle manifesto" (Dimitrova & Bell, 2023). As part of my collaboration and thesis research, I conducted debriefing interviews with the other participants and made a historic account of the site.

# 2. Theoretical Framework

In this chapter, the theoretical basis of this research will be elaborated. Firstly, a background is given on urban natures as more-than-human, bioculturally diverse and how attending to the nonhuman is made possible through stories. This is followed by an account of previous academic work studying water and specifically rivers as active actants. In the third part, more-than-human care ethics, the analytic 'caring capacity', and earlier works on care in an urban context will be elaborated. This will be followed by the conceptual model and finally, a short summary of this chapter.

## 2.1 City Natures: More-than-humanism, Biocultural Diversity, Storied Places and Storied Matter

As briefly mentioned, since a few decades there has been a shift towards viewing nature as vital to urban futures accompanied by ecosystem services frameworks (Phillips & Atchison, 2020). Within such framings, urban nature is valued in ecological and economic terms and the associated professional expertise is emphasised (Phillips & Atchison, 2020). Whereas this trend is relatively recent, values and perceptions of urban nature have differed throughout time.

Within urban planning exists a long tradition of seeing cities as separate from nature (Houston et al., 2018). Western ontological dualisms such as nature/culture and urban/rural have demarcated the city as a product of concentrated human needs (Phillips & Atchison,

2020, p. 158) and reduced nature to a tamed and domesticated physical environment for primarily human habitation (Steele et al., 2019).

Since the 1990s calls have been made in urban scholarship to pay more attention to more-than-human worlds and human-nonhuman relations (Phillips & Robertson, 2020). Since then, much geographical research has started to question human framings and categorisations of nonhumans in space. Conceptions of the city as 'hybrid' were drawn that emphasise the entanglement of nature and culture (Hubbard, 2018). By building on assemblage and actor-network theory, scholars such as Sarah Whatmore stated that entities never simply belong to either the sphere of 'nature' or 'society' (O'Brien, 2004). Instead, the city should be understood as

> *co-constructed with a range of nonhuman others - not just in the sense that human production requires relationships and cooperation between human and nonhuman beings, bodies, and matters, but also in the ways that weather, environmental conditions, other animals, and water courses determine how cities are built, and can change or shape those processes.* (Bayes, 2023, p. 13)

In these so-called more-than-human conceptions of the city, agency is not limited to humans but distributed throughout networks between all kinds of living and non-living entities, materials, and elements.

Following this perspective, Poe et al. (2014) describe urban nature areas as "places in the making, where the identities, histories, struggles, and hopes of human and more-than-human converge" (p.5). In a similar vein, Phillips and Atchison (2020, p. 159) propose to understand urban greening as a co-production - an ongoing process of mutual achievement between humans, plants, soil, sun, fungi, and more. In this way, understanding urban nature areas as collective achievements requires knowing and living with diverse humans and nonhumans (Phillips & Atchison, 2020). By considering nonhumans simply as nature or green stuff, their differentiations and significance are undercut, which is stated to limit the potential of responding to current socio-ecological crises (Phillips & Atchison, 2020, p. 158).

Not all nonhumans are the same, and neither are all humans (Steele et al., 2019). People have diverse and complex perceptions, expressions, and relationships with urban nature (de Kleyn et al., 2020). To some, urban nature areas might be spaces of belonging whereas others might be excluded. To attend to this multiplicity of differences and the ongoing power relations, the following part will discuss the concept 'biocultural diversity' and issues of biocultural belonging.

### 2.1.1 Biocultural Diversity and Belonging

The concept 'biocultural diversity' (BCD) was developed in the 1990s for studying the interrelatedness between people and their natural environment (Elands et al., 2019). It was first described in the Declaration of Belém of the 1988 Congress of Ethnobiology in Brazil, which responded to the global concerns around the loss of tropical forests, multiple animal and plant species, as well as the disruption of indigenous cultures around the world (Stålhammar & Brink, 2021; Elands et al., 2019). Formalised in the 1992 UN Convention on Biological Diversity, it was recognised that biodiversity-related knowledge, innovations, and

practices of indigenous people needed to be maintained just as well as biodiversity itself (Elands et al., 2019).

Traditionally, BCD has been used to study relations between biodiversity and cultures in tropical countries and rural landscapes (Vierikko et al., 2016). Yet, in more recent years, BCD is increasingly applied to urban contexts, especially for the planning and management of urban green infrastructure (Stålhammar & Brink, 2021; Vierikko et al., 2016). In these studies, BCD has been recognised as an alternative to the ecosystem services approach which has been criticised for its dichotomous framing of nature solely as a service provider (Stålhammar & Brink, 2021).

The premise of BCD is that knowledge, values, and actions towards nature are grounded in culture (Elands et al., 2019). As a lens, it enables us "to look at the complexity of culture and nature and their relationships in different situations and contexts" (Vierikko et al., 2016, p. 9). It therefore invites one to question one's own knowledge and to be sensitive to different contexts (Vierikko et al., 2016, p. 8). Similar to BCD, other scholars have written about 'environmental imaginaries' that describe the social constructs through which the physical environment is made sense of and cultural and personal values, attitudes and beliefs are determined (Bayes, 2023, p. 12).

When recognising the social construction of nature, Stålhammar and Brink (2021, p. 613) note that it becomes apparent how wildly different ontological perspectives of the same things or pluralities of worlds can be, which raises questions of power and inclusion. Diversity can be a source of disputes and conflicts when for instance the experience of a particular urban green space by one group is at the expense of another (Elands et al., 2019). In the same manner, de Kleyn et al. (2020) write of 'winners and losers' from outcomes of decisions and practices related to urban green (p.207). At the same time, benefits concerning health or leisure from urban nature areas are much more accessible for people with 'rich' socio-economic backgrounds (McPhie, 2019). Hence, the legitimacy and possibility of practices in and with urban nature can differ greatly, creating senses of (un)belonging (Poe et al., 2014).

Besides uneven power relations emerging from cultural complexity, scholars urge to consider negotiations between people and nonhumans as individuals and collectives as well (Phillips & Atchison, 2020). Roos (2021) states that everything humans intentionally, emotionally, or unknowingly do might have consequences for biodiversity. Yet, all too often biodiversity is reduced to a malleable instrument for ecosystem services and a static background for human life. Approaching biodiversity as a list of species and their numbers negates dynamics in space and time and leads to actions that are not responsive to environmental conditions (Roos, 2021).

Furthermore, species are attributed certain characteristics such as 'native', 'invasive', 'wild', or 'domesticated' that determine their belonging (O'Gorman, 2014). This type of boundary-making is based on cultural ideas about who fits in which types of places (O'Gorman, 2014, p. 284). Often this relates to the imaginary of the city as a machine that requires management through technology, as Bayes (2023, p. 187) explains. This technical control may include for instance defensive architecture or CCTV in public spaces.

Different scholars have noted the similarities between cultural and ecological belonging (O'Gorman, 2014). The binary native/invasive is demonstrated to resonate with ideas about nation and purity (Poe et al., 2014). Both humans and nonhumans can equally be considered out of place and their exclusion legitimised by for instance their informality (Steele et al., 2019). Yet, as multiple scholars elaborate, belonging is not an inherent quality but a

relational achievement that is contested between biocultural meanings (Phillips & Atchison, 2020; Poe et al., 2014; O'Gorman, 2014). For instance, a particular tree might be unaccepted in a place due to its production of large pinecones that are perceived as a risk by people walking below it (Phillips & Atchison, 2020). At the same time, the tree might be perceived as bringing value to the city when for example providing shade on a sunny day or filtering traffic polluted air.

Biocultural belonging therefore emerges from "the interplay of human and more-than-human agencies with sociocultural, political, and ecological contingencies" (Poe et al., 2014, p. 14) and is hence a "complex, dynamic, socio-ecological, and spatial-temporal negotiation" (Phillips & Atchison, 2020, p. 163). Attending to how biocultural relationships are created and contested and with what consequences for whom can reveal how we organise ourselves and live together (O'Gorman, 2014; Poe et al., 2014). In this sense, ideas of nature are seen as mirroring human culture (Whiston Spirn, 1997).

Different scholars have asked what it might mean to live together in biocultural complex worlds in which diversity is acknowledged (Phillips & Atchison, 2020; Sachs Olsen, 2022; Van Dooren & Rose, 2012). To attend to these diverse forms of co-living is quite challenging, especially as nonhumans are thought to be incapable of speaking for themselves. In response to this challenge, scholars have proposed to attend to 'stories' of place and matter (McCormack, 2019; Van Dooren & Rose, 2012; Iovino & Oppermann, 2014) which will be elaborated next.

### 2.1.2 From Multispecies Placemaking to Storied Places and Matter

As mentioned, a growing body of scholars emphasises the importance of recognising how not only humans but also nonhumans make places and have meaningful engagements with their surroundings (Choi et al., 2023). Scholars such as Duhn (2017) and Sachs Olsen (2022) deal with so-called 'multispecies placemaking' in which attention is given to how urban places are co-created through more-than-human relations. Duhn (2017) for instance, suggests attending to how power relations and politics shape how places are made, who makes them and who is affected by placemaking. Hence, attending to issues of biocultural belonging and diversity.

Yet, it becomes tricky to be attentive to multispecies placemaking as the challenge remains how to access nonhumans' experiences on their terms. So, while more-than-human scholars recognise nonhumans as having agency, debate remains on the nature of such agency and how to access it (Hubbard, 2018; Robertson, 2018).

In their article, van Dooren and Rose (2012) approach this dilemma through the notion of 'story'. Based on the Uexküllian[5] conception that every organism has its own life world and life story - its 'Umwelt' - van Dooren and Rose explain that a story is "that which emerges out of an ability to engage with happenings in the world as sequential and meaningful events" (p.3). In this way, stories are seen as the thing that connects one event to another within a specific context that produces meaning (McCormack, 2019, p. 72). Through this conception, van Dooren and Rose argue that nonhuman animals can be considered as narrative subjects in their own right. They explain that the experiences of nonhuman animals are rendered meaningful by them in ways that humans can think about through the lens of 'narrative' (p.4).

[5] Jakob Johann Freiherr von Uexküll was a Baltic German biologist, who described the notion of 'Umwelt'.

The capacity to tell a story is for this purpose therefore not a necessary condition, the ability to construct a storied experience of the world is sufficient.

As different populations of nonhuman animals understand, negotiate, value, and actively shape their places, these meaningful multispecies temporal and spatial relations are what van Dooren and Rose refer to as 'storied-places' (McCormack, 2019). In these places of multispecies encounter, meaning-making practices overlap and are entangled with each other and embedded in histories and systems of meaning. Notably, storied-places do not mean that meaning is projected onto a landscape, but that meaning and matter are co-constitutive (McCormack, 2019, p. 73).

Apart from van Dooren and Rose, other scholars have also applied a storied approach to understand the more-than-human realm. For instance, Turner and Morrison (2021) deal in their article with dogs as meaning-making and placemaking agents through performing narrative inquiries on how dogs place themselves in accounts of 'agentic emplotment'. In this manner, a notion of narrative is used to understand more-than-human placemaking for designing cities that accommodate multiple species.

Whereas these scholars mostly stick to the narratives of nonhuman animals in their research, scholars from material ecocriticism push further and explore the narrative agency of all matter. Based on Karen Barad's agential realism, Iovino and Oppermann (2014) have defined 'storied matter' to describe how "material phenomena are knots in a vast network of agencies, which can be 'read' and interpreted as forming narratives, stories" (p.1). In their account, all "bodies, things, elements, toxic substances, chemicals, organic and inorganic matter, landscapes, and biological entities" (2014, p.7) intra-act[6] with each other and with the human dimension which establishes meanings in and through textual and material bodies (Karkulehto et al., 2020). This is what Iovino and Oppermann (2014) refer to as 'storied matter'.

To explain in other words, material and discursive practices always co-emerge (Raipola, 2020). Human individuals never author a story alone, but stories are told together with nonhuman agencies. Hence, from a storied matter perspective, nonhuman matter is seen as being capable of influencing human narrative sensemaking and possessing narrative agency. For instance, images and stories that humans make about a certain place reflect and stem from the encounters made with this particular place (Karkulehto et al., 2020). This means that places have the capacity to make us experience and think about them in the ways we do experience and think about them (Karkulehto et al., 2020, p. 7).

In this theoretical understanding, the world consists of a web of meaning "in which humans, nonhumans, and their stories are tied together" (Iovino & Oppermann, 2014, p. 5). Matter and meaning are therefore not thought of as separate but through one another: "matter being an ongoing process of embodiment that involves and mutually determines cognitions, social constructions, scientific practices, and ethical attitudes" (Iovino & Oppermann, 2014, p. 5). In this way, material ecocritics such as Iovino and Oppermann argue that there is an implicit textuality in the becoming of material formations. A material phenomenon can be read 'in text' through its discursive representations but also 'as text' through its emergence in concrete reality. Whether or not a material phenomenon is perceived and interpreted by a human does

[6] 'Intra-action' is a term defined by Karen Barad to replace 'inter-action' (Kleinman & Barad, 2012). While 'intra' means 'within' and 'inter' means 'between', they prefer the former term to denote that in an act there is no fundamental separation between entities. Agencies do not exist prior to an encounter and are inherent to an entity, but instead agency emerges from 'within' the relationships between entities.

not matter for its literal 'mattering'. Storied matter therefore refers to the formative power of matter that humans can interpret as stories but are not necessarily doing.

But, as Iovino and Oppermann and similarly van Dooren and Rose state, by narrating the stories of matter and places, new narratives and discourses can be gained that give voice to the complexities of collective worlds. By telling stories with nonhuman others, new connections and accountabilities can be drawn (Van Dooren & Rose, 2016).

Yet, there is some critique of narrating nonhuman agencies through storied places and matter as it always entails some degree of anthropomorphising. This means that as humans we cannot know the experiences of nonhumans and are limited in our perspectives (McCormack, 2019). In this sense, Raipola (2020) also speaks of 'unnarratable matter'. He explains that matter may indeed produce meaningful actions that can be represented and interpreted by humans as stories, however, human explanations of these actions always follow a narrative logic that by default misrepresents the 'creativity' of matter. When humans make stories, they assign some sort of causality to the events they witness to make sense of them and to gain a sense of cognitive control in their imagination (p.270). Hence by narrating nonhuman agencies, the complexity of an emergent more-than-human world is lost and ignored (Raipola, 2020).

Instead of attending to the narrative agencies of matter, Raipola (2020) proposes to analyse how matter escapes narrative descriptions. In this way, material ecocriticism could study the "complex relationships that are lost when active and emergent matter is (...) 'storied' and brought into our cultural landscape" (p. 277-278). Such an approach would, according to Raipola, not be seen as the patent answer to the global environmental crisis, "but rather as a major part of the problem" (p.278). Despite his critique, Raipola also mentions the necessity of stories. Whereas they might never be considered as truth claims, stories are necessary to make sense and respect the role of the world beyond humans.

Apart from Raipola, other scholars emphasise the necessity for nonhuman storying as well. For instance, McCormack (2019) highlights nonhuman storying as an ethical strategy to make room for multispecies conviviality. As there is no neutral language or way of imagining the more-than-human in place, questioning dominant narratives, imaginaries and discourses can open ways for finding more responsive modes of storytelling (Bayes, 2023; McCormack, 2019). By constructing narratives that acknowledge the similarity and entanglement of the human and the nonhuman, insights can be gained on how to settle conflicts in ecologically diverse communities (Bayes, 2023).

In this vein, attending storied accounts and imaginaries of urban nature places can reveal who and what might come to matter and why. Yet, one needs to be mindful that these stories cannot reveal an essential truth if there ever is one.

## 2.2 Urban Riverscapes and the Agencies of Water

"The story of cities is also the story of waters" as Bayes (2023, p. 154) writes. Rivers and other water sources have been part of the urban since the first settlements as they meant a stable source of food and hydration. However, relations between people and water are manifold throughout space and time (Bayes, 2023; Watson, 2019a). Today, urban water spaces are theorised through many different frames such as infrastructure, symbol, culture, politics, management and delivery, consumption, the economic and the social (Watson, 2019a, p. 3).

In recent years, urban water spaces are also increasingly in focus as sites for enhancing urban lives as they are mentioned to bring many benefits (Völker & Kistemann, 2013; Alikhani et al., 2021; Gearey, 2022; Zingraff-Hamed et al., 2021; Mosler, 2021). Among those benefits are for instance important ecological functions such as hosting a wide range of biodiversity, as well as cultural services such as providing space for recreation, leisure and 'wilderness experience' (Alikhani et al., 2021; Zingraff-Hamed et al., 2021). Further, urban rivers and other water features are increasingly mentioned as parts of nature-based solutions to limit the effects of climate change as they for instance reduce the urban heat island effect and support stormwater management (Alikhani et al., 2021).

Additionally, urban waterfronts are seen in the context of rebranding and enhancing the cityscape by creating new cultural places and economies of consumption (Watson, 2019a). Especially rivers can be iconic to their cities, attracting tourism and creating a sense of identity and belonging (Watson, 2019a; Mosler, 2021). They are perceived as enhancing spatial quality by offering views, accessing water, creating recreational areas, allowing visual permeability of built spaces, creating landmarks, and enhancing aesthetic values (Mosler, 2021, p. 113).

Apart from such ecological, economic, and social benefits, several studies have also explored the health benefits and mental well-being associated with urban water spaces (Völker & Kistemann, 2013; Buser et al., 2020). Foley and Kistemann (2015) for example describe water spaces as health-enabling landscapes.

Because the management of riverscapes has historically emphasised resource exploitation which added environmental stressors and decreased their resilience, many rivers worldwide are in a critical state today (Zingraff-Hamed et al., 2021). Walsh et al. (2005) describe the 'urban stream syndrome' which states that urbanisation has led to reduced biotic richness and elevated concentrations of nutrients and other pollutants (Zingraff-Hamed et al., 2021). Springett (2019, p. 91) also writes of riverscapes retaining "stories that have been shaped and scarred by an anthropocentric idea of urbanization that is at odds with the underlying natural ecology." Hence, numerous calls are made to protect urban riverscapes and other forms of urban blue spaces which emphasise the many benefits they bring (Alikhani et al., 2021; Gearey, 2022; Zingraff-Hamed et al., 2021; Mosler, 2021).

However, rivers are not seen solely in a positive light. Zingraff-Hamed et al. (2021) note that urban river spaces may also have negative impacts on human health through for example polluted water, eutrophication which increases the risk of diseases, or plants possessing toxic or allergenic properties. Furthermore, urban water spaces risk enhancing displacement and social injustice when they become part of regeneration schemes (Toomey et al., 2021). Research has shown that urban green and blue are generally associated with higher property prices and that interventions may lead to so-called 'green' or 'ecological' gentrification (Bockarjova et al., 2020; Bayes, 2023).

Similarly to such accounts, Pitt (2018) states that water can simultaneously enable and disable human well-being. It can be perceived as "a provider of enjoyment and general well-being, but also represent an array of dangers or aversion and repulsion" (Kaaristo, 2020, p. 172). Pitt therefore proposes the term 'wateriness' to demonstrate that water is diverse and affords different encounters depending on person, place, and context. In the same vein, she prefers the term 'watery' space over 'blue' space to avoid popular imaginaries of water as blue, clean, and healing. 'Wateriness' then highlights watery places as configurations of material and meaning that vary across time, space, and interaction.

Other scholars such as Neimanis (2017) have also approached water as both an embodied and embodying substance, meaning that 'water' is both a human idea and at the same time the 'stuff' of human bodies and not separable from (human) materiality (p.21). In this way, water is thought to bridge the realms of nature and culture.

Scholarship that approaches watery spaces as entanglements of social and natural processes generally applies the term 'waterscape' (Karpouzoglou & Vij, 2017; Acharya, 2015). Within waterscape research, watery places are perceived as the products of water and social power interplaying (Acharya, 2015). Importantly, water is not constructed as a static background against which social and political power happens, but as an active actant[7] (Acharya, 2015). Water is highlighted as being able to hold multiple meanings at the same time - as being 'multivocal' (Acharya, 2015). Additionally, water is conceived as 'transmutable' as it can take many shapes and operate across a range of scales, sites, and social actors (Baviskar, 2007, as cited in Acharya, 2015, p. 373). In this way, it is emphasised how "water enables and assembles a multiplicity of publics, embodied practices, cultural practices and diverse forms of sociality" (Watson, 2019a, p. 2).

In studying urban rivers as waterscapes or 'riverscapes', it becomes apparent how they can be simultaneously rural, urban, and wild (Kaaristo, 2020). Rivers are "multi-use spaces for various individuals, groups and stakeholders, including boaters, walkers, joggers, anglers and cyclists, navigation authorities and volunteer organisations, but also for non-human animals, from wildlife at home on the waterways to domesticated animals and pets" (Kaaristo, 2020, p. 169). Through their transmutable materiality and multivocality, they can "invoke passions, attachments, encounters and connections" (Watson, 2019b, p. 974).

As rivers have different meanings and connections for different individuals, Kaaristo (2020) elaborates that the territorialisation processes of multiple actors might cause friction. For instance, boaters and anglers might not get along as both groups are perceived as disturbing to the other (Kaaristo, 2020). In the same manner, cultural ecosystem services such as recreation may conflict with other ecosystem services such as providing a habitat for endangered species (Zingraff-Hamed et al., 2021). Struggle over water can therefore be both about material resources but also about different meanings and values that are generated by it (Acharya, 2015).

Hence, as rivers "enrol bodies in new connections, socialities, alliances and politics in unpredictable ways" (Watson, 2019b, p. 961), this 'throwntogetherness' (Massey, 2005) of human, nonhuman, water, and land cannot be defined "merely through geographical, temporal or historical denominators" (Kaaristo, 2020, p. 173). Different scholars find that rivers' popular representations and imaginations often produce forms of injustice (Watson, 2019a; Acharya, 2015; Bayes, 2023; Gearey, 2022). For instance, Acharya (2015) finds that watery spaces are regularly reduced in ways that allow them to be consumed and appropriated. Further, Watson (2019a) finds that governments, water authorities, and managers usually imagine only one sort of watery space user that adheres to the 'ideal' of white male subjects, or traditional nuclear family households. Bayes (2023) even goes further to question watery space imaginings as human-centric.

[7] 'Actant' is a term coined by Bruno Latour to denote that agency is distributed throughout networks of actors that are more-than-human (Dwiartama & Rosin, 2014). The use of 'actant' instead of 'actor' is suggested to emphasise relationality over singularity.

All these authors suggest attending to these framings in order to be able to reimagine waterscapes in ways that acknowledge diversity. Riverscapes and other watery places should be conceptualised as "liquid and relational occurrences generated by numerous dynamics, entanglements and interrelations" (Kaaristo, 2020, p. 174).

## 2.3 Care Ethics in an Urban Context

Originating from the 1980s, feminist care ethics initially provided an alternative frame to justice-oriented moral theories in Western philosophy by challenging the implicit public/private divide (Keller & Kittay, 2017). Moral theories up to that point were seen as neglecting aspects of human dependency and reproduction and not addressing the range of women's life experiences. According to these theories, moral and political agents are depicted as independent and autonomous adults. Instead, care ethicists highlight human experiences as constituted and situated in relations with others (Keller & Kittay, 2017).

Throughout the decades, theories on practice and ethics of care further evolved and went beyond topics of gender-specific discourses and intimate relationships, to cover the larger social, political, and economic contexts in which care takes place (Keller & Kittay, 2017; Krzywoszynska, 2019). Fisher and Tronto (2003) have been very influential in this step by defining care in a universal manner as

> *a species activity that includes everything that we do to maintain, continue, and repair our 'world' so that we can live in it as well as possible. That world includes our bodies, our selves, and our environment, all of which we seek to interweave in a complex, life-sustaining web. (p.34)*

Care is then not a one-way dependence but emerges in the world as relational space of 'being-in-common' (Buser et al., 2020; Gabauer et al., 2021).

Additionally, Fisher and Tronto described four different phases of care: caring about, taking care of (or caring for), care giving, and care receiving (see Figure 1, below) (Tronto, 2013). The first phase, caring about something, is the capacity to perceive needs, whereas the second phase already involves an assigned responsibility to the ones taking care of. In the third stage, the actual care-giving work is done, whereas the fourth stage entails the response of the one(s) receiving care that makes an assessment of the care work possible. Thus, this practice view on care suggests that "we must consider the concerns of the care-receiver as well as the skills of the care-giver, and the role of those who are taking care of" (Tronto, 1993, p. 118).

Roughly a decade later, Tronto also identified a fifth phase, namely 'caring with', which emphasises the relationality of care practices and highlights care as an ideal for a functioning democracy: care "be[ing] consistent with democratic commitments to justice, equality, and freedom for all" (2013, p. 23).

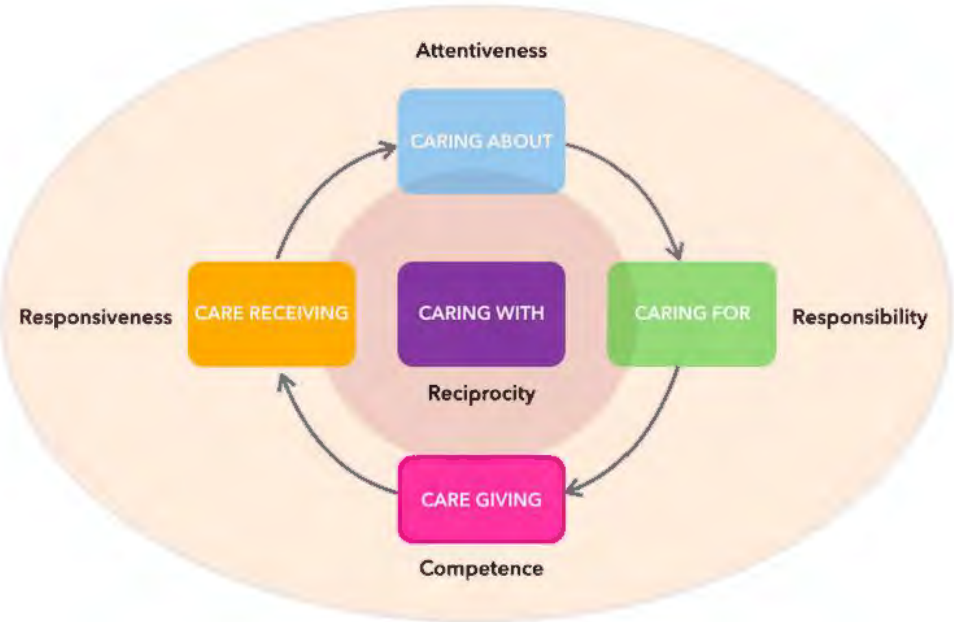


*Figure 1 Care Phases taken from Moriggi et al. (2020, p. 4)*

Whereas Fisher's and Tronto's definition of care was originally thought of in a humanistic manner, María Puig de la Bellacasa (2010) pioneered in applying it to the realm of 'naturecultures'. While acknowledging that care is a "human trouble", she argues that it is no "human-only matter" (2017, p. 2), as she advocates to recognise the caring work that nonhumans perform. Through this reasoning, she extends the previous understanding of human agency in care towards a more-than-human one.

She further elaborates that care is the condition for all life as it is the totality of practices that enable it: "even when caring is not assured (...), in order for them to merely subsist somebody/something has (had) to be taking care somewhere or at some time" (Puig de la Bellacasa, 2012, p. 198). Whereas both humans and nonhumans might not care for each other, they are dependent on each other in their intra-active becoming (Petersmann, 2021). Therefore, Puig de la Bellacasa finds it absurd to disentangle human and nonhuman care relations (Flower & Hamington, 2022).

Furthermore, Puig de la Bellacasa (2012) points to the fact that care by no means is harmonious, rewarding, or comforting. Both neglect and care exist not necessarily intentionally or morally but emerge in an embodied way through the practical everyday doings of interdependent existences that are inevitably troublesome (2012, p.199). Therefore, "relations foster care for some things rather or more than for others" (2017, p. 166). In other words, interdependency and reciprocity do not equal symmetrical care relations, but rather imply the multiplicity of care(s) that may express power inequalities (Buser et al., 2020).

A recent body of publications explore this link between justice and care and highlights the transformative potential care can have in urban settings (Canoy, 2023). Care is highlighted as a utopian ideal for envisioning how to best facilitate care for people, planet, animals, and future generations (Power & Williams, 2020). In this vein, Power and Williams (2020) urge urban geographers to ask, "Is this a city that cares?" (p.9) in their approach to the urban. When looking through a caring lens, it is suggested that urban space needs to be viewed as a product of (un)caring spatial practices and social relations (Gabauer et al., 2021).

To apply care ethics as an analytic to the urban realm, Power (2019) advances Fisher's and Tronto's above-mentioned care phases and merges them with assemblage thinking. Whereas Tronto proposed 'caring-with' as the fifth phase of caring - as the practice of communal solidarity and caring about care - Power repurposes the concept as a way to conceptualise the practice and relational emergence of care.

In her reasoning, she departs from ideal visions of feminist care to ask what assembles the capacity or potential for care. As she elaborates: "care becomes a generative sociomaterial relation that is productive of and emergent through assemblages of actors who are not always supportive of care" (2019, p. 766). As this care takes place in unequal and imperfect worlds, caring-with conceptualises how caring is both enabled and limited through its relational context.

Power then describes three frames that advance caring-with as an analytic for caring capacity. The first frame locates caring-with as a socio-material relation, meaning that care takes place together with human and nonhuman others, similar to Puig de la Bellacasa's argumentation. Based on assemblage theory, Power elaborates that the overall capacity of an assemblage emerges from the relations that individual entities with their own properties form. The second frame foregrounds the "historical depth and future potential of care assemblages" (p.767). It highlights that care and the capacity for care are influenced by past practices and relations. When analysing current capacities and future potential for caring, one has to be aware of the past and current capacities of assemblages. Finally, Power's third and last frame highlights the spatiality of caring-with. Care is spatially constituted through practices and relations that stretch across near and distant places. For instance, state policies can shape the potential for caring-with from quite some distance. Power explains that for researchers, this means to be aware "of how spatially proximate and distant actors and relations co-constitute the capacity for care" (p.768). In summary, when applying caring-with as a concept to analyse caring capacity, one needs to explore the socio-materially, temporally, and spatially expansive networks that make care (im)possible (Figure 2).

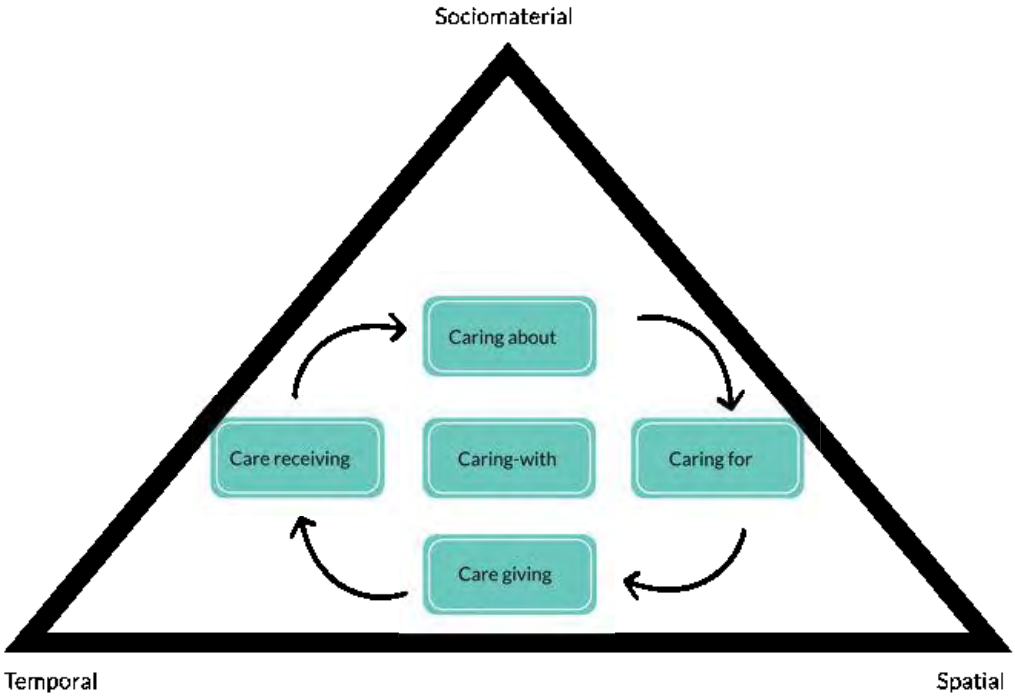


*Figure 2 Power's (2019) Caring Capacity*

Other scholars have taken similar approaches to Power and describe care and environment as co-constitutional while focusing on the factors that influence caring-with an other. For instance, Buser et al. (2020) analyse how water and nonhumans in their various material and discursive contexts participate in the production and facilitation of forms of social and environmental care. They do this by turning to the agency of water in specific relations and encounters and by examining how these enable the potential for social and environmental transformation. They find that not only the materiality of water itself but also the surrounding and associated built forms participate in creating caring landscapes.

Further, Veldpaus and Szemző (2021) use care as a notion to reframe built heritage conservation to foreground the ethics that are involved. They found that caring for a place is not separate from caring for people, thus highlighting the importance of reflecting on what it actually entails to protect and restore a complex of buildings. They propose to focus on "how the work of care sustains or ignores certain structures, institutes, groups, and histories, on who gains from it, and who loses out, and who stands to lose if care is withdrawn" (p.201).

In a similar vein, Imrie and Kullman (2016) find that 'misfits' between bodies and built form result from ways of designing urban space that are not sensitised to the diverse needs of bodies and collectives. Like Power (2019) they view care as a socio-material practice, hence the planning and design of an urban environment can greatly shape the capacity for care. They argue for the importance of exploring how systematic incompatibilities are formed and maintained by urban design as professionals plan based on their values. Instead, Imrie and Kullman propose a 'caring design' that remains open enough to enable humans and nonhumans to reshape their environment to their requirements. To achieve this, Imrie and Kullman state that designers do not require new instruments and methods but rather skills and sensibilities that "allow them to attend to the fragile attachments among the human and nonhuman others for whom they design to foster caring relationships" (p.11).

In a similar line of thought, Choi et al. (2023) approach in their article design for liveable urban futures as matters of care. They argue that urban interventions should "enable, rather than create, experimental and relational possibilities that lead to profound alterings of urban conditions" (p.33). By looking at the politics of inclusion and exclusion, they argue that knowledge can be gained on how to co-create urban interventions in more pluralistic cultural and social contexts. This entails a "respect for individuals' and collectives' agencies as imagined, perceived, and experienced by/for themselves" (p.33).

To Jon (2020) reframing urban planning in a way that develops more inclusive and ethical relationships with nonhuman species involves caring for the existing cultural and ecological historicity of a place and recognising the wider scales and interconnections. Urban planners therefore need to "provide more synthetic accounts of 'bigger pictures', supporting contextually competent built environment interventions that are sensitive to the surroundings and their cultural/ecological historicity" (p.412). In this way, he emphasises like Power (2019) the spatiotemporal context.

All these works suggest the importance of care ethics in an urban context. Care is demonstrated as being deeply intertwined with issues of urban planning, heritage, design, and environment and rooted in socio-material, temporal, and spatial relations. As a lens, it provides a way to engage with more-than-human worlds in terms of what matters and what is excluded from mattering (Petersmann, 2021). As the above-mentioned works have shown, this involves a focus on context, lived experiences, and politics of inclusion and exclusion across socio-

material and spatiotemporal dimensions. Applying Power's caring capacity as an analytic helps to discern what factors make it (im)possible to live in the world as well as possible.

## 2.4 Conceptual Model

Based on the theoretical framework, the following conceptual model is drawn (Figure 3).

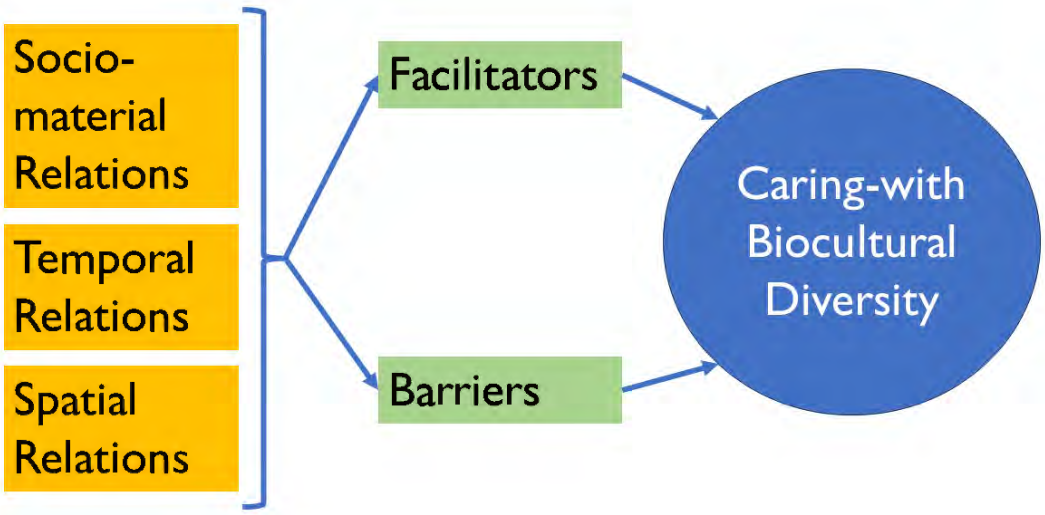


*Figure 3 Conceptual Model*

'Caring Capacity' as described by Power (2019) is assembled through socio-material, temporal, and spatial relations. This research aims to gain insight into how the (im)possibilities for caring-with biocultural diversity are shaped. Therefore, facilitators and barriers serve here as mediating variables. From the relations, enabling and disabling factors emerge (here referred to as facilitators and barriers) that mediate the caring capacity.

## 2.5 Chapter Summary

As the theoretical background of this research is quite extensive, I will summarise the main insights that were gained in this chapter.

In the first subsection, we have seen that urban nature spaces involve a rich diversity of biocultural actors. The term 'biocultural diversity' points to the wide range of differences within nature and culture as well as in the relationships between them in different situations and contexts. This means that both 'nature' and 'culture' are not consistent and static entities, but context-specific. Different ideas and imaginaries about who fits in urban green spaces co-exist beside each other. Whilst some ideas are more dominant than others, this results in instances of cultural and ecological (un)belonging and (in)justices. To attend to the emergence of different forms of biocultural co-living (or being in-common), the concept 'story' is proposed. In this understanding, stories are not seen as a purely human 'thing'. Instead, stories are understood as emergent from the in-between of humans and nonhumans. Nonhuman entities and matter are viewed as possessing 'narrative agency' as they influence

the ways we make sense of them and tell stories. In this vein, by focussing on storied accounts of urban nature places, it can be revealed who and what might come to matter and why.

The second subsection then zoomed in on the diverse relations between urban rivers and people and the manifold meanings that water can evoke. As water can hold different meanings simultaneously and can take manifold forms, it enables and assembles diverse publics, practices, and social relations. Rivers, for instance, can be framed as healing, or threatening, as conservation areas, spaces of recreation or consumption and therefore be instrumentalised or used in different ways. Different uses and framings of riverscapes can conflict and rivers become part of complex politics of in- and exclusion that I will approach through 'stories'.

In the third subsection, I elaborated on care ethics and the relevance of applying 'care' as a lens to the urban realm. 'Care' refers here to the life-sustaining activities of humans and nonhumans that take place jointly. From this point of view, life cannot exist without care and thus includes all practices that enable life. Looking through a caring lens, urban space is understood as produced through (un)caring spatial practices and social relations. Power (2019) suggests approaching these practices and relations through socio-material, temporal, and spatial dimensions to be able to assess the 'caring capacity' - the extent to which care might be possible or impossible in a specific context. In this way, we can assess how (in)justices in a place emerge and persist.

Integrating these three frameworks, this research sets out to examine stories of the Dommel's riverscape to understand how care for the biocultural diverse actors that dwell in it is enabled or disabled. To do so, I needed to collect data. The next chapter will explain how.

# 3. Methodology

In this chapter, I will elaborate my research strategy and the procedures and methods that were used. Additionally, I will reflect on the methodological limitations of this study.

## 3.1 Research Strategy: Urban Ethnography & Narrative Research

To answer the main research question: '*Taking a storied approach, to what extent is Eindhoven's capacity to care-with biocultural diversity at the Dommel made (im)possible?',* an investigation of how care is enabled or disabled for bioculturally diverse actors is needed. To engage with different perspectives, this thesis followed an ethnographic and narrative approach.

Urban ethnography aims to understand a "city from within by engaging in the multiple perspectives and experiences of the people inhabiting, planning, building, policing, organizing, contesting, or using it" (Verloo, 2020, p. 37). Essentially, it is therefore about studying why people behave the way they do and why processes unfold in certain ways (p.40). In this way, it can shake up normative or dominant ideas that people have about the ways a city should be lived and used.

According to Verloo (2020, p. 38), an important focus of urban ethnography is to reveal hidden processes of for example inclusion and exclusion. For instance, by studying policy and governance processes and treating them as discursive practices that are embodied and

enacted, an urban ethnography can juxtapose the experiences of inhabitants with the practices of governors (Verloo, 2020).

In performing ethnography, a researcher is doing fieldwork that commonly includes participant observations, interviews, and keeping detailed field notes (Verloo, 2020). Based on the notes, researchers often apply a specific type of writing that is referred to as 'thick description'. This style is used to describe situations, events, and behaviour in detail by paying great focus on sensory perception (Verloo, 2020). In this way, lives can receive a sort of 'thickness' on the page that gives them vitality and presence in the minds of readers (Van Dooren & Rose, 2016).

As the answer to my research question is based on such thick descriptions of bioculturally diverse lives and care relations, an ethnographic approach hence lends itself well as it allows for close investigations of cultural expressions, urban life, and subgroups (Verloo, 2020). However, to gain insight into human-nonhuman relations, I am also following a narrative approach.

Turner and Morrison (2021) state that narrative approaches are based on the notion that knowledge can be found and understood in stories told. Generally, these approaches are used when research goals are about insights and potential to reflect on commonalities, instead of problem-solving (Turner & Morrison, 2021, p. 5). Thereby, narrative research aims to make statements about meaning in order to describe a context. In narrative stories, contextual details are often given by describing physical, emotional, and social situations to highlight their temporality (Creswell & Poth, 2018, p. 69).

The gathering of narrative stories usually occurs through a variety of data forms such as interviews, observations, documents, pictures, and other sources of qualitative data. Narrative research might occur through "collecting stories of personal experiences in the form of field texts such as conducting interviews or having conversations, retelling stories based on narrative elements (...), rewriting stories into a chronological sequence, and incorporating the setting or place of the participants' experiences" (Creswell & Poth, 2018, p. 198). Through 'restorying', the researcher organises and retells the stories she collected (Creswell & Poth, 2018).

According to Gergen (1994, as cited in Creswell & Poth, 2018, p. 153), narrative researchers should approach stories as forthcoming and not as a pre-existing product of an individual. It is therefore necessary to recognise that all people have stories to tell. As elaborated in the theoretical framework, taking this notion further towards storied places and storied matter admits a way of recognising that stories are jointly told together with the more-than-human. Therefore, using a narrative frame can give insights into how care is co-becoming through material-discursive practices. By analysing narratives stemming from different sources, I can understand who and what matters in what ways in the more-than-human enactment of care. Paying attention to where multiple meanings overlap or create tension and disjunctures, provides a way of gaining insight into how care is facilitated or prevented.

Following these approaches, thus merging urban ethnography with a narrative approach based on stories of place and matter, is for this research particularly useful as it allows a way of engaging with multiple perspectives and cultural expressions as well as, through treating them as 'stories', a way of recognising more-than-human agency.

## 3.2 Operationalisation

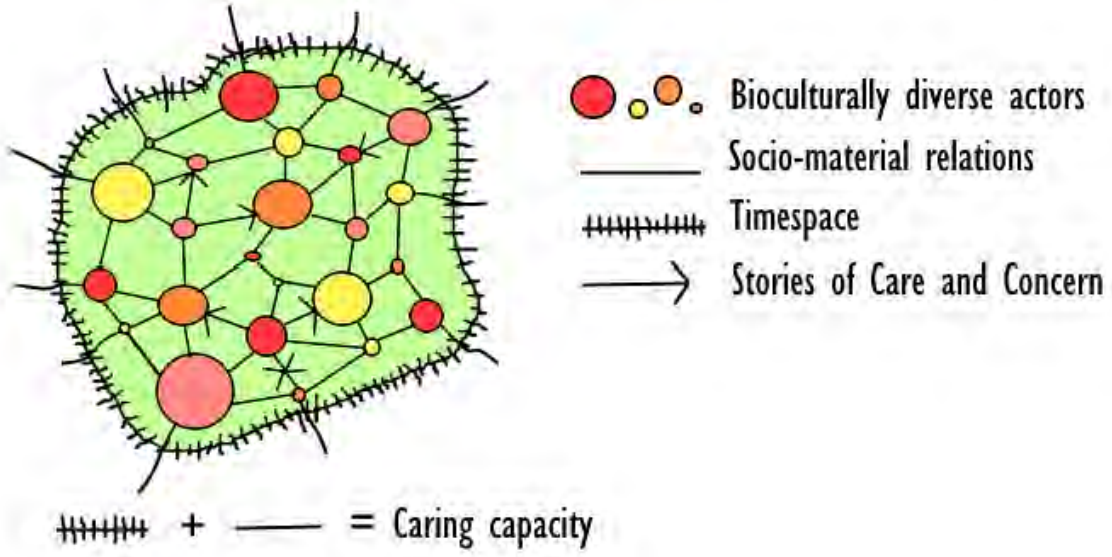


*Figure 4 Operationalisation*

According to Power's (2019) framework, socio-material, temporal, and spatial relations jointly assemble the capacity to care. Care is conceptualised here based on Fisher's and Tronto's (2003) definition as all practices and relations that allow living in the world as well as possible. Additionally, following Puig de la Bellacasa (2017), these practices and relations are understood as more-than-human. To attend to these relations, I approach them through the notion of 'story' as described by van Dooren and Rose (2012) and Iovino and Oppermann (2014).

In this research, I approach temporal and spatial relations through historic accounts, spatial plans, (historic) mappings of the Dommel and surrounding area and respondents' memories. As socio-material, I consider any more-than-human relation mattering within the riverscape. These three dimensions will be witnessed through narratives. The ways that stories express perspectives on nature and culture reveal where care is happening, is possible, or is restricted. Hence, by attending how care and concern for biocultural diversity are storied makes apparent which actants across a bioculturally diverse spectrum are actively cared for, about or receive care and which might be ignored under what kind of circumstances.

## 3.3 The Research Area

This research was developed in cooperation with the project 'Stewards of the Dommel' by Studio Kornelia Dimitrova which focussed on a specific site at the river Dommel in the city centre of Eindhoven (see Figures 5, 6 & 7). This area covers roughly 7,2 ha. It is bordered on the west side by the street 'Wal', on the east by 'Stratumseind' and 'Stratumsedijk', and in the south by 'Bilderdijklaan'. In the northwest, the town hall is situated. The Dommel passes from west to east through the site and is officially part of the national ecological network (see Figure 5) in which it functions as an ecological connection zone. The Van Abbemuseum is located in the south of the site and parts of its architecture reach into the water of the Dommel.


*Figure 5 Nature Network Netherlands (green)*


*Figure 6 Research Area*

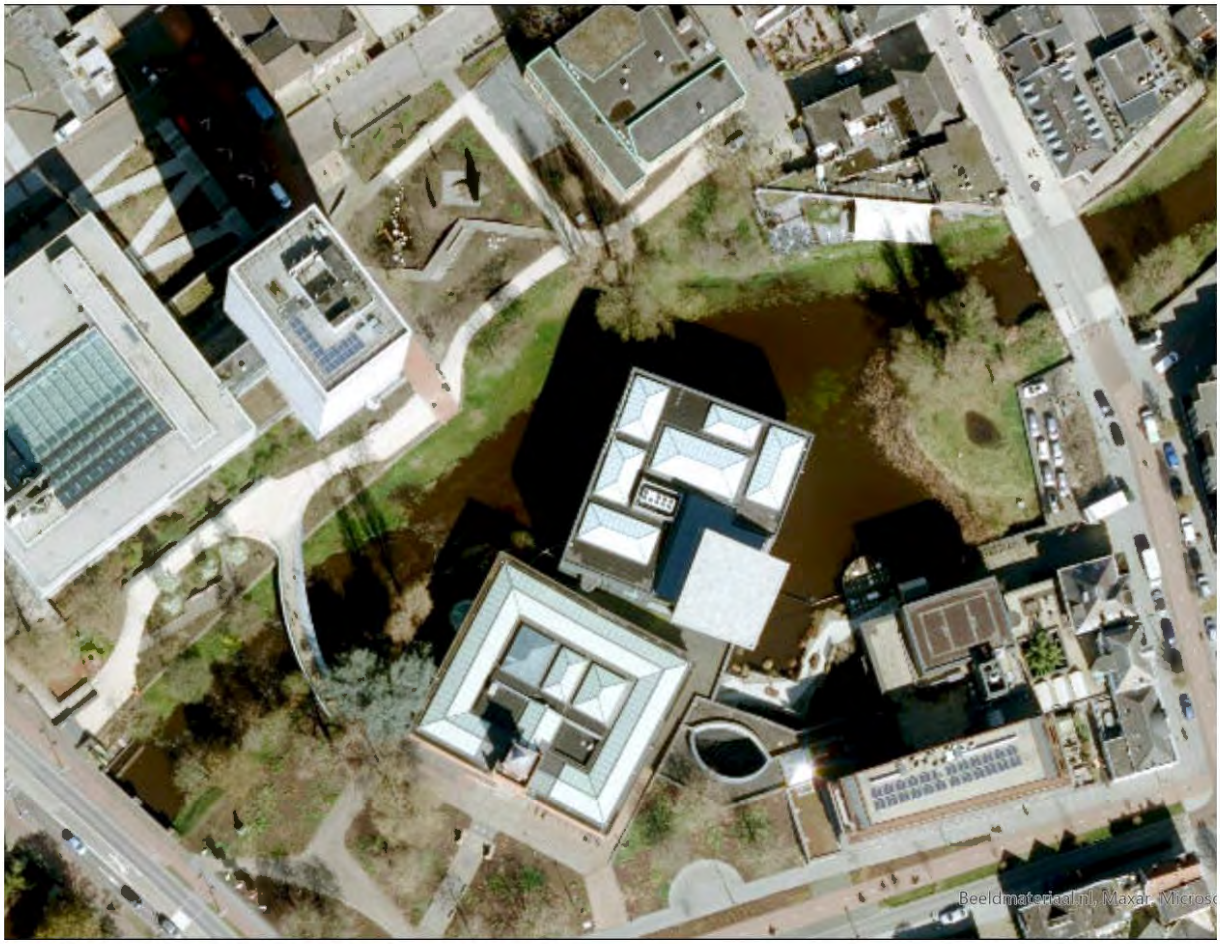


*Figure 7 Aerial Image*

## 3.4 Methods

In this section, I will elaborate on the research process, how data were collected and how they were analysed. Data collection occurred through an iterative process of desk study and fieldwork that entailed document analysis, participant observation, photography, informal and semi-structured in-depth interviews.

### 3.4.1 Desk Study

During desk study, I gathered relevant policy documents such as Eindhoven's green policy plan (see Gemeente Eindhoven, 2016) and its policy plan for greening the city centre (see Flux Landscape Architecture BV & Gemeente Eindhoven, 2022). I also collected mappings of the research area from 'topotijdreis.nl' to reconstruct how the Dommel's shape changed throughout time. Additionally, I gathered grey literature. These entailed (local) newspaper articles, online commentaries, blogs, and reviews on for instance google maps. I performed document analysis on these sources by tracing out the different perspectives and views of the site.

### 3.4.2 Fieldwork

The fieldwork extended over a period from January to August 2023. Within these months, I visited the research area a total of 17 times. Most of these visits were during noon and afternoon, but some were scheduled in the morning and evening, to gain an impression of seasonal and temporal changes. Site visits lasted between 1-6 hours.

#### 3.4.2.1 Participant Observations

During site visits, I performed participant observations. Participant observations are embodied practices that include the researcher's experiences (Verloo, 2020). During observations, I would participate as a user of public space by walking around the surroundings and sitting in different spots. I first started my observations broadly and then concentrated on specific aspects of the research questions, as Creswell and Poth (2018, p. 167) recommend. I watched the physical setting and paid attention to people's socio-spatial practices, as well as to my own thoughts, behaviour, and senses. I would also observe nonhuman animals, plants and how people interacted with them. The observations were documented in field notes, a reflective diary, and photographs. Notes were taken on-site or briefly after observations in proximity to the study site.

#### 3.4.2.2 Interviews

Next to observations, I conducted interviews to gain insight into people's perspectives. According to Pinkster (2020, p. 71), interviews are useful for understanding the meaning that people attribute to their social worlds. Whereas observations are useful for describing the what and how, interviews can help to understand the why. In this way, interviews help to "uncover the motives, attitudes, considerations and experiences that guide people's actions and inform how they relate to and interact with each other" (Pinkster, 2020, p. 71).

For this research, I conducted informal street interviews as well as in-depth interviews. For the informal interviews, I approached people in the research area, introduced myself as a master student doing thesis research and asked whether they would be interested in having a conversation about the area. In these interviews, I followed a narrative approach in which I invited participants to tell me about their experiences with the place (Pinkster, 2020). I would then also ask follow-up questions for clarifications and specifications. These conversations would often entail details on how often and since how long they have been coming to this place, personal memories, what they liked and disliked, and what they hoped for in regard to the future. Additionally, I went into a restaurant that is in the research area next to the Dommel and in a similar way, asked them to narrate their experiences. In this manner, I held a total of 15 interviews with 18 people. Figure 8 shows a map of the locations in which I held these informal interviews. The people I talked to were aged 19 to 80 years and were sampled for maximum variation, but also according to convenience. In two cases, it was me that was approached by my respondents. While some conversations were rather brief, taking around 5 minutes, others ranged from a half to 1.5 hours.


*Figure 8 Locations of Informal Interviews*

Next to the informal interviews, I also conducted semi-structured in-depth interviews. The project 'Stewards of the Dommel' entailed a mapping exercise for which different people had been invited by Kornelia Dimitrova and spatial designer Felix Bell. All participants have been involved with the research area, like e.g. a regular Dommel visitor, as someone who does environmental activities such as clean-up activities or as someone who holds an official position such as urban planner, city ecologist, or landscape architect. In the mapping exercise, participants were handed an incomplete map in which they were asked to draw the shape of the river and personal elements of care and concern. The reason why it was chosen for an incomplete mapping exercise that was done individually at their convenience was to avoid that participants' stories and contributions would be influenced.

Afterwards, I was tasked with conducting debriefing interviews in which I would ask clarifying questions to specify the objects and contents that were brought up in the maps. The maps therefore provided the structure in which I would ask participants to narrate their perspectives. This was accompanied by an interview guide that included some general questions on persona, personal connection, and frequency of visits to the Dommel. Based on the expertise and connection of the interviewee in relation to the river, I would also ask some questions on topics such as maintenance, spatial design, policy, responsibility, and challenges concerning the area.

The number of in-depth interviews was five, of which three were done virtually, one in person at the municipality of Eindhoven, and one on location at the research area. The interviews took between 35 to 75 minutes and were recorded and transcribed after permission was granted. Appendix I includes an overview of all respondents and key narrative themes and Appendix II includes the interview guide.

#### 3.4.2.3 Photography and Field Diary

During observations, photographs were made for different purposes. Apart from allowing the readers of this thesis a visual impression of the site, they also served as additions to the written field notes. Making photos was used as a way to 'look with intention' (Sanders, 2007, as cited in Van Melik & Ernste, 2019). By looking through a lens, I could more consciously capture what precisely grabbed my attention, thus turning photography into a device for becoming a little more aware of my positionality. As this research is largely interpretative on my part, this method supported me in the reflection of my perspectives and angles.

Additionally, I used photos to gain botanical and zoological knowledge of nonhuman life at the site via the feature of 'Google Lens' on my smartphone. With this feature, I could identify some of the animals and plants that I encountered.

Furthermore, I kept a reflective field diary in which I noted thoughts, feelings, impressions, and questions I had regarding this research. Keeping a diary enabled me to reflect on my biases and my own embodied position in place. For instance, through writing down my emotions and reading them afterwards, I noticed that I felt unsafe on-site at times, especially during evenings.

### 3.4.3 Data Analysis

For analysis, all data except for the maps and photos were loaded into the programme 'Atlas.ti'. Coding of the data was mainly inductively done. However, the grouping of codes occurred based on the theoretical framework. The codebook can be found in Appendix III.

## 3.5 Limitations

This research builds upon encounters that were made and connections that were found. Based on these, I 'make' instead of tell stories (McPhie, 2019), as I mediate between my encounter with the encounters of others through my imagination. As a 'storymaker', I narrated together with participants, materials, pen, paper, computer, sun, heating, trains, and many more. That is to say, this research needs to be positioned in relation to specific contexts that I found myself in. If I had talked with different people or been at the site at different times, the findings of this thesis might have turned out differently. In this regard, the following 'limitations' need to be considered.

Firstly, I only paid site visits from January until August and usually around noon and afternoon on weekdays. In this way, I missed temporal stories of for instance autumn, weekends, and early mornings. Additionally, I only interviewed people during the summer months and in this way missed experiences of the riverscape in other seasons.

Secondly, my selection of respondents is to some degree biased. For the street interviews, I mostly approached people who were alone and sitting down as I was timid to disturb people who were in conversations or seemed to be in a hurry. Also, I unfortunately missed certain perspectives in interviews that might have painted a different picture of the caring capacity such as, for instance, the waterboard's or the museum's.

Thirdly, most of the interviews were held in Dutch and as this is not my first language, I might have misunderstood things occasionally or placed what was said in a different context.

Fourthly, I found that asking people to explain their experiences is difficult as many things are intangible and relate to more embodied ways of knowing. In this way also nonhuman storying is challenging as they escape our narrative sensemaking logics.

A further reflection on these limitations can be found in Section 5.3.

# 4. Results

In this chapter, the results of this research will be presented following the structure of the sub-questions. This will be done through narrations of three consecutive stories that I as a storymaker composed through stories of the Dommel's riverscape. The three key themes entail: a spatiotemporal account; encountering bioculturally diverse relations of care and concern; and negotiating the politics of a biocultural in-common.

The first story will give an overview of some of the historical developments of the Dommel and the research area. By giving an account of different spatial elements, a background will be given to the reader about what matters in which ways in the historicity of care. In the second story, I will delve into relations of care and concern that emerge at the Dommel today. As care and concern are often entangled, the third story will examine their interplay and meanings that come to matter in the negotiation of being in-common.

Further, this chapter comprises excerpts from interviews to include storied perspectives in original words. However, most of the quotations needed to be translated from Dutch to English and have therefore been interpreted by me. To ensure readability, the quotations were also edited, while paying attention not to change their content.

By using a code that consists of the letter 'R' for respondent and a corresponding number, it is indicated from which respondent a quotation or story stems. An overview of all respondents is listed in Appendix I.

## 4.1 (Hi)stories of Care I: a Spatio-Temporal Account

According to Power (2019), "care is always a process of caring-with that has roots in time" (p.767). To understand how caring-with the Dommel's riverscape was shaped throughout time, in this section some historic developments will be narrated. Parts of this (hi)story have also been published in Dimitrova and Bell (2023).

### 4.1.1 The Dommel's Origins: Prehistoric Times

At the end of the last Ice Age, 11,000 years ago, the waters of what is today known as the Dommel, formed part of a braided river network flowing over eastern Brabant (Schippers & van de Laarschot, 2009). With this type of river, sand and gravel deposits form temporary channels or 'braids' that weave and shift over the landscape. When the Dommel's riverbed was setting into a permanent shape several thousand years ago, small groups of hunters and gatherers occasionally lived on the sand ridges next to the Dommel (Schippers & van de Laarschot, 2009; Arts et al., 2012). They fished in the Dommel and hunted the game that came to the water to drink (Schippers & van de Laarschot, 2009).

Around seven thousand years ago, their lifestyle gradually transitioned to farming, which made them settle on the higher sandy ridges along the Dommel (Arts et al., 2012). These

farmers depended on the Dommel for the care of their livestock and their craft activities (Schippers & van de Laarschot, 2009). They also began cutting down forests in the valleys for building activities, fuel and making utensils. Archaeological finds such as flints, bronze spearheads, and axes indicate that the Dommel had a ritual function in prehistoric times and at the beginning of recorded history (Arts et al., 2012). These objects that were found in the river valleys are today thought to be offerings made to the gods. During Roman times, humans began slowly to leave the area. In the fifth and sixth century, the Dommel valleys were uninhabited which allowed the primaeval forest a chance to grow again.

### 4.1.2 Harnessing Waterpower: the Middle Ages

During the early Middle Ages, farmers recolonised the river valleys and cut down forests to make room for fields (Arts et al., 2012). With the cut of the forest, the course of the Dommel became more variable (Schippers & van de Laarschot, 2009). Loose sand deposited, creating bends and rapids, and causing the river to meander.

From the early 8th century on, locations with a sufficient natural gradient were harnessed for powering the wheels of water mills (Arts et al., 2012). New settlements were built on the edges of the Dommel, amongst which the city of Eindhoven shortly after the year 1200 AD. In these times, the river was still primarily important as a source of drinking water, although craft activities polluted the water early on (Schippers & van de Laarschot, 2009). The Dommel also served as a washing place and made part of the city's defence infrastructure (Burg, 2019). In the 16th century, the Dommel, together with the river Gender, supplied a system of canals[8] with water to defend the city during the Eighty Year's War (Burg, 2019; Coolen, 2015).

### 4.1.3 Instrumentalising the Dommel: Industrial Revolution

Watermills that were powered by the Dommel played an important role in agricultural and urban life (Schippers & van de Laarschot, 2009). One such mill, the Stratum water mill, was located in this research study area. Today, the remaining 'Molenstraat' (Mill Street) still reminds us of its existence. Mentioned for the first time in 1340, the Stratum water mill was located just outside the forts of Eindhoven and was originally a grain mill (Buijks, 2021). In 1812, the mill was turned into a textile factory "Den Bouw" that used water power for wool spinning and fulling (Schippers & van de Laarschot, 2009). This was considered Eindhoven's first real factory building (Arts et al., 2012).

[8] *'Grachten'*

*Figure 9 Reminders of the Dommel's Industrial Past*

In the factory, the machines ran on water power. The textile industry along the Dommel also used the river water to wash and rinse products and to discharge waste, resulting in the water changing colour and smell. In 1896, the factory was largely destroyed by a fire and was never rebuilt. The remainders served until 1928 as a slaughterhouse, when the whole complex including the Stratum water mill was demolished (Arts et al., 2012).

In the middle of the 19th century, the water mills began causing conflict between different parties that made use of the Dommel's water (Schippers & van de Laarschot, 2009). Silting was causing flooding, which led to disagreement about the water level. In response, in 1863, the waterboard 'De Dommel' was established for the purpose of managing the river and limiting flooding. To them, this meant removing bends from the Dommel, levelling sand banks and eventually straightening the river through canalisation to achieve a steady water flow and to reclaim land. The canalisation of the Dommel lasted until the middle of the 20th century, when slowly the management of the waterboard was changed from being economically focused to accounting for ecological, environmental, and recreational aspects, too (Schippers & van de Laarschot, 2009).

### 4.1.4. The Dommel as Landscape Element: 20th Century

In the beginning of the 20th century, Eindhoven was expanding because of the annexation of surrounding municipalities in 1920 (Gemeente Eindhoven, 2016, pp. 18–19). The restructuration followed the garden city ideal in which the Dommel was to be preserved as a 'green lung' - a landscape feature along which public parks were going to be realised (Andela, 2005).

At this research's study site, plans were made to create a park, but after postponing the construction, the site was given a different purpose. In 1936, the Van Abbemuseum (see

No.1, in Figure 16) opened its doors next to the Dommel which was donated to the municipality by cigar business owner Henry van Abbe (Andela, 2005).

At the same time, Eindhoven was dealing with frequently occurring floods and a population increase that required more space. This resulted in the decision to fill in the city's canals (Nuchelmans, 2018; de Jong, 2023). By removing the canals, streets could be expanded to improve accessibility for the growing traffic (de Jong, 2023). After World War II, only one last part of the canal system remained (see Figure 10). Up until then, the Dommel had two branches in the city centre, forming an island on which the Stratum water mill had been in the western part (Arts et al., 2012). On the eastern side was a slum that was frequently flooded by the polluted and smelly waters of the Dommel and the city canals. Inhabitants started protests for measures to be taken against the floods and therefore the last remaining part of the canals was removed by 1955 (de Jong, 2023; Arts et al., 2012). The water quality of the Dommel finally improved when, in 1963, Eindhoven received a water treatment plant (Coolen, 2015).

In 1969, the building of Eindhoven's new town hall (No.2, in Figure 16) was finalised next to the Dommel.

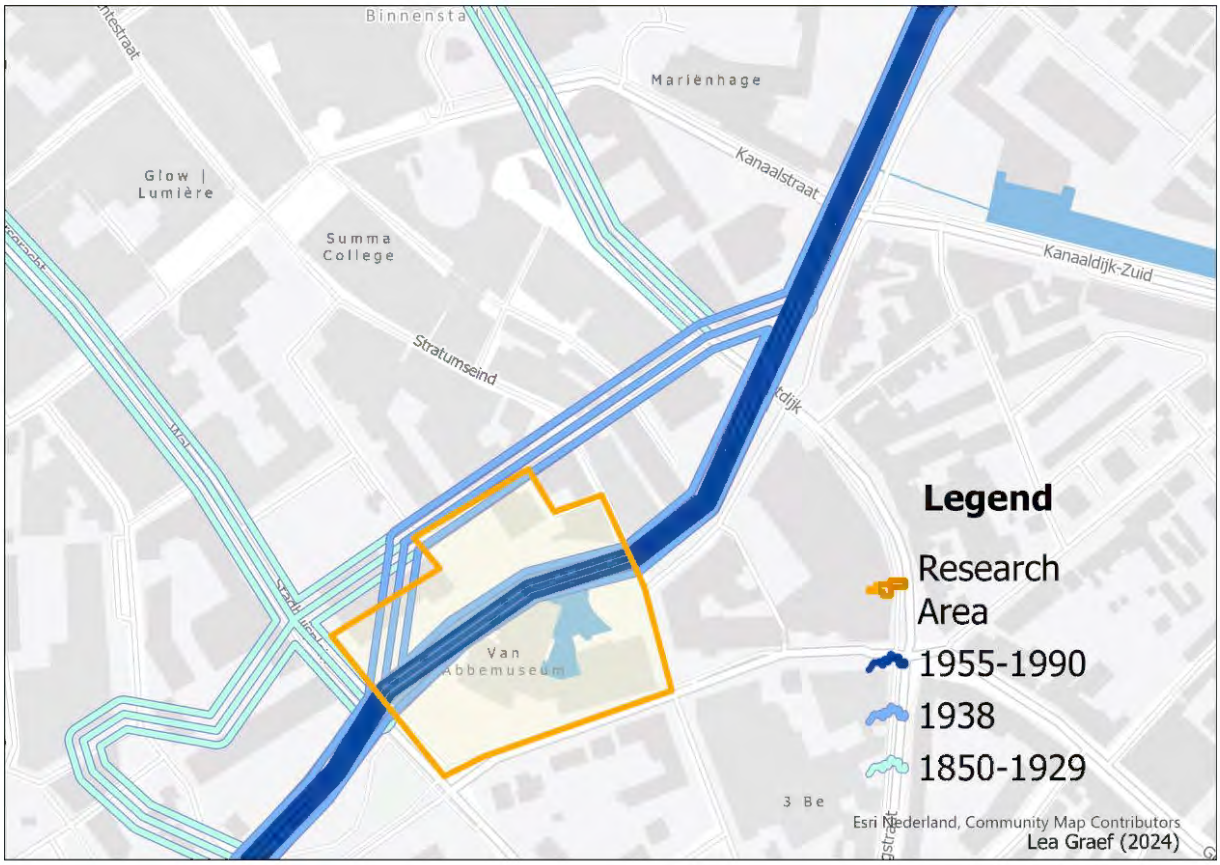


*Figure 10 Estimation of the Dommel's Course throughout Time*

## 4.1.5. Ecological Revitalisation: Late 20th Century to Present

Whereas the Dommel had been mostly forgotten and ignored in the mid-twentieth century, city planners rediscovered the river during the 1980s and 1990s (Gemeente Eindhoven, 2016). The Dommel was no longer supposed to remain in the background of the city but integrated in spatial policies as a rest area amidst the busy city centre.

When in 1990, the National Government's Nature Policy Plan[9] was released that proposed the realisation of the National Ecological Network[10], a network of natural areas throughout the whole country for the benefit of flora and fauna, the Dommel was to be turned into a connection zone. In 1999, the waterboard developed a plan[11] in which the 17 kilometres of the Dommel that pass through Eindhoven were assigned the following functions: connection zone for terrestrial nature, fish water, and aquatic nature. This meant that the river and riverbanks needed to be turned into a semi-natural stream valley and in the city centre into a 'multifunctional' stream that provides space for fish and terrestrial nature to flourish (Andela, 2005). In the following years, the Dommel and its banks were redeveloped according to these plans.

> *"At the time when I still worked for the waterboard, together with a bureau (...) we looked at what needed to be done to make an ecological connection zone in Eindhoven. And if you want to make a connection zone, you have a guideline that says it needs to be 25 metres wide, not counting the water, only the riverbanks. That was challenge number one because it becomes very difficult especially here in the city centre. How do you manage to obtain 25 metres? You would need to take away buildings, parking lots or streets. All of these are very capital-intensive goods in a city. Of course, that's not possible all of the time. So, we thought we would just work with the space we had. And we thought about the species we wanted to accommodate. For this purpose, we thought about 'target species'. A whole list of species of which we thought that they should be able to make use of the space later on. And from these targeted species, 'indicator species' were chosen. Indicator species are from every plant and animal group, one species that is rather critical and of which we think that if we make the space appropriate for them, then other species of that group can also live here. And we proceeded like that. (...) So based on the indicator species, we thought about the different landscape elements that were needed along the Dommel. So, for instance, herbaceous or reed-like vegetation that provides cover for different animals that dwell on the riverbanks. And then you can think about vegetation, trees. (...) The original idea was to have small groups of trees that are cut down every 5 to 10 years and then sprout again, so that they don't grow really tall but remain sort of small groves. That was the idea because then you have a bit more dense, slightly higher vegetation that also gives shelter for certain species as well as food of course. Trees also provide food to birds and other species. So that's how we proceeded at the time."* (R18, city ecologist)

Based on these ideas, the Dommel's riverscape experienced spatial modifications. The quay wall (No.3, in Figure 16) next to the town hall was broken down and rebuilt a few metres further away to give the Dommel more space to expand.

> *"The wall (...) used to be the border between land and water, so nothing used to be here. Only a bank made of stone. The Dommel was almost a canal so to say. And the*

[9] *'Natuurbeleidsplan'*
[10] *'Nationaal Ecologische Hoofdstructuur'*
[11] *'Toetsingskader Stadsdommel voor ecologische inrichting en optimaal waterbeheer'*

*water was held up behind the barrage, so there was also no water movement. It really looked like a canal. So yeah… zero nature."* (R18)

Silt was removed, new meanders were created where it was possible, and fish passages were added to promote fish stocks and create living, spawning and juvenile areas for fish (Arts et al., 2012). In 2002, the monumental bridge and barrage 'De Sluis' (No.4, in Figure 16) from 1929 was opened (Architectuurcentrum Eindhoven, n.d.; IVN Eindhoven, 2018). In the same year, a fish ladder measuring 60 metres in length (No.5, in Figure 16) was built next to the Van Abbemuseum (IVN Eindhoven, 2018).

*"Just on the other side of the bridge is a barrage. This barrage is monumental, so it had to be preserved but it was opened. With a fish ladder, we want the water to flow downstream in such a way that fish that migrate upstream can counteract it. It consists of several thresholds that are covered with broken stones on top. What you don't see is that underwater, there are slots in the middle of these thresholds that go down to the bottom. The water flows very fast in these places but fish that want to go upstream, real river fish, can quickly shoot through them and migrate further upstream."* (R18)

*Figure 11 View of the Fish ladder*


*Figure 12 River's Movement Accelerated by the Fish Ladder*

Under 'De Sluis' and the bridge crossing over the Dommel at Stratumseind, fauna passages (No.6, in Figure 16) were added, too. Overall, by redeveloping the Dommelbanks in this way, the waterboard broke with the previous design of the riverbanks that reflected the interpretation of urban nature at the beginning of the 20th century (Andela, 2005).

At the same time, the Van Abbemuseum was expanding and added a new building (No.7, in Figure 16) in 2003 next to the old one (Van Abbemuseum, n.d.). A section of the Dommel was widened especially for the museum so that next to it, an 'inner lake' and reflection pool[12] (No.8, in Figure 16) were created (M. Peeters, 2002). The temporal overlap between the museum development and the restoration of the Dommel was no coincidence.

> *"The museum with the new building played a role of course. I was still working for the waterboard when the building was designed by the architect. The municipality of Eindhoven wanted that architect to build it and then the manager of the waterboard came to me and said, 'we have a problem, because they want to put a museum building there and the province has said that it should be an ecological connection zone.' And yes, of course I also kind of knew that I could hardly stop a museum building from coming here. The architect's idea of doing it that way was already very much… he had already thought it through, and it is very difficult to have an architect change it [the design] completely. And then I said yes. If they must build the museum there anyway, then this side of the Dommel [the one opposite the museum] should have a good green bank with natural elements."* (R18, city ecologist)

[12] A reflection pool is a shallow water pool that is designed to reflect a specific landscape element such as a building.

*Figure 13 Reflection Pool*

Roughly a decade later, the museum encountered some problems due to its location at the Dommel.

> *"There did end up being problems related to the water level and the building. That is also quite a story."* (R18, city ecologist)

In August 2012, heavy rainfall led to an increase of the Dommel's water level by one and a half metres in 90 minutes (Aggeres, n.d.). On that day, the water was already entering the museum. As the building has a basement below the water level in which also part of the air conditioning system is located, the water was perceived as a major threat to all artworks in the museum as a fall out of the system would affect the humidity levels in the whole building (Omroep Brabant, 2016). Whereas the design of the building considered changing water levels, it was not designed with the climate crisis and extreme weather conditions in mind (Omroep Brabant, 2016).

> *"The project manager of the museum came to me and said, 'so we built that new building here'. He said, 'the other day there was high water, and it would not have taken much more until the water would have flowed into the museum'. And then he said: 'is it possible that one day the water will get so high that that would happen?' I said, 'well, I'm very certain it will get that high'. Yes, I had worked for the waterboard, so I knew a bit about how that works. Water rises in frequencies. If you choose a certain height, for instance if you would put marks up to the rooftop of the museum*

*building. And then if you'd ask, could the water ever reach that height? Yes, with a certain frequency! The water reaching up to the museum doors, that's a frequency of let's say 25 years that that happens. Another 1 metre higher is maybe once every 200 or 300 years and yet another metre maybe once in 1,000 years. But the water reaching that level once in 1,000 years, that could be tomorrow or next week. So that's how I explained it to him. I said, 'it will happen eventually. I just don't know when, but it will happen eventually'. (...) That is the risk when you build a building along a river in a stream valley and this low. And I'm just saying, you must take that into account. It can happen (...), you know, the water doesn't even have to rise that much. And the waterboard can't always solve that. If it's going to rain a lot… Well yeah, they can't make the river 50 metres wide here. So, you do have to take that into account. And it was good that he knew, because he said, 'oh, then we do have a problem to solve."* (R18)

So, on behalf of the waterboard and the municipality that owns the museum building, a self-closing flood barrier (No.9, in Figure 16) was constructed by April 2016 (Aggeres, n.d.).

In 2006, a footbridge (No.10, in Figure 16) over the Dommel was added to connect the park areas on both sides of the river and to lead to the former main entrance of the museum (Nederlandse Bruggenstichting, n.d.).

*"The bridge was actually also a special element to make here. It was added due to the museum's request. Because the museum said 'we have a poor connection to the city centre. We are actually facing with our back to the centre.' And then we said, 'we could do it in this way with a bridge at this location'. (...) And we deliberately made it very high so that nature can easily pass through under it as well."* (R18)

In 2006, the square next to the town hall (No.11, in Figure 16) that used to be a car park, was redeveloped into a green area (IVN Eindhoven, 2018). At the time, they lowered the ground and created a lawn. Later in 2020, this green space (No.11) and the surroundings (No.12, in Figure 16) were again redeveloped as part of the EU project 'UNaLab' (= Urban Nature Laboratories). For this project, Eindhoven amongst other cities was chosen to test nature-based solutions (Gemeente Eindhoven, 2023). A landscape architecture firm was tasked with redesigning the Dommel gardens around the town hall. The focus of the remodel was on climate adaptation, combating urban heat stress and flooding, and increasing amenity value of nature and biodiversity in the city (Smartland landscape architecture, n.d.). They transformed the formerly raised planting areas that had caused a lot of water nuisance into three bioswales[13] that allow rainwater from the surrounding streets to be channelled into the Dommel (Smartland landscape architecture, n.d.). During the excavation work, the old factory walls of "Den Bouw" (see 4.1.3) were found. It was decided to incorporate the find into the design by adding an 'adventure path' consisting of stepping stones that lead through the walls (see Figure 14). Further, they built boardwalks in two areas on which benches are situated. Both boardwalks are wheelchair accessible.

[13] A bioswale is a channel designed to collect and remove stormwater runoff.

*Figure 14 Stepping Stones and Remainders of Den Bouw in March (above) and May (below)*

In the design it was chosen for native plants that were arranged in gradients from wet to dry and that would grow to different heights. Apart from planting they also chose for sowing seeds and for plants to be able to naturally grow from seeds that were already in the soil (R17, personal communication, July 31, 2023). The idea behind the design was to avoid a traditional 'garden-like' appearance and to achieve more of a wild and organic one that adds and connects to the ecological connection zone (R17, personal communication, July 31, 2023). Central to the design stood the idea of making the Dommel and its biodiversity more experienceable to people (R17, personal communication, July 31, 2023). In this way, the landscape architects' design aims to care for the humans and nonhumans in the Dommelscape by enlarging nonhumans' space, and by enabling the ability to build a relation between 'people' and 'nature'.

*Figure 15 Dommel-Gardens in April*

To sum up, throughout centuries the Dommel has undergone many transformations and the meanings for and the relations with humans have evolved. In the last decades, the river has been recognised as a vital contributor to human and nonhuman lives. The attentiveness to care needs shifted from human-centred to seeing the well-being of humans and nonhumans as intertwined. The recent spatial modifications of the riverscape can be seen in the light of the municipality and waterboard taking care of human and nonhuman needs. In the next section, I will examine stories of care and concern to attend to the socio-material care relations that emerge and exist at the Dommel today.


*Figure 16 Overview of Spatial Elements*

## 4.2 (Hi)stories of Care II: Encountering Bioculturally Diverse Relations of Care and Concern

Following Gabauer et al. (2021), urban space is viewed as the product of (un)caring spatial practices and social relations. Looking through this lens, the Dommel's riverscape emerges through socio-material relations between all kinds of humans, nonhumans, institutions, materialities, and so on, that can be perceived as (un)caring. Based on Choi et al. (2023) who highlight the importance of "respect for individuals' and collectives' agencies as imagined, perceived, and experienced by/for themselves" (p.33), I approach these through stories. This reveals firstly the differences in biocultural meanings and perceptions of the Dommelscape. Secondly, it may reveal how these meanings relate to the diverse ways of care and concern that emerge at the Dommel today.

### 4.2.1 Of Diverse Ways of Caring About the Riverscape

This section will focus on the diverse stories of care that take place at and with the Dommel. This entails how care in the riverscape is storied by and for different actants and the socio-material relations and spatial practices that matter within these stories.

#### 4.2.1.1 'The' Benefits of Urban Nature and the Dommel

The municipality's current view towards urban nature is marked by the vital services green and watery spaces provide for humans and nonhumans.

> *"Landscape, urban green and water (...) are seen as distinctive factors for the liveability of the city of Eindhoven. They not only provide space for solutions to climate challenges, but also contribute to people's physical and mental health, social interaction and form the foundation for an attractive business climate (...). The development of green space, based on the garden city concept, is crucial for a qualitatively sustainable living environment where people, plants and animals feel at home."* (Gemeente Eindhoven, 2016, p. 25)

Creating and maintaining natural spaces around the city also contributes to biodiversity by providing space and food for plants and animals which is "vital" for a liveable world (Gemeente Eindhoven, 2016, p. 40).

> *"Biodiversity means rich amounts of plant and animal species. High biodiversity is important for the survival of species themselves, but also for us humans. For purifying air and water, balancing climate, converting waste into raw materials, and protecting and pollinating crops. More biodiversity means a more resilient ecosystem. Especially against the background of intensive agriculture, urban green space can be an important habitat for a variety of plant and animal species. With enough species and ecosystems, nature can mediate many changes such as climate change. Should a species disappear, a biodiverse ecosystem can better cope with the loss of that species. In addition, greenery can have positive effects for the living environment of humans. For example, heat stress is expected to increase and greenery can provide significant cooling."* (Flux Landscape Architecture BV & Gemeente Eindhoven, 2022, p. 31)

In this way, care for people and care for animals and plants are viewed as intertwined. The municipality's aim is thus to achieve an *"optimal balance between people and between people and environment"* (Gemeente Eindhoven, 2016, p. 40).

From this perspective, the Dommel, flowing right through the city centre, is perceived as an *"important green-blue connection"* (Flux Landscape Architecture BV & Gemeente Eindhoven, 2022, p. 87). The care that the Dommel provides is the space the river offers for recreation, biodiversity, climate adaptation, and making the city an attractive space to live and work in (Gemeente Eindhoven, 2016, p. 34).

> *"The banks and adjacent paths form an important link in the network for recreation and ecology/nature."* (Gemeente Eindhoven, 2016, p. 33)

*"If you are talking about greening or stormwater catchment, then the Dommel is really important. (...) It is simply sacred, right?"* (R16, urban planner)

*"As municipality, we not only want to create nature spaces, but we want to let people enjoy and get into touch with them and maybe learn something about nature. And we also want people to be able to move and exercise in public space. (...) We hope that a garden like this will inspire people to take a walk."* (R18, city ecologist)

In this sense, the Dommelscape functions for the municipality as a vehicle to provide specific forms of care to its citizens that are in line with discourses of ecosystem services, sustainability, and healthy lifestyles.

#### 4.2.1.2 Nonhuman Thriving

Due to the ecological restoration of the Dommelscape in the early 2000s, many species apart from the human were able to thrive within the city centre of Eindhoven as well. Figure 17 shows a variety of animals and plants that were mentioned in context with the Dommel during interviews or encountered during observations. The Dommel became able to care for many species as it offered habitats for species that had not previously lived there.

*"Yes, it certainly succeeded. (…) In the early years, when we had just redeveloped the area, a grey wagtail[14] nested here. That's a species that only occurs along naturally designed streams. And those birds also made use of those stone sills of the fish ladder. When the water was a bit lower it would sit on those stones and catch insects. Because that's why they dwell near streams. And then they nested on the roof of the town hall! It's all gravel there and the wagtails like that. We immediately said, 'oh, that's a success' because this animal was never here before. And it would certainly not have breeded here. Because what would the Dommel have provided for it? The water was just streaming along the quay wall and [the bird] couldn't do anything there. So yes, definitely successful in that sense."* (R18, city ecologist)

[14] Dutch: Grote gele kwikstaart (Motacilla cinerea)


*Figure 17 Nonhuman Species*

Species, such as the common kingfisher[15] that were used as indicators for the ecological restoration are able to live at the Dommel today.

> *Before we reached the bridge, he suddenly pointed out a shimmering blue bird that we saw flying over the Dommel. Enthusiastically, he told me that we had just seen a common kingfisher, a rare sight within the city and a sign that it's going well with the river.* (field notes, August 9, 2023)
> *"It is a good indication that this bird is living here (...) It is prone to disturbances. It is quite shy, so this means there is enough space for coverage and safety. There is enough fish, the water is clear enough. It can fly safely under the bridges."* (R18, city ecologist)

During the redevelopment of the riverbanks, some plants were planted *"to get things going"* such as marsh marigolds, whereas others were thought to come up naturally after some time, and even others were a positive surprise (R18, personal communication, August 9, 2023).

> *"We have never planted reeds here. Because we knew that reed spreads itself very well and that it probably will come naturally, and it did."* (R18, city ecologist)

> *"About 10 years ago, our maintenance manager suddenly found orchids here. The heath spotted orchid[16]. (...) The nice thing about this low riverbank is that, of course sometimes Dommel water floods it, but that you also have seepage from the city. The groundwater (...) outside the stream valley is higher than this water level. So, this means there's groundwater slowly seeping in here and bubbling up out of the ground of this lower bank. (...) And species such as wild orchids like places where there's seepage water in the root zone."* (R18, city ecologist)

[15] Dutch: IJsvogel (Alcedo atthis)
[16] Dutch: Gevlekte orchis (Dactylorhiza maculata)

Encountering species such as the common kingfisher or the heath spotted orchid demonstrates that they respond to the care that was provided through the ecological restoration. In this way, the Dommel is storied to successfully provide care for a variety of nonhuman species.

*Figure 18 Collage of Nonhuman Species*

### 4.2.1.3 Personal Meanings and Relations

On the individual level, every person I interviewed has their own (hi)stories and care relations with the Dommel and the riverscape. A few respondents were mainly related to the Dommel in a professional way, whereas a large share related in personal ways. While some lived or worked relatively close and came on a regular basis, others did not live in Eindhoven but would visit occasionally whenever they were in the city.

Every respondent storied the riverscape in a way relating to caring for the self. By taking a walk along the river, visiting after work hours or during lunch breaks, exercising outdoors, walking the dog, meeting friends and acquaintances, and sitting down to enjoy the sun, listening to music or podcasts, reading a book, or simply watching the scenery, the Dommel provides for many a place to relax and calm down.

> *To R20 (citizen), "the Dommel is simply the most beautiful part of Eindhoven." While growing up, she spent much time hiking in nature, which to her has always meant a form of freedom. She hates walking through residential areas and while she prefers walking where it is a bit hilly and Eindhoven does not provide that, the Dommel is a good alternative to her. "I usually walk mostly on days I work. Afterwards, I go for a walk, because I have to think about a lot of things, and that goes very well while walking." When walking along the Dommel, she occasionally meets acquaintances. "I have lived in Eindhoven since 1979 (…) and so I meet someone I know every day. And then I can say hi or have a chat or something. For me, it's actually quite a social path. My life traces itself in that path. I encounter my own life so to speak. People*

*from 30 years ago, people from 40 years ago, people from a week ago. I bump into all of them once in a while." At the research site, she likes to sit down to read a book, enjoy the sun during springtime, and listen to the sounds the river water makes. "If there's a bubble, (...) when somewhere air comes up, then it makes 'bloop', a deep 'bloop'. I find that a very soothing sound, very relaxing, because it's such a low tone." She also enjoys watching skaters that practise and perform tricks on the stairs and railings that lead into the public space.*

*For R15 who works at the Van Abbemuseum, it is amazing to have such a nice place right outside her workplace. It is pleasantly peaceful. She usually comes during her lunch break and sometimes she takes a walk along the Dommel as well. As she is getting older, she says she notices a greater need for green surroundings. Because she works in the middle of the building where she is surrounded by steel and concrete, she feels the need to step outside to see natural light and breathe fresh air. Most of her colleagues eat their lunch at the museum's canteen, which she cannot understand when there is such a nice place right outside. Sometimes when sitting on the riverbank she encounters tiny mice, rats, or little birds. These birds have a cheerful nature about them, chirping, coming close to her and giving her company while she's eating her lunch.*

*R10 (citizen) who said to not have had a happy childhood, has always found comfort in being surrounded by 'nature'. Saying that she wasn't properly raised by her parents, she gave herself the last name 'Nature'. Although she hasn't been everywhere, the Dommelbank is the most beautiful place in Eindhoven, she says.*

*Figure 19 People in Dommel Garden*

*Figure 20 Different Angles*

Different aspects appealed to human visitors on site. Many mentioned the soundscape of the Dommel and especially the sounds that emerge due to the water streaming down the fish ladder. One visitor (R10) referred to it as the Dommel *"singing a song"*. Others said that it was never noisy as most of the city noise is hushed by the river. Apart from the river songs, other dominant sounds at the riverscape were described such as the sound it makes when people walk on the gravel paths and birds chirping.

Some Dommel visitors reported that they frequently smoke cannabis when sitting down at the riverbank. R2 said that he felt comfortable to consume cannabis there because he perceived it as a common and accepted practice in the space. R12 told me that he was struggling with anxiety and coming to the Dommel, and smoking cannabis enabled him to calm his mind. However, if his parents ever found out that he was consuming it, they would be very angry with him, he said.

*R6 is 19 years old and came from Eritrea to the Netherlands four years ago together with his family. He works for a logistics company and after work hours he frequently goes to the Dommel. He enjoys the peace and quiet in the space and often listens to music or watches videos on his phone. He also smokes cannabis and while he says that smoking is not good for him, at least it gives him something to do. He is usually alone at the Dommel because he says that he does not have a lot of friends. Other people that hang out there consume too much alcohol to his liking.*

To another respondent a specific plant that grows at the Dommel enabled her to care for herself.

*R10, who has been sick for a long period of time, points out a specific plant that is growing near the Dommel and tells me about its medicinal properties. While learning about purple loosestrife[17] during a workshop, she later applied the plant to her eyes and said that it had helped her. She says that "nature's intelligence is divine."*

For these people I spoke to, the Dommel's riverscape mattered as a place for self-medication, passing time, or relaxation.

In some ways, the Dommel's riverscape also provides space for people who experience homelessness. Some people reported that they occasionally saw people sleeping or hiding their belongings under the bridges.

*I met R8 at the Dommel. He told me that he is from Bulgaria and that he has been living in the Netherlands for a few years. He does not speak Dutch and is unemployed. He would like to go back home, but he does not have the money for the journey. He told me that he is sleeping at the Dommel underneath a bridge. During the summer months, he said that it was fine except for the mosquitos that were pestering him. However, during winter it could get quite cold.*

Some visitors said that they had felt connected to the Dommel all their lives and it made them remember positive memories of for instance their childhoods. R5 said that he has been enchanted by the Dommel since he was a young boy. On multiple occasions, he had tried to find the river's source and travelled along the water on his scooter. R4 said that her parents had been acquainted with the van Abbe family, so being in the research site made her remember moments of her past:

*"I really like this place here because I know it from the old days. It's a beautiful area, isn't it? Especially with the memories of Aunt Marijke and Uncle Albert van Abbe. And yes, the Dommel that flows here also flows behind our house [where she was born and grew up]. So that's also delightful to always see back. So, I come here every day... I walk this stretch with my dog, then I go a bit through the city and then back to where I live now. So that's very nice and my doggie loves it too."*

[17] Dutch: Grote kattenstaart (Lythrum salicaria)

### 4.2.1.4 Atmosphere and Aesthetics


*Figure 21 Seasonal Changes*

Whereas a large share of the respondents said that they actively seek out and highly value greenery and watery spaces in cities, the research site was often highlighted as especially appealing due to its location within the city centre. While being in stark contrast to the surroundings, the Dommelbanks were storied as an oasis of calmness where people could take a break from the busy city life. Based on my own observations, I also noticed that the riverscape has a cooler microclimate. During field visits on hot summer days, I perceived arriving at the Dommel as very pleasant after walking through the city centre.

During conversations, it often came up that people liked especially the 'wild' and 'natural' look.

> *"It really seems like you're in the countryside. So much greenery with different kinds of plants. And you also see people sitting on a bench nice and quiet in the lee of the city noise. Yes, that's really a contrast. So that also appeals to me." R16 (urban planner) usually visits the Dommel because of his work as he is involved with the redevelopment of the town hall square. "Sometimes when I give a tour for new employees or interested people, I always walk this way (...). Because of course people know the town hall square [but] this is kind of hidden behind the town hall. So, I always like to walk around behind the town hall through the greenery to say 'look, this is Eindhoven too. It's not just bricks and buildings.' (...) This is very beautiful with the bridge and the greenery. (...) So this is why I always walk through this place when I give a tour. To really convey the green atmosphere of Eindhoven. Eindhoven is a green city. Sometimes it doesn't seem like it, but it really is."*

For many, the presence of the Van Abbemuseum contributes a lot to the appeal of the riverscape as well. The architecture of the newer museum building, its placement in the river,

and the art installation on top of the building that showcases the phrase 'Turn Panic Into Magic' (see Figure 22), were reported as intriguing.

> *"The most beautiful building in Eindhoven. Every time it is enjoyable all over again. It is pure art from all sides and the sound of the Dommel with its hushed water music, everything here speaks for itself, I love it all *****"* (Groen, 2023)

> *"To me it really sets the mood. I think it's a beautiful building."* (R20, citizen)


*Figure 22 The Van Abbemuseum*

R19 likes it when 'art spaces' are next to nature because *"nature triggers creativity."* In these ways, the Dommel and the museum jointly let people enjoy the place.

Also, both bridges in the area provide people the opportunity to take in the view (see Figures 23 & 24).

> *"Like every time I go through Stratum Street, then I do actually absorb the view from the bridge as well. Because I always find the view very, very nice and, you know, teasing in some ways. There's a river, there's a nice museum. It looks beautiful. It's really nice."* (R19, citizen)

> *"What you regularly see is that people walk up that bridge to look out over the area. So, we only saw that bridge as a gain."* (R18, city ecologist)


*Figure 23 'Absorbing the view'*

*Figure 24 'People walk up that bridge to look out over the area'*

#### 4.2.1.5 Commercial Gain

The Dommel offers commercial appeal as well. Both the museum café and a restaurant (see No.13, in Figure 16) are situated at the Dommel's waterside. R9, who works at the restaurant, said that the river attracts customers. Regularly, they receive compliments for their nice terrace located near the riverbank. The following excerpts are online reviews taken from Google Maps:

> *"Fine place at the Dommel. An oasis of peace in the middle of the city."* (Jansen, 2022)

*"The terrace at the river Dommel makes the experience even more enjoyable."* (van Laak, 2021)

*"Beautifully located literally at the Dommel"* (Marijnissen, 2023)

The restaurant itself stories the Dommel as a selling point when advertising its proximity to the river as, for instance, a *"unique location"* to get married at (Restaurant El Puente, 2023). Because customers enjoy the proximity of the Dommel, R9 says that they are very happy with their restaurant's location. In this way, the Dommel affords and supports the restaurant's existence.

*Figure 25 The Restaurant's Terrace*

## 4.2.2 Of Diverse Forms of Concern in the Riverscape

This section will delve into stories of concern that reveal the 'uncaring' socio-material relations and spatial practices that matter within the Dommel's riverscape.

### 4.2.2.1 Social Safety and Vandalism

A point of concern that matters in many participants' stories is social safety at the Dommel. During the day, different respondents found that the riverscape could have a 'shady' atmosphere because sometimes *"intoxicated and confused people"* (R15, museum employee) would hang and stray around. R3 (visitors) said that occasionally non-Dutch speaking foreigners would approach them who might just want to make friendly contact, however, they

remain cautious as they could potentially be dangerous. R10 (citizen) who is physically not able to run away, said that whenever people came that she perceived as shady, she would leave. Although she likes the plants and vegetation around the Dommel, she prefers them not to be too dense and growing too high because her visibility will be restricted.

Concerns about insufficient visibility and surveillance mattered for R16 (urban planner) as well:

> *"Because it is an area that no one looks out at, isn't it? Especially at night when it's dark. I think as a woman alone, you would not want to walk or jog there in the dark. So hence those security cameras."*

While I as a cis-woman noticed that I did feel unsafe during nighttime at the Dommel, this was not necessarily the case for everyone.

> *"I guess it's different when you're young. I don't have that. I mean when you get older like me, I'm 68, then you become kind of invisible, right? That's a big advantage. So, you don't draw attention from men or anything. So that insecurity is just not there. They just don't see you."* (R20, citizen)

Multiple respondents mentioned that because the party mile 'Stratumseind' is just around the corner, many drunk people hang out and party at the Dommel during nights. R13 (neighbour) who lives close, storied her concern about *"partying youth"* that breaks stuff and throws trash onto the riverbanks and plant beds.

> *"I also saw some vandalism, you know? So, graffiti on that bridge and the boardwalk they made here was set on fire."* (R16, urban planner)

> *"Yes, the space has been redeveloped. It's too bad that people set fire there. Now there's a big hole in that decking."* (R20, citizen)

> *"And that bridge too, right? There are these bars and these glass plates on it, they were smashed. That makes me think why would you break this? That's… very strange."* (R16, urban planner)

*Figure 26 Burnt Boardwalk & 'Smashed Glass Plates'*

R7 (gardener) noticed how people stray from the paths and walk straight through the plant beds that he and his colleague are taking care of. Also, multiple trees in the green space next to the town hall were damaged by breaking off the tops (Figure 27). R7 perceived this as a shame as this prevents them from growing into the shape of trees and makes them remain bushes. For R17, the landscape architect who designed the garden, this was also an unfortunate incident as his design was built around plants of different heights that would support each other. He asked the municipality to replace the trees, also because once there is a neglected image it backfires, and more damage will follow.

*Figure 27 'Tree that will remain a bush'*

Dealing with vandalism evoked different responses. R13 (neighbour) suggested putting fences around the plant beds or increasing surveillance to discourage any more vandalism. The occurrence of vandalism was mentioned multiple times in combination with surveillance. However, as full-time surveillance is neither desirable nor feasible (R16, personal communication, July 25, 2023), concerns of possible damage are already anticipated during the design stage.

> *"The concern is that because no one has a view on this area, there are no homes bordering it… Yes, then in the design you do have to think about, 'beware', there are also going to be people that are homeless, or vandalism is going to take place"* (R16, urban planner)

For instance, the footbridge is designed in a way that prevents *"improper use"* by skaters, and enables the easy replacement of the plates along its sides which also have anti-scratch and graffiti coating (Nederlandse Bruggenstichting, n.d.). Although, according to R16's observations, graffiti was still applied to the bridge.

#### 4.2.2.2 Pollution and Waste

Multiple respondents storied their concern about the amount of waste in the riverscape and the possible pollution of the river.

> *R19 (citizen) who was part of an environmental group that organised clean-up activities in Eindhoven is worried about "the health of the water and the wildlife around it. (...) There is a public space. But for example, people throw stuff in there or somehow the water is being contaminated. That's one of the important things to take care of as well." For him this means that "there is a basic responsibility on all of us. So, if I'm using the space, I should not disrespect it by throwing trash around it. That's the collective responsibility or care element."*

*Figure 28 What the Dommel Caught*

Because of the location in the city centre, some people said that the riverscape would also get messy quicker. During fieldwork, I encountered many items that were considered 'waste' and unbelonging in the riverscape (Figures 29 & 30).


*Figure 29 Collage of Abandoned Items*


*Figure 30 Encountered Waste*

The municipality and waterboard share the concern about pollution around the river (R18, personal communication, August 9, 2023). From 2010 to 2013, the Dommel was cleaned as the sludge that had deposited at the bottom of the river contained high concentrations of heavy metals such as cadmium (Arts et al., 2012). The pollution was due to discharges of factories stream upwards in Belgium and the previous industrial activities in Eindhoven.

> *"Yes, the pollution did cause problems, you could see that. (...) if, for example, in such a polluted piece of sludge, you scooped out mosquito larvae and you put them under*

*the microscope, you could see that they had all kinds of weird shapes. (...) So then you see that that really does have a detrimental effect on nature. But of course, all that cadmium and zinc pollution is also dangerous for people, so for that reason alone, they preferred to get rid of it as much as possible."* (R18, city ecologist)

In this way, concerns about pollution involve both human and nonhuman interests.

For cleaning up in the public space, the municipality has people employed that *"come with those pricking sticks and clean up"* (R20, citizen). Yet, removing pollution from the riverbanks is not easy because of occupational health and safety regulations[18].

*"Someone has to go down there, and I would say, just jump down and then climb back up. But that is not allowed according to the regulations."* (R18, city ecologist)

A garden maintenance worker (R7) that I met during fieldwork also told me that the people employed to collect garbage in the public space usually work around the green spaces and do not enter plant beds. He and his colleague therefore often remove garbage from the beds but *"won't go out of their way as it is not part of their job."* Whenever they find bottles and cans that have deposits on them, they put them on the paths so that people can collect them and retrieve money. R7 also noticed how the deposit policy that was introduced in April 2023 changed the number of cans that they encountered during their work.

While the official cleaning practices appear to be challenging, other people also participate in unofficially collecting garbage. Often the people who were concerned about pollution and who mentioned it in their stories of the riverscape, also told me that they would clean up from time to time.

*"There really is a lot of rubbish being thrown down, isn't there? The McDonalds stuff or I don't even know what else. Some people just throw everything there. On the other hand, a lot of people also clean it up again, you know. I clean up myself and luckily at the moment a lot of cans are being picked up, right? The deposit system is a huge step forward, I think. You see a lot less cans, so that does make a difference. (...) Plastic bags and stuff like that that I find very disturbing, I actually clean those up. I am not cleaning up all the time though. But if I see those disturbing things that I can easily clean up, well yes, I just clean that up. There are a lot of people who do that."* (R20, citizen)

Cleaning up garbage is in this way a practice that entails different motivations and forms of care or concern. It can be a way to make a living through official employment or unofficial deposit collection practices and caring for the health of plants, wildlife and the Dommel.

Being concerned about the amount of waste myself, I was wondering where all the unwanted things at the Dommel come from. I could observe a couple of times that people would throw their empty cans down on the riverbank or leave their bottles behind. Although I would encounter garbage everywhere around the site, I noticed that much of it concentrated around the benches:

[18] *'Arbeidsomstandighedenwet'*

*In between the planks of the benches on the wooden deck, are different things stuck. For instance, plastic bags, a paper cup, cigarette box, tissues, cigarette butts. To me, this looks like people are getting 'creative' with disposing of their trash because there is no trash can.* (field notes, July 6, 2023)

*Figure 31 'Creative' Way of Disposing Trash*

Stories of concern around the pollution of the riverscape are not only tied to waste immediately present at the Dommel in Eindhoven, but also involve spatial practices at other scales.

> *"Another concern seems to be that quite a lot of drug waste ends up in the Dommel, you know? From Belgium. Of course, that is also a point of concern. I think that's not in our hands. But yes, what this requires is that children learn about it too."* (R20, citizen)

For R20, dealing with this kind of pollution presents a form of powerlessness and inability to care for the health of the Dommel. However, she narrates a responsibility that involves different timescales by highlighting the importance of educating children about environmental pollution and its consequences. In comparison, the waterboard stories a responsibility to care for the Dommel's waters by committing millions of euros to upgrade their sewage treatment plants (van der Meijden, 2019).

#### 4.2.2.3 Disturbing 'Nature' and Exclusiveness

In multiple stories, a concern was voiced around disturbing 'nature'.

> *"That's the disadvantage of nature in the city. You must deal with a lot of disturbances. (...) Just the physical presence of people. Sight, noise, but also litter can be a disturbance. Artificial light is also important here."* (R18, city ecologist)

> *"Concern about… let's say knowingly or unknowingly (...) drawing parts of nature to have something only for humans. Or just a project for the sake of the project."* (R19, citizen)

> *"Simply that it [nature] is respected and remains intact. That's my concern."* (R20, citizen)

Certain human spatial practices and built structures are storied by respondents to cause disturbances to 'nature' and affect the way of being at the Dommel.

> *"Some time ago, a young man came to me who wanted to start a rental business for SUPs[19] on the Dommel. And I said to him, I get it, that would be a super nice thing to do here. I would also like that. However, it can become really intrusive because you have to take into account that it could become really popular. And suddenly there are dozens of hundreds of those boards passing here on a summer day. Well, then you would never see the kingfisher here again."* (R18, city ecologist)

While there is a community of watersports pro-standers that have been arguing for decades to allow water recreation such as canoeing on the Dommel (P. Peeters & Verhagen, 2023; van Gerven, 2020), the waterboard who is in charge of setting up the recreational policy does not permit it. Since 2004, the municipality and the waterboard have been in correspondence over permitting boating on the Dommel (van Gerven, 2020). Whereas in the beginning there were concerns about possible ecological disturbances, the dialogue later concentrated on safety issues for boaters that needed to cross the fish ladder at the Van Abbemuseum. When in 2007, research was carried out to assess the situation, the results confirmed the safety concerns, however, also claimed that those could be avoided by taking technical measures. In 2011, the municipality asked the waterboard for a financial contribution to make the fish ladder boat traversable. However, the waterboard declined saying that they would still be open to finding other ways of increasing the recreational use of the Dommel (van Gerven, 2020). Although both municipality and many societal actors show interest in establishing a boating route on the Dommel, the process is lengthy and difficult according to the Dutch Water Sports Association (van Gerven, 2020).

> *"I also explained it to him at the time: You know, this is one of the few places in the city centre where we have said we really want nature. The province has designated it for that purpose, and it is also laid down in the zoning plan. Because it is one of the*

[19] Stand-Up Paddleboarding

*few places where we said that we really want to preserve this nature as well as possible. If you want to go SUPing, do it on the canal. See if you can start something like that there, or another place where there's suitable water too. But here I'd rather not do it, although I totally get it. And also because of the fish ladder, SUPing can't be done here. Accidents can happen and you cannot insure that."* (R18, city ecologist)

By not allowing water recreation on the Dommel, disturbances to nonhumans that should be able to dwell in the ecological connection zone are prevented. Through the zoning plan and the waterboard's recreation policy, humans are excluded from the Dommel's waters.

Apart from spatial practices, another concern around disturbing nature and exclusiveness is *"man-made structures"* (R19) that claim too much space around the Dommel. Mainly the restaurant was mentioned by respondents in this manner.

*"There's a lot of space being used, probably illegally by private spaces. So, the restaurant in this case is encroaching on the river as well. I think there's always the risk of overdoing it. And in this case, it's happening. They're actually constructing their restaurant spaces very close to the river. And that also leads to… (...) I'm no expert on this, but [it got] mentioned that the ducks come out when they lay their eggs. They need some space around it and that has reduced quite a lot due to, let's say in this case, coming too close to the riverbank. These kinds of things are basically then very intrusive. (...) [Also] if there is too much encroachment, you will have unwanted things in the water bodies."* (R19, citizen)

*"I just don't think it's acceptable. That [area] is just being nicked by the restaurant. There's a big sign saying, 'no entry'. But that part isn't off-limits at all. And because of that you can't just walk there. (...) I think that gives a nasty atmosphere. (...) Yes, commercialism is then way too much in the natural area."* (R20, citizen)

*"Those terraces that are attached with tension wires in the ecological connection zone… it encroaches a bit, right? And yes, it's a little bit noisy from the people that are sitting on these terraces. I think it's a bit of a missed opportunity. You could have done something else."* (R16, urban planner)

In these stories, concerns of disturbing wildlife intersect with concerns of making parts of the Dommel exclusive to a limited number of humans and the belief that the benefits of the Dommel should be for everyone.

*"I actually see the Dommel as a continuous line through the city centre. It would be very nice if you could walk along it from the beginning all the way to the end. That you can experience it everywhere."* (R16)

*"I can imagine that the people sitting there by the water have a very nice time. (...) But for the bigger story I do think it's a shame that it's exclusive"* (R16)

*"I've tried everything to walk to Den Bosch via the Dommel, but I can't because there are all those [private] gardens next to it. And I'm wondering whether they're legal.*

*Because I don't think that the Dommel's banks belong to those people. And that bothers me a lot because you can't keep walking next to the Dommel. (...) I wonder if it's even allowed because what people do a lot is appropriating land, don't they? Farmers also do that. They appropriate footpaths and I wonder if that is really their land here and if they can really say, no one is allowed to pass here."* (R20, citizen)

After hearing R20's concerns about illegally claiming space, I checked the zoning plan, and the restaurant seems to be using the space that is legally allocated to it. For R16, this means that the zoning plan and property lines manifest an inability to create a footpath next to the Dommel between the restaurant and the ecological connection zone.

*"Yes, it is private property and not owned by the municipality. So, we should have earlier taken into account that we wanted certain things at the Dommel. Now, it's become very difficult of course. Because the 'ecology' weighs more heavily than the use by humans."* (R16, urban planner)

Exclusiveness is storied here not in terms of environmental conservation, but in terms of inequalities of accessing the Dommel. Whereas the zoning plan in the case of water recreation enables protection for nonhuman species, in the case of the restaurant it disables equal human access.

Respondents also narrated their concerns about humans disturbing or not respecting nature as part of an attitude or lack of knowledge.

*"You could be doing something without being aware that you're for example encroaching too much into the river area and that you might be impacting the wildlife around it (...). I didn't know that personally, and if people are not aware of that, then you're basically building stuff and it's affecting the natural habitat. But you don't even know about it, so that's also a concern in my view."* (R19, citizen)

*"It really hurts me. Not only that people don't pay attention, but also that they don't care if something is damaged. Take for instance the trees in my neighbourhood. They [neighbours] prefer to have those cut down, because they are bothered by the leaves in autumn. You can't imagine it, but it's really true! And there is one tree that is half dead and well, occasionally a branch falls out. Every time that happens, it's a drama! Because it could have fallen on a car! That's nonsense by the way, because it could have fallen on a car, yes, but the branches of this particular tree happen to be very light. So, if a branch falls, you won't even have a scratch on your car. But every time, they call the municipality and tell them that the tree must go. I find that horrible and it even goes so far as to me really disliking those people. Like 'I have nothing in common with them'!" (R20, citizen)*

*R10 (citizen) sometimes collects seeds from flowers in public spaces to spread them all over Eindhoven. When she spread a few of them in her garden recently, none of the seeds came up to her astonishment. Because she spread the seeds in different areas and they sprouted nowhere, it could not have been due to the soil. To her, this means that the seeds are genetically modified and calls this the "boundary-crossing*

*behaviour" of science. Big companies imagine that they can exercise control over nature, she says.*

*"It also has to do with you yourself. Do you see yourself living with nature, are you agnostic, or are you indifferent to nature? If your mindset is a bit indifferent, then you could be causing harm."* (R19, citizen)

In these respondents' stories, harming or disturbing nature matters through the kind of relation people hold with nature and what it means to them.

#### 4.2.2.4 The Nonhuman and Harm

While the Dommel is part of caring relations for many people, it is storied in terms of concern as well. During the summer months, it is observed that people enter and swim in the river's waters (*Zwemmen in de Dommel, Is Dat Verstandig?*, 2022). However, according to the waterboard that is responsible for monitoring water quality, it is not suitable for swimming (*Zwemmen in de Dommel, Is Dat Verstandig?*, 2022). Although the water might seem clean, it can contain harmful bacteria such as Leptospira that spread through water that is contaminated with animal urine and faeces of mostly rodents such as rats (*Zwemmen in de Dommel, Is Dat Verstandig?*, 2022). In this regard, stories of the Dommel involve different perceptions of 'threat' and 'cleanliness' that require knowledge and surveillance of harmful bacteria.

People also storied their concern about different nonhuman species. Apart from species that were 'targeted' during the Dommel's redevelopment, and which are seen as belonging to the Dommelscape, it also hosts species that were not intended. For instance, a population of turtles can be encountered at the Dommel that used to be pets but were abandoned (Kamp, 2019). While the human owners no longer cared for the turtles, the Dommel provided them a new living environment. However, concerns are voiced about turtles potentially being dangerous for children and dogs that enter the water (Kamp, 2019). Also, there is concern about their ability to survive in the colder climate:

*"I was surprised today, they don't belong here, do they? Those red-eared sliders*[20] *don't belong here, but they are here. (...) They were released at some point, and that's not good at all because they can't survive here… But I saw them once in one spot and today they were in a different one at the Dommel. So, I thought that's very nice. I saw one today that was really big! Yes, children pointed it out to me. That's nice then too. Having conversations with children: 'madam, madam, did you see that?'"* (R20, citizen)

The turtles are storied both in the context of care and concern, as they make part of social relations that are valued, but also ideas of harm and unbelonging.

While R20 (citizen) cares about the assemblage turtle-Dommel-children, she did not like encountering rats at the Dommel:

[20] Dutch: Roodwangschildpad (Trachemys scripta elegans)

*"Of course, it's a bit of an idea, isn't it? That rats are dirty. And I believe that they can also cause problems too. Certainly muskrats[21]. I think that they dig quite a lot in riverbanks and that that's a problem. But yes, [seeing rats] just gives a dirty feeling. Because people also leave a lot of food there. (...) But maybe it's more of an idea, like I prefer not to be anywhere near rats, [because of] the association I have with them."* (R20)

In this case, the rats are storied as being unhygienic and particularly 'muskrats' causing problems for the riverbank-structure. In this way, the assemblages of rats-food-people and rats-riverbank become relevant for R20's concern.

R12 (student) who once had an uncomfortable experience with a goose during a picnic with his friends at the Dommel, said to now have a lot of respect for these animals and keeps a distance from them. There are multiple concerns about geese in Eindhoven as they sometimes appear threatening to humans, *"they make noise and there is a lot of poop"* (Burg, 2023). Particularly the 'Canada goose'[22] that originates from Northern America is mentioned to cause nuisance but falls under environmental protection law (Partij voor de Dieren Eindhoven, 2022). By taking measures that influence geese's living environment such as regularly mowing riverbanks and taking away areas for breeding, shelter, and overwintering, the municipality of Eindhoven wants to reduce the tensions between humans and geese (Burg, 2023).

Whereas turtles, geese and rats are storied as being harmful for humans, also plant species raise concerns:

*"Giant hogweed[23] (...) is really an invasive species and for years we let it do its thing in many places in the Netherlands. 'As long as you don't touch it, it will be fine'. But now there are several municipalities that have started actively fighting it, wanting to eradicate it. (...) And yes, the disadvantage of hogweed is mainly that it creates problems for people that get into contact with it. That's always been the main focus. But of course, I have also seen in Almere where really large areas were completely overgrown, you do lose a piece of nature. Because giant hogweed is a plant that is of little use to Dutch animals. Well, it does have beautiful flower heads, so bees will make use of it, I think. But of course, you'd rather have more variety than a large field completely filled with giant hogweed. So yes, considering wildlife, we are not eager on those non-native species. And certainly not if they are invasive.* (R18, city ecologist)

*"We do have some species that we are having big problems with. For example, swamp stonecrop[24]. These are very small, aquatic plants and sort of loose needles. We sometimes come across them in amphibian pools that we have constructed and scattered throughout the city for frogs and salamanders. And if this plant gets into*

[21] Dutch: Muskusrat (Ondatra zibethicus)
[22] Dutch: Grote Canadese gans (Branta canadensis)
[23] Dutch: Reuzenberenklauw (Heracleum mantegazzianum)
[24] Dutch: Watercrassula (Crassula helmsii)

*such a pool, the pool will grow completely covered. So, we fight those very actively if we come across them."* (R18)

*Figure 32 Giant Hogweed and its Removal*

Giant hogweed and swamp stonecrop are both storied as non-native invasive species. Whereas giant hogweed is mainly removed in Eindhoven because it concerns human health, removing swamp stonecrop is seen as a measure to prevent the displacing of species whose presence is valued.

While both species are storied as 'non-native', the determining factor that actually leads to their removal from the riverscape relates to the idea of 'invasiveness'. In contrast to the province or the national authority, for the waterboards, it does not matter whether a species is native or not (Reeze et al., 2021). When a species disturbs the ecological balance by overpopulating an area, it will be managed.

> *"There are also exotic species that came to the Netherlands or to Europe a long time ago and at some point became naturalised so to speak. (...) Look, nature in large areas naturally consists of a composition of different plants and animal species that keep each other more or less in balance. And when an exotic species is included in that balance, so it does not overgrow everything, its presence is a little distributed, and the Dutch animal species have learnt to make use of for example its berries or flowers (...), then at some point the ecologists that deal with it will say 'we consider this species to be naturalised'. (...) This species is an exotic, yes, but it is naturalised."* (R18, city ecologist)

In comparison, although reed is considered a native species, it takes part in stories of concern:

> *"Take that reed, for example, that is actually also an invasive species. It grows like crazy, but it is native, so there are more species that benefit from it. But preferably we don't want everything full of reeds here either."* (R18)

Furthermore, stories of nonhumans and harm are entangled with concerns involving phenomena taking place on larger scales.

> *"Eradicating non-native species is something we don't do much because that's just very difficult and costly. And you can debate whether you're going to sustain that in the long run. (...) It is a constant task. Of course, if you start early, it's not a lot of work and it doesn't cost a lot of money, but you must be constantly on the lookout. (...) We are dragging so many plants and animals around the world these days that it's really a hopeless task. And because of climate change, a lot of what was originally in southern Europe will move here. If you want to spare nature a bit in that aspect (...) then you'd have to say we'll stop with all that dragging of those animals and plants. But that's difficult for people to unlearn."* (R18)

> *"Weather extremes such as peak rainfall, heat and prolonged drought mean that surface waters are subject to more changes than before. (...) Most fish, amphibians, aquatic plants, species that prefer low dynamic environments, will suffer. But lovers of high-dynamic environments (opportunists) will benefit. (...) One such opportunist is the mosquito. It causes considerable nuisance in residential areas. Moreover, the*

*arrival of the Tiger mosquito*[25] *and other exotic mosquito species increases the risk of new diseases."* (Gemeente Eindhoven, 2016, p. 49)

In this way, climate change and practices of global trade and movement matter in stories of harm caused by nonhumans at the Dommel.

To sum up, different nonhuman species are entangled with storied concerns that involve ideas of threat, invasiveness, or harm and other spatialities. These concerns also matter for the care work that takes place in the Dommelscape which will be discussed in the following section.

#### 4.2.2.5 Not Caring 'Properly'

Practices of maintenance and caretaking are narrated as 'concerns' by multiple actants. Mattering in these stories are relations and practices of being unable to care 'properly'.

*R7 (gardener) and his colleague are responsible for maintaining the plant beds and the Dommel-gardens next to the town hall. They are not employed directly by the municipality but work for a construction and development company that is assigned with the landscaping in the public space. R7 tells me that he and his colleague take care of greenspaces like the Dommel-gardens all over the country. They have been working at the Dommel a few times a year for a couple of years now. Because they live nearly 90 kilometres away from Eindhoven, they must get up early in the morning to be able to start work before the sun becomes too strong in summertime. Up until recently, they received a parking permit for their van. But for unknown reasons, the community service officers have not granted them one for a few weeks. Due to this circumstance, they are parking their car on the pedestrian's path and keep their eye out for any officers. If they receive a fine, the gardeners will need to pay it out of their own pockets. Their job is to take away any plant that is considered a 'weed'. R7 says that weeds mostly seem to be growing in places where the 'original' plants have died. Currently, the garden is looking sad and neglected with many plants missing or some even damaged. The soil is very dry, and they have not watered this year yet, because they have not received any orders. R7 says that it is a bit stupid to take away weeds because the soil will dry out even further. He is not following orders to the point all the time, he says. When there is a nice flower, he will leave it growing, no matter if it is considered a weed or not. In his experience, the degree of maintenance fluctuates with policies. It always depends on the money the municipality is willing to spend. To him, it would be much smarter to first look at what kind and how much maintenance one can pay for and then see which design fits the budget. Yet, it seems to be always the other way around. When he or his colleague say something, they will be listened to but not really taken seriously. It's always 'the one who pays will decide'. Luckily, at home he has his own garden where he can do whatever he wants. Sometimes, he says, it might be better to simply put asphalt instead of greenery. Because it is such a sad sight when no one properly cares for it.*

[25] Dutch: Tijgermug (Aedes albopictus)

*R17 (landscape architect) and his colleagues made the design for the Dommel-gardens. They are not happy with the ways it was carried out and how the gardens currently look. In some spots plants are missing or disappeared because they have not been well planted or maintained. For R17, the issue is how the municipality takes care of this kind of planting. Because their design is not like a 'usual' garden, it does not need 'tight' maintenance such as other places in the city. Their design envisioned wild and natural vegetation, so he hopes that the city has enough patience to let the 'wild' vegetation grow and settle. For this purpose, he is currently consulting with the municipality on how to adapt their maintenance regime at the Dommel.*

As these stories indicate, there is a mismatch between the care needs of the greenery and plant beds and the care work that is provided. According to the gardeners, financial constraints, not being listened to, and their working circumstances matter in their lack of agency to respond to these unmet needs. The landscape architect stories the inability to respond carefully as a matter of adapting the municipality's maintenance approach.

Whereas the Dommel-gardens are intended as enhancing the amenity value of the Dommel and its biodiversity, not caring properly for them seemed to disable this purpose. R19 (citizen) narrated a need for urban green spaces in which people can connect with nature while questioning the purpose of the gardens:

*"If you create too many structures in nature, then you know, you, being a city person and wanting to connect with nature, it just doesn't happen. So, I think there is a good balance that's required around this. There was a specific area I think between the municipality and the Stratum restaurants. I think there's like an open free area and I don't know what's going on there."*

In this case, although the Dommel-gardens are intended as the kind of space that R19 stories as important, because of their implementation, their caring potential is restricted.

In a similar way, not maintaining a specific design is storied as a concern. The original design of the riverbanks during the redevelopment entailed groups of trees that were cut regularly to create small and dense groves for small mammals to take shelter. However, R18 (city ecologist) noticed that the riverbanks were no longer maintained according to plan:

*"Those are black alders, so that's good. That's a species that naturally belongs in such an area. And if you take a tree that belongs naturally, then you have the most interaction with the fauna. If you plant a non-native tree, insects and birds will usually interact with it very little because they're not adapted to it. They are not adapted to finding any food or something from it. And with native trees, you do have that interaction. So that's why we wanted black alders here. Only, this one isn't in a spot where we had originally wanted it. So that's a part of caretaking and maintenance that makes you think. We actually deliberately wanted these trees here in a group and that they would be cut down every so many years and can start all over again."*

By not taking care of the riverbank in the way it was previously determined and intended, the ability to care-with for example the water shrew is being made more difficult. In the same way, the fauna passages underneath the bridges need to keep being maintained for animal species

to be able to use them (R18, personal communication, August 9, 2023). In this way, not caring 'properly' is storied to be concerning for the caring capacity of the riverscape.

In another way, R11 (tourist) storied a concern about the riverscape not caring 'enough' for children. As children are society's future, they should receive more space within the city and especially have spaces where they can encounter 'nature'. According to R11, this could be achieved for instance by adding a playground in the area. Further, he was concerned about the riverbanks not being accessible to people with mobility aids. R16 (urban planner) shares this concern of inaccessibility:

> *"It's not really nice for disabled people to get there. (...) There's a ramp, yes, but you're stuck with that gravel. So actually, if you wanted to lay it out for everyone, you cannot design it that way anymore."*

In this way, missing spatial elements such as playgrounds but also design features such as the gravel paths are part of stories of concern and not caring 'properly' as they are connected to differences in accessibility.

## 4.3 (Hi)stories of Care III: Negotiating the Politics of a Biocultural In-Common

The previous (hi)stories have described a multiplicity of stories that converge at the Dommel. In line with Pitt (2018), we have seen that the Dommel's 'wateriness' affords diverse encounters depending on person, place, and context. Multiple times, one form of being in the riverscape was storied as conflicting with another. "Relations" were storied that "foster care for some things rather or more than for others" (Puig de La Bellacasa, 2017, p. 166). These struggles in the riverscape are as Acharya (2015) described about material resources but also about the multiple encounters, meanings, and values that the Dommel affords. Following Choi et al. (2023), by looking at the politics of inclusion and exclusion, knowledge can be gained on how to co-create urban interventions in more pluralistic cultural and social contexts. Therefore, I will now attend to the struggles over the riverscape, and the power asymmetries manifested in discursive meanings and material matters (Iovino & Oppermann, 2014). In this pursuit, I will examine the stories that play a role in the city's negotiation of whom/what is cared about/for and its responses to a biocultural in-common at the Dommel. In this negotiation four themes could be distinguished that will be discussed in the following.

### 4.3.1 Physical space

Buser et al (2020) found that not only the materiality of water itself but also the surrounding and associated built forms participate in creating caring landscapes. According to the municipality, in the inner city, there are often large buildings and parking lots close to the river, taking away space for humans to experience the water. However, the Dommel *"deserves more space in the city centre for plants, animals and people"* (Flux Landscape Architecture BV & Gemeente Eindhoven, 2022, p. 87). In this way, the city narrates an inability to care for *"plants, animals, and people"* because of insufficient space.

The unavailability of space matters in caring for nonhuman species:

> *"One thing that we also wanted to make were amphibian pools. And we made a small one, there in that greenery around the corner behind that reed (...). And we actually wanted to have multiple at a certain distance from each other, at 400m maximum. Because that works well for amphibians. You could say, you have water here [at the Dommel], but amphibians don't lay eggs in running water, because then by tomorrow they will be in Rotterdam. (...) And so that's what you actually need those pools for if you want frogs and salamanders to be able to live here as well. But we didn't actually succeed in creating good pools for them, we just don't have enough space. We did create one then, but yeah… within 400m to this side and that side, we haven't created any other pools. So, this one doesn't really connect to anywhere for amphibians. And maybe there could still be a common toad or so living around here somewhere. It could also go through gardens in the city or so and get here. But it's not the kind of connection which works for amphibians, I think."* (R18, city ecologist)

But the availability of physical space also matters in humans' stories of care. While a number of respondents mentioned the desire to have for instance a playground for children (R11) or dogs (R13), or a footpath (R16, R17, R20) at the riverbanks, the ecological connection zone already takes up a specified amount of space.

> *"Ecology just weighs heavier here than the use by humans."* (R16, urban planner)

In this way, negotiating the limited amount of space is further complicated as the city assigns priorities to needs by dedicating space to specific purposes. In the same vein, while past stories did not imagine an ecological connection zone and buildings were built close to the river, the restaurant bordering the Dommel is storied to prevent for instance a footpath along the river (see 4.2.2.3). Both, the ecological connection zone and the restaurant are registered in the zoning plan, which on the one hand protects certain needs while at the same time excludes others.

Notably, while buildings such as the restaurant are storied as concerns, other features such as the museum or the bridges (see 4.2.1.4) make part of stories of care. This difference between them could be due to their different levels of accessibility. In this sense, the availability of physical space in the negotiation of care relates to matters of access and inclusivity.

People also storied possibilities for negotiating the lack of space:

> *"If you can't really recreate at or on the Dommel itself, then you could think about making something on the flanks of the riverbank. Because if we enlarge the green space around it, then you can go there for example to do yoga (…) without being directly in the ecological connection zone of the Dommel. Then you just sit next to it."* (R16)

> *"This is the narrowest part of the Dommel where there's really an emphasis on making a [ecological] connection in this narrow part. So, you could perhaps focus on the areas where there are more possibilities, where the river is a bit wider."* (R16)

*R11 (tourist) tells me of a small green space between a housing block and train tracks back in his home city. This garden is very biodiverse and appealing despite the small size and due to the good planning and maintenance of the residents. "If there is limited space, you need to be smart about it."*

In this way, caring-with biocultural diversity in the framework of a limited amount of space becomes an issue of planning and maintenance practices.

### 4.3.2 Spatial practices

According to Kaaristo (2020), territorialisation processes of multiple actors can cause friction. While some spatial practices are encouraged, others are displacing, prohibited, or prevented. For instance, the practice of some people leaving their waste behind (see 4.2), aggravates several respondents and may threaten nonhuman life when the river's water is polluted. Also, the consumption of drugs and partying at night cause feelings of unsafety in some individuals that might be reinforced through dense vegetation restricting visibility. The dwelling of people experiencing homelessness is raised in some people's concerns. Also, the dwelling of geese is by some humans perceived as threatening and therefore actions are taken to manage geese populations. The territorialisation processes of certain plants such as giant hogweed threaten human and nonhuman stories and lead to their removal from the riverscape.

As species such as the common kingfisher avoid spaces with too many humans, recreational practices such as boating and SUPing are storied to conflict with the kingfisher's dwelling and therefore prohibited. In negotiating this conflict, pro-boaters story possibilities for reconciling cultural and natural appropriation of the Dommel's territory.

*"The problem is that waterboard De Dommel's current recreation policy is insufficiently concrete, making it difficult to act unambiguously. In other words, there is no policy to facilitate on-site recreational boating or help enthusiastic entrepreneurs with water plans. Therefore, the waterboard should offer more space to recreationists and entrepreneurs on and along the water. Instead of 'no unless', the new adage should be 'yes if'. With this open attitude, the waterboard supports new initiatives and makes recreation possible. With the creation of policy rules, there will be room for new possibilities."* (P. Peeters & Verhagen, 2023)

The pro-water recreation group argues that with a different mindset, conflicts could be negotiated. In this regard, it seems that 'disruptive' spatial practices and biodiverse dwellings can be negotiable. While nature conservation matters for the prohibition of watersport recreation, it appears not to cause tension for other activities:

*"The Dommel is always spared as much as possible. Although there was once a concert held here somewhere. (...) So that makes me think… that's possible somehow, whereas I would think… but I'm of course no ecologist… but that this would be very disruptive…"* (R16, urban planner)

From 2010 to 2014, the riverspace next to the museum hosted a classical music festival. During the festival, a floating podium was installed on the Dommel (Eindhovens Dagblad,

2009). A challenge that the organisers of the festival encountered was the small pool (see No.14, in Figure 16) that serves as a nature conservation area for toads and other amphibians (Eindhovens Dagblad, 2010). To not disturb this area, a deck was placed on top of the pool.

Compared to water recreational practices, the festival was able to take place at the Dommel by taking measures. However, a difference between these two practices could be their temporality:

> *"You know, if that happens occasionally, then it is not such a problem. Then the kingfisher won't be gone immediately. But if you start doing organised boating, then it becomes a different story."* (R18, city ecologist)

In this way, determining which spatial practices are acceptable involves finding a balance that is mindful of boundaries.

> *"As a city ecologist, you know there are people, and they want all sorts of things. And you cannot send them away and say that they are not allowed to do anything here. Only the question is how far can you go?"* (R18)

These boundaries can be laid down in policies such as the waterboards' recreational policy or the zoning plan. However, being able to respect different boundaries sometimes involves knowledge and competencies.

> *"If it's a bit more specialised care, like checking the health of water (...), it should be part of someone who's an expert. (...) It has to be people who know what they're doing. Because there's one element of care that says I want to care, but the other element is, do I have the capability to care. And for certain things you need a bit more skill or knowledge to care for it."* (R19, citizen)

Tensions and conflicts between spatial practices within the riverscape arise from different imaginings of what the Dommel should accommodate. The dominant storying of the riverscape as an ecological connection zone enables certain practices while disabling others. The negotiation between cultural practices such as recreation and desired nonhumans' dwelling involves competence and knowledge of species' needs and demands explanation and open deliberation with stakeholders to assess possibilities.

### 4.3.3 Caretaking

According to Veldpaus and Szemző (2021), caring for a place is not separate from caring for people as care work sustains or ignores certain ideas that are entangled with histories and relations of power inequality. Negotiating care work in the Dommel's riverscape involves ideas of what, how, and by whom should be taken care of.

For instance, taking care of pollution in the riverscape is storied to involve practices by different actants spread out on multiple spatial scales such as water treatment plants, municipal waste collection, or collecting bottles and cans for deposit and citizens voluntarily picking up waste. Keeping the riverscape waste-free comes with different expectations. Whereas R11 (tourist) and R12 (student) expected that the municipality should provide more

bins or maintain the space better, other respondents said that a waste-free public space should not be solely the responsibility of the municipality. *"Everyone can contribute a little bit"* (R20, citizen).

Taking care of pollution also involves a negotiation of where to facilitate waste containers. I noticed that in the whole research area, there is only one waste container and asked whether adding one might make a little change:

> *"I would say put one here too [by the benches]. But it's also a bit of maintenance… We also don't want too many trash cans in the city. Because you have to empty trash cans and that costs labour hours… and a trash can has to be easily accessible, right? So, for this trash can that is there… somebody will park his car here, walk over to the can and leave. For a trash can over there [points to the benches], you have to walk too far. It is very mundane, right? But that's how it goes. (...) Look, for one trash can it's not so bad, but if he has fifty trash cans and he has to walk that much every time… But yeah, that's the thinking from maintenance."* (R16, urban planner)

> *"If [trash cans] are destroyed very often, for example, then the caretaker will say 'I'll take them away.' Because a broken garbage can doesn't help anybody. And if I must incur a lot of costs every so often… that's also not what the taxpayer's money is for!"* (R18, city ecologist)

Additionally, R7 (gardener) said that sometimes, municipalities do not provide facilities because people might dump their waste at public waste containers to avoid taxes. For the municipality, caring for the waste by supplying garbage cans in public space involves a negotiation of labour and cost intensity.

Negotiating caretaking of pollution also involves imaginaries of how it should be cared for in different places and by whom:

> *"On the other hand, people are often used to being able to dispose of their waste easily, but they don't think about the fact that this costs a lot of taxpayers' money. And then you can ask yourself, is it really necessary? (...) [A friend of mine] was a mountain climber and he said, 'as a mountain climber, you learn that what you take full with you, you can also take back again empty.' On top of a mountain, you would not put a trash can. (...) So it becomes the question: do we want to spend a lot of money on garbage cans or say, I can take that bottle back with me. (...) Only if it's dirty, then it often becomes a little more difficult. Then you don't want to put it in your pocket or bag. But I do understand it. If I see a trash can when I'm on the road, then I'll use it too. Sure, that's what they're there for. (...) In the last 10 years or so, I see that nature managers are also gradually placing fewer waste containers. In nature areas, it is of course also more difficult to empty them. Because someone has to go there with a car, and it is not easy to get everywhere with a car. Or in the winter months when it gets very wet and there is less waste, you still must empty them sometimes. So, I understand that. For nature managers it's relatively expensive, and they would also prefer that everyone is a mountain climber so to speak and takes their waste back with them. Yes, if you go up the Feldberg in Germany you would not*

*expect there to be a trash can. But then you go to the Veluwe*[26] *and then you do expect one."* (R18, city ecologist)

In this way, expectations of who is responsible for caretaking differ and are entangled with imaginaries of 'nature' and the 'city'. In urbanised areas, dealing with waste tends to be seen as the responsibility of governments.

Compared to pollution, caretaking for plants and vegetation at the Dommel involves similarly a range of actants on multiple scales. In Section 4.2.2.5, stories of concern were described around a mismatch between care work and care needs of the Dommel-gardens. Following R17's (landscape architect) story, as the Dommel-gardens differ in their design and functioning from other green areas in Eindhoven, they require a different form of care. By not caring for the gardens in the required way, their potential to care-with a diversity of plants, animals and humans is obstructed.

To R7 (gardener), the mismatch results from a lack of time and money stemming from policies. According to R11 (tourist) these kinds of policies are associated with neoliberal histories of privatisation and outsourcing. Also, the gardeners perceive a mismatch between the orders they receive on how to care and plants' caring needs. By being ordered to take away plants considered weeds from already dry soil, the soil is further drying out and becomes less able to care for plants. Perceiving that they are not being taken seriously, the gardeners' insights and knowledge are ignored by hierarchical structures in decision-making.

In the negotiation between how and what to care for, a mismatch between care work and needs can be due to a lack of deliberation between different parties:

> *"I think the challenge is to manage and maintain in such a way that the natural value remains optimal. And I must admit, I have very little insight into this, because I don't know what the caretaker does here. (...) [In the ecological connection zone], the waterboard is the caretaker. And yes, there are people employed that have a purely cultural engineering background, so maintenance of greenery and water. If all goes well, they have a maintenance plan that states what an element is for and how to maintain it. What you very often see in our municipality, and I think perhaps at the waterboard too, is that this is in the caretaker's head. And that, of course, is actually very stupid because that caretaker could fall ill one day or leave for another job. Then another caretaker will arrive, and he or she will have to think about: What is this for? What should I do with this? And that's not helpful. So, you should actually lay that down in a maintenance plan. And we should remember that when something like this area is developed, that we also immediately make a maintenance plan so that the caretaker has it in their cupboard or in their computer folder and they just know: Oh, I have to think about this. And of course, this also applies to the design. For example, if they see that in the design those trees are standing together, they'll probably think 'oh, that's not for nothing. Then I'll plant them there again.' But now all three of them are very lonely. That in itself is not a disaster of course, but it's not how we had intended it. We had deliberately put them together in groups. That is a focal point that we must keep an eye on. So that we also continue to take care of the place in the way that it is for and that we also maintain it as well as we can."* (R18)

[26] The Veluwe is a national park and one of the largest natural areas in the Netherlands.

Hence, if intentions for caring and giving care are spread between different parties, it becomes important to facilitate competence and knowledge of caretaking through communication. This can be achieved for instance by keeping a maintenance plan that specifies why and how to care.

Apart from how to care, negotiating what to care for can matter for the caring capacity. Imaginings of what should be taken care of influence the way how care work is carried out on the riverbanks:

> *"There's a bit of a trade-off in how to take care of, let's say, natural grassland. How to mow it. Because ideally, the soil is poor in nutrients. In that case, you just let the vegetation grow in spring (...). And then you only have to mow once a year, usually in August or early September. Most plants have already dropped their seeds by then and you can mow everything down and dispose of them. To remove them is quite important because there is always nitrogen settling down from the air. In the Netherlands, that's happening a bit too much these days, way too much! So, the soil is actually always being fertilised and if you want to keep the ground sparse, then you have to mow down those plants that have grown there every year and dispose of them to make sure that you've removed some fertiliser again. So mowing is the preferred way to do it. Only here, the soil is not poor, because you have the Dommel that is flooding the banks sometimes. So, it always deposits nutrients in the form of silt. Therefore, the soil has never naturally been nutrient-poor here anyway. (...) [There are] species that are, say, very competitive like for example the stinging nettle. This is really a nitrogen-consuming species and if there is enough nitrogen, it can easily displace all other species. And you don't really want just nettles growing here either because that doesn't give any variation."* (R18)

Because the riverbank is discursively storied as *"sparse grassland"* (Flux Landscape Architecture BV & Gemeente Eindhoven, 2022, p. 14), it requires a maintenance style that is at odds with the Dommel's topology. Maintaining the riverbanks *"extensively"* (Flux Landscape Architecture BV & Gemeente Eindhoven, 2022, p. 14) means that to preserve a diverse system of plants, the waterboard needs to mow the Dommel's banks multiple times a year and remove plant material. Due to the settling of nitrogen, caring for the riverbanks in this manner is further obstructed by spaces elsewhere.

Negotiating caretaking comprises a weighting of the stories that are desired to be preserved. These stories involve imaginaries and expectations of 'nature' and 'city' and their needs. Caring-with stories can be challenged by material resources, a lack of deliberation, sharing of knowledge and competence as well as material stories happening on wider spatial scales and past times.

### 4.3.4 Design

According to Imrie and Kullman (2016), planning and design can greatly shape the capacity to care. Because professionals plan based on their values, systematic incompatibilities between bodies and built forms can be created and maintained through urban design. This is also shown by the stories of the Dommel. For instance, design is storied as a matter of a particular 'zeitgeist':

> *"Nothing but stones. Then again that was the trend at the time. (...) Now we think very differently about the design of public spaces. (...) Like there should be something fun, to stay, to sit… People are more often going outside to sit in parks. (...) If you live in a small city apartment and you want to sit outside, you should have that possibility. And not only if you go to a cafe where you must pay. But people should be able to simply go to a little park."* (R16, urban planner)

Attentiveness to needs evolves over time. Like in this case in which the idea of what a public space should offer changed, the current idea of the Dommel providing space for humans, animals and plants is different from earlier conceptions that focused on for example facilitating industry (see 4.1).

However, as we have seen in Section 4.3.1, past stories can influence today's ability to design in response to needs. R17 storied challenges with making a design for the Dommel-gardens as there were multiple artworks and the finds of the industrial heritage (4.1.5) that needed to be considered. In the case of the fish ladder, the bridge that is protected through its monument status was able to be negotiated with the idea of an ecological connection zone by opening the barrage (4.1.5).

Apart from a particular trend or zeitgeist influencing the attentiveness and viability of designs, systematic incompatibilities also seem to arise when designers and architects do not have sufficient knowledge and capabilities. For instance, looking back at the museum's extension's design that did not consider rising water levels (4.1.5). Similarly, R17 (landscape architect) experienced that often the first phase of a project does not involve ecologists or landscape architects, so sketches are produced that are not viable, for example because they have too much effect on biodiversity. In this way, producing a design that is caring demands multiperspectivism.

Further, urban design is narrated as challenging due to the diverse needs that need to be considered:

> *"You need to be meticulous with design. Because of social safety, lighting, ecology... there's always a point."* (R16)

Making a design entails consideration of needs that are not always compatible. For instance, because the ground of the public space is covered with gravel which increases the ability for rain to infiltrate and prevent flooding, it, in turn, also prevents people from skating or restricts the mobility of people requiring walking aids (R16, personal communication). Similarly, while greenery is valued because of its aesthetic, ecological, or health-beneficial affordances, it can cause feelings of unsafety for some people (see 4.2.2.1).

> *"If you start planting dense bushes (...), that might be very good for biodiversity, right? But if you have to cycle at 6 o'clock at night and it's dark and you've got these dense streaks on the side and there lives a homeless person or maybe there is someone that wants to harm you…"* (R16)

Increasing artificial lighting is also not always an option because it can obstruct nonhuman animals such as bats.

*"One target group are bats, and they avoid artificial light. I just happened to be talking about this with our lighting designer. He's taking bats into account in a lot of places nowadays and he said he didn't really know why bats avoid light. He thought they might be blinded by it. I said, that's not the problem, they can fly through light just fine. But they're not safe from predators. (...) A smart bat flies in the dark because it can 'see' well, but nobody sees it. So that's why you'd rather not want lighting along the Dommel."* (R18, city ecologist)

Yet, these conflicting needs are storied to be negotiable through design. For instance, by adding one-sided shields to lamps so that they only give light to one direction (R18) or using a different colour lighting as bats seem to have fewer problems with green light (R16). However, this requires that people with different tasks and expertise consult and share awareness:

*"Light is also a focal point where I am thinking, how do we manage it best over time? But fortunately, our lighting designer and our lighting policy person have become very aware of that over the years. And with every project they think, 'wait a minute, could there be an issue with bats here?' And then they come to me or my colleague. So, there's a lot to think about and it never all goes well. But we try to do better and better."* (R18)

Further, designing is storied as involving a negotiation of whom to design for.

*"Designing the city is always a bit of a dilemma, isn't it? For whom do you do it, for which purpose and when do people feel comfortable and safe? And is it accessible to everyone?"* (R16, urban planner)

Between interviews, I noticed that people's preferences and responses to design are diverse:

*R12 came from Azerbaijan to the Netherlands for university studies. He dislikes parks and green areas back home, he says, because they often consist of nothing but lawns with paved paths, statues, and water fountains. He prefers when greenery is a bit more 'wild' and 'natural' like at the Dommel.*

*R19 who moved from India to the Netherlands found Dutch green spaces to be quite artificial and highly maintained. "At least in the Netherlands, everything is perfectly sculpted, and I miss the wild aspect over here."*

Like de Kleyn et al. (2020) demonstrate, the perceptions of urban nature are diverse as they develop through their understanding of place, values, current and past interactions, and associated cultural understandings and social relationships. In this regard, people imagined very different elements as 'care-full', such as more benches, spaces for dogs or children, or wheelchair-accessible paths. But also, on the contrary, more space:

*"for the Dommel and the things around it to be. (...) You don't always have to build things all the time. (...) If it's grass or whatever, just let it be. You can maintain it a bit, but people can still sit on the grass. You don't have to put benches everywhere."* (R19)

While R19 is concerned about nonhuman needs being neglected because of human interests dominating, R17 (landscape architect) also narrated a dilemma of designing for both humans and nonhumans. While nature is also a 'user' of their designs, considering its needs is challenging as they are not as accessible.

Negotiating a 'caring' design can be also challenged by the feasibility of caretaking. As R16 (urban planner) explains:

> *"When we develop a plan, we go to our maintenance department and ask them whether it is feasible. Or we ask are there potential improvements we can do to make it more maintainable? Because if we choose a very expensive lamp that we are going to put here, and they cost let's say €10,000 each and they get broken every weekend. Then the maintenance department will say, we won't be able to replace them every time. So, it would be better to take this lamp, because we have 20 or 40 in stock and can easily order more. Within a week, we can have them hanging there. (...) So there are lots of aspects in public space you need to consider: is it easy to maintain? Is it easy to replace?"*

In a similar way, the damaging of trees in the Dommel-gardens threaten the ability to care-with plants and animals (4.2.2.1), financial resources to replace the trees are essential in this case to guarantee the overall capacity to care. Also, the design and its execution can always differ as the stories of the Dommel-gardens have shown.

Hence, negotiating a design that satisfies all needs forever is impossible. In this regard, Imrie's and Kullman's (2016) suggestion of a 'caring design' that is open enough for humans and nonhumans to shape their environment to their requirements is very important. Imrie and Kullman argue that designers need skills and sensibilities that "allow them to attend to the fragile attachments among the human and nonhuman others for whom they design to foster caring relationships" (p.11). In the case of the Dommelscape, these skills and sensibilities seem to incorporate multiperspectivism, which is facilitated by the sharing of knowledge and deliberation. When incorporating multiple perspectives at the beginning of a project, its ability to care-with biocultural diversities is increased.

# 5. Conclusion

This research was set up to gain insights into the challenges and opportunities for spatial interventions in urban nature that aim to be more environmentally and socially responsive to more-than-human needs and thereby form a means to more viable multispecies urban futures. This was done by applying a care lens to the narrations of perspectives, agencies, and capacities of multiple more-than-human bodies. Based on Power (2019), the focus was on the socio-material, temporal, and spatial assemblages that make care possible. The Dommel's riverscape in Eindhoven provided the empirical case.

Within this chapter, I will provide an answer to the main research question: *Taking a storied approach, to what extent is Eindhoven's capacity to care-with biocultural diversity at the Dommel made (im)possible?* Further, I will provide recommendations and a reflection on this research.

## 5.1 (Im)possibilities of Caring-With Biocultural Diversity at the Dommel

In the following, I will summarise the empirical findings gained corresponding to the sub-questions in order to then synthesise an answer to the main question.

### 5.1.1 The Dommelscape's Historicity

The first (hi)story of care has described the stories that historically mattered and shaped the riverscape. It was demonstrated how the Dommel has been shaped by human intervention from early on. It was also shown how the meanings that the Dommel held and holds range from spiritual, water and food supply, generating waterpower, city defence, waste disposal, water supply for industrial purposes, creating nuisances such as flooding and smell, green landscape and 'lung', ecological connection zone and urban nature laboratory.

As the Dommel has been imagined in these diverse ways, these imaginings have materially mattered and shaped the riverscape. In more detail, I have described the most recent imaginings of the Dommelscape as an ecological connection zone and urban nature laboratory. Throughout time, care needs and Eindhoven's attentiveness to these needs shifted slowly towards valuing nature conservation and sustainable living environments for humans. Based on this relatively recent attentiveness, the municipality and other governing parties saw a responsibility to take care of these needs and establish new infrastructures such as the ecological connection zone.

As an ecological connection zone, the Dommel is intended to care for certain nonhuman species and was spatially modified to fit care needs. However, this was not the only story that mattered as cultural imaginations such as the museum and heritage were also considered relevant in the restoration of the riverscape.

As an urban nature laboratory, the Dommelscape is intended to care-with the Dommel, humans, and nonhuman species. This intention is manifested in design by making the public space wheelchair accessible, planting plants that connect to the ecological connection zone and enlarge wildlife territory, and designing paths and sitting features to allow people to explore and engage with 'nature' while incorporating industrial heritage.

To sum up, throughout centuries the Dommel has undergone many transformations and the meanings for and the relations with humans have evolved. In the last decades, the river has been recognised as a vital contributor to human and nonhuman lives. The attentiveness to care needs shifted from human-centred to seeing the well-being of humans and nonhumans as intertwined.

### 5.2.2 (Un)caring Relations as Imagined, Perceived, and Experienced by/for Actants Themselves

The second (hi)story delved into the socio-material relations and spatial practices that are storied as (un)caring. These were approached through five themes of care and five themes of concern.

Beginning with stories of care, firstly, the Dommelscape is imagined by the municipality as a vehicle to provide specific forms of care to its citizens that are in line with discourses of ecosystem services, sustainability, and healthy lifestyles. The Dommel is narrated to offer

space for recreation, biodiversity, climate adaptation, and to make Eindhoven an attractive space to live and work.

Secondly, the Dommel offering space for nonhuman species and fulfilling the function of an ecological connection zone is storied as caring. In these stories of nonhuman thriving, rare and diverse species matter that were targeted during the ecological restoration.

Thirdly, personal caring relations were narrated. For multiple respondents, the riverscape provides a means for self-care by, for instance, offering views or space for relaxation, recreation, and encounter. In individuals' stories, careful relations in the riverscape entailed different practices and affordances such as listening to the river's soundscape, meeting people, encountering animals, having personal memories of the past, consuming cannabis, and offering a place to sleep when experiencing homelessness.

Fourthly, the atmosphere and aesthetics of the riverscape mattered in stories of care, for example in the form of the microclimate or the wild and natural look contrasting with the rest of the city. Also narrated as relevant were the museum and bridges that enable engagement and enjoyment of the riverscape.

Lastly storied as a care-full relation is the Dommel's affordance and support of consumption industries such as restaurants through attracting customers.

Uncaring relations and practices were approached in this research through stories of concern. Firstly, concerns around vandalism and spatial practices that intimidate others such as consumption of drugs, noise, and partying were narrated. These concerns involve ideas of individuals' personal safety as well as integrity of greenery and built features. Light, plant density and height, and surveillance play a role in these stories.

Secondly, pollution of the Dommelscape is storied as concerning. These concerns include the health of both humans and nonhumans. Further, they involve other timescales such as the Dommel's industrial past, and other spatial scales such as polluting practices that take place upstream. But also concerns around people leaving waste in the riverscape are narrated. Based on these concerns, practices come to matter that involve different senses of responsibility, agencies, and capacities such as informal clean-up practices, deposit collection, water treatment plants, or educating children.

The third theme of concern is situated around humans disturbing or harming nonhuman species. This involves spatial practices such as water recreation and built structures such as restaurants as well as attitudes of people towards nature that can be disturbing either because they lack knowledge and awareness or because of indifference. These concerns also intersect with ideas of making parts of the Dommel exclusive to a limited number of humans and the belief that the benefits of the Dommel should be for everyone.

Fourthly, there are concerns around harm caused by the nonhuman, such as the Dommelwater as a health threat, rats and geese causing nuisance, or invasive species displacing other species and harming 'biodiversity'. In these stories, also larger phenomena such as climate change and global trade and movement play a role as well as differing ideas and perceptions of harm, threat, or hygiene.

Lastly, the inability to care according to perceived needs is narrated as concerning. In these stories, mismatches between care work and care needs, care work's circumstances and not properly maintaining a design diminish the potential to care as intended. Also, concerns around not providing care to certain groups such as children or people with mobility aids are narrated as a matter of missing spatial features and not taking them into account while designing.

### 5.2.3 Matters in the Negotiation and Potential for Care

The third (hi)story of care dealt with the stories that matter in the current negotiation of care by turning to the city's challenges of caring-with biocultural diverse actors. The discursive meanings and material matters that seemed to play a role in the negotiation were discussed through four themes: physical space, spatial practices, caretaking, and design.

In negotiating care, the availability of physical space matters. As the city's past stories did not imagine an ecological connection zone and buildings were built close to the river, Eindhoven narrates the inability to care for biocultural diverse needs in a limited space. Built features prevent the city from caring-with both humans and nonhumans. Caring-with is further complicated by the zoning plan that manifests the grounds for in- and exclusion. Yet not all buildings, for instance, matter in the same way. It was found that access and inclusivity play a role in these stories. Additionally, storied possibilities for negotiating the lack of space include enlarging territories to negotiate needs that cannot be addressed in the same area and care-full maintenance and planning.

Within the riverscape, spatial practices and territorialisation processes conflict that involve different imaginings of what the Dommel should accommodate. The dominant storying of the riverscape as an ecological connection zone enables certain practices while disabling others. Whereas negotiating conflicting spatial practices can be sometimes a matter of mindset, other times capabilities are needed to assess boundaries. In this way, the negotiation between cultural practices such as recreation and desired nonhumans' dwelling involves competence and knowledge of species' needs and demands an explanation and open deliberation with stakeholders to assess possibilities.

Care work in the riverscape entails practices by diverse actors on multiple spatial scales. Sometimes, mismatches between care work and care needs arise. These mismatches involve ideas of what, how, and by whom should be taken care of. While negotiating care work comprises a weighting of stories that are desired to be preserved, these stories involve imaginaries and expectations of 'nature' and 'city' and their needs that can be at odds with the material landscape. Care work can be further challenged by material resources, a lack of deliberation, sharing of knowledge and competence as well as material stories happening on wider spatial scales and past times. In this regard, facilitating competence and knowledge through communication becomes important.

As design can shape the capacity to care, systematic incompatibilities between built form and needs were found to be due to a lack of awareness of needs and a lack of money and time. Awareness and attentiveness to needs are influenced by past stories or 'zeitgeists' as well as the competencies of designers. Also, design involves a negotiation of whom to design for. While needs are diverse and sometimes conflicting, reconciling diverse biocultural needs was found to be possible but requires consideration, inclusion of and deliberation with a multiplicity of perspectives and knowledge(s).

### 5.2.4 Main Conclusion: Assembling the Capacity to Care

Reviewing the three sub-questions, we have seen the complexities of biocultural care at the Dommel. Whether intentional or unintentional, far away or nearby, taking place currently or in the past, all kinds of practices and relations between diverse actants were described in the riverscape's stories of care and concern. Following Power's (2019) conceptualisation of caring

capacity in which socio-material, temporal, and spatial assemblages make care possible, I have attended to stories of the riverscape to gain insight into the factors that make or break Eindhoven's capacities to care-with its biocultural diversities. In the following, I will describe these factors.

Returning to the five phases of care (see Figure 2), the Dommel's stories make it apparent that attentiveness to care needs is essential. While past human spatial interventions have not cared about nonhuman species, biodiversity and providing infrastructure to (certain) nonhumans have moved into the focus of Eindhoven's urban planning in recent decades. This has resulted in the successful giving and receiving of care of species such as the common kingfisher or the grey wagtail. By viewing human and nonhuman needs as intertwined, care can be provided for both like, for instance, in the case of the fish ladder. Imagining the city as a space for human and nonhuman thriving has allowed the making of a material landscape that cares-with multiple more-than-human actors. In this pursuit, it has been found that sharing competencies, knowledge, perspectives, and material resources is fundamental for facilitating caring-with.

Yet, attentiveness to needs and giving and receiving care are also limited and restricted by the relational contexts. As Eindhoven negotiates who, what, where, and how to care (for), past and current imaginings and stories influence the caring capacity as they manifest the grounds for in- and exclusion in for instance policies, the availability of space, or design. While the Dommel "enables and assembles a multiplicity of publics, embodied practices, cultural practices and diverse forms of sociality" (Watson, 2019a, p. 2), the diverse stories it affords sometimes conflict. Imagining the Dommel as an ecological connection zone prevents certain ways of recreation. Imagining the Dommel as an inner city 'green wedge' that facilitates businesses and recreation makes it difficult to care-with nonhuman species that require more space. Also, imagining the Dommel as a place for a certain type of human user can displace others such as skaters or people requiring mobility aids. In this sense, stories of what to care for can prevent care for others.

Further, the stories revealed that care-giving is obstructed by spatial practices and social relations on multiple spatial scales. Global trade flows, climate change, settling of nitrogen, drug dumping, or industrial activities can make caring-with biocultural diversity challenging. Also, political stories that determine how many resources are available for care-giving matter for the caring capacity. In receiving care, it was shown that sometimes although care attentiveness, intention, and work are present, responses to this care are obstructed when material and discursive landscapes do not line up.

Hence, Eindhoven's (im)possibilities of caring-with the Dommel's biocultural diversities hinge upon the kinds of imaginings and the roles they play in the material landscape of the Dommel. As Springett (2019) argues while the story of a river reflected through layers of human and ecological history shifts, it remains immutable and reveals the primary topography of urban/natural boundaries. Revisiting these imaginings can be productive as they reveal where discursive and material stories do not match and incompatibilities between needs and urban form emerge. While the Dommel's multivocality provides grounds for both the enablement and disablement of caring-with biocultural diversity, it is within human's power to decide which kind of stories to attend and continue to tell-with the Dommel.

## 5.2 Recommendations and Further Research

This research has aimed to provide recommendations to the initiative 'Stewards of the Dommel' and relevant institutions and stakeholders on how the Dommel riverbank can transform while considering its biocultural diversities. The following lessons can be drawn from this research:

- As care relations were shown to be diverse and complex, it becomes important to be wary of the stories one produces and how these relate to the stories that are/have been there.

- Design that intends to be caring can have unintended effects such as plant height causing feelings of unsafety, street lighting being restrictive for species such as bats, or surfaces that support stormwater runoff but limit people's mobilities that require walking aids. Therefore, including diverse perspectives when making a design is essential. Also, evaluating how this design is received is important to understand the causes of unintended consequences and limitations of the design. Additionally, while future needs cannot be anticipated, deliberating and including perspectives can help support a 'caring design'.

- It has been found that integrating multiple perspectives and values at the beginning of a project can be very beneficial. As Eindhoven already is making ecological interests conditional to new projects, this should be continued.

- In executing and maintaining a project, sharing different knowledges, skills, and abilities should be better facilitated and laid down in a maintenance plan.

- When negotiating between conflicting interests, such like, for instance, water recreation and environmental conservation, it has been found that expert knowledge should be communicated and shared between all parties. In this way, the complexity of conservation values can be shared with the public.

- As the wider societal structures have been shown to make care more difficult, fostering and facilitating attentiveness through for instance the education of children or activities that invite people's engagement can provide possibilities for care in the future.

Hence, a "healthy and green environment" (Gemeente Eindhoven, n.d.) at the Dommel is not so much something to be achieved for others rather than with others. While in this research, I have seen many instances and people's engagements that made care already possible, further strengthening a multilateral dialogue across people with different perspectives, expertise, knowledge, and capabilities will contribute to a riverscape that is more socially and environmentally responsive. In this sense, I want to emphasise the potential for deliberative democratic principles in urban planning interventions.

Additionally, the following recommendations for future research are made:
Whereas this research's approach has been broad to identify and explore multiple issues, a deep dive into stories could be valuable to reveal and describe specific challenges of 'care-full' urban planning and multispecies placemaking. For instance, a closer investigation of water recreation and environmental conservation and the involved imaginaries. As this research has found that in this aspect there are unresolved issues and different versions of the same conflict and opportunities, I think that this can provide an interesting case for engaging with a multilateral dialogue focussed on multispecies justice. In this regard, phenomenological or art-based approaches such as participatory theatre might prove to be a valuable addition to enable and invite diverse perspectives.

Following Raipola (2020), attending to moments in which nonhuman agencies escape narrative sensemaking is necessary. While I felt that I lacked the required knowledge and the scope to approach such instances, I think that multidisciplinary research that investigates how issues of storying relate to the material landscape supported through ecological fieldwork and gathering of data could be promising here.

Further, an investigation of the different agencies within the municipality and its departments can provide insights into how more caring responses could be facilitated. In turn, researching how care is prevented from being received by people who cannot access the place is another valuable focus for addressing caring capacity in more detail.

## 5.3 Reflection

Lastly, some final words of reflection on the whole thesis research process.

As much as I enjoyed working on this research project and engaging with the different theoretical understandings and perspectives, it also challenged me. Oftentimes, I felt that I did not do full justice to the stories I encountered nor to the theories that I aimed to think-with. Due to my broad approach, I was able to describe multiple instances of biocultural diversity. At the same time, I lacked the space to engage more thoroughly with them and bring their 'thickness' to the fore in this thesis.

As many scholars describe, it is quite challenging to attend to and write story worlds that acknowledge the nonhuman (Bayes, 2023, p. 230). As most of the stories I collected were drawn from interviews and observations, I think that other methods might have been more suitable or at least would have made a valuable addition to study 'storied places' of nonhumans. In the same way, interviewing people is a dilemma as it might represent more their attempt to make sense of the situation in which I approach them for research. Also, communication beyond language is not something that I was able to attend to through my scope. In this sense, Raipola's (2020) 'unnarratable matter' is something that I recognised during this research. I think that more long-term observations and personal storying acts through creative methodologies could bring many more insights in this regard.

Further, describing care or concern assemblages was not easy. Many times, I found relations to be very entangled and incorporating diverse actants. Splitting up care into something that is given by one and received by another oftentimes did not make sense. I found that care and concern (or uncare), and also inclusion and exclusion were always part of the same relationship. Splitting these terms into two separate conditions undermined their relationality. While 'care' as a concept also emphasises this relationality, expressing it in words

might again be restricted by the 'unnarratability' and limits to human sensemaking and language.

While I emphasise the need for multilateral dialogue and consideration of multiple perspectives, I think that this research could also have benefitted a lot from it. While I talked to for instance an ecologist, a multidisciplinary research team could have offered space to engage more deeply with the nonhuman world while at the same time interrogating this knowledge. Being more or less on my own in making the meta-narratives, I produced an account of my perspectives without much critical reflection outside myself.

As Lucas (2016) states, there's always a trace of the researcher's personality throughout the research. While I consider myself somewhat more of an introvert, approaching strangers in public space in an unknown city was sometimes quite challenging for me. Oftentimes, I felt like I might have missed nice stories and insights because I was too timid to approach someone. Then again, this project posed a learning opportunity for me from which I have gained confidence.

Finally, I think that my research shows that the debate around more-than-human care is not finished. With the data I collected, there could have been many more interesting questions to dive into. For my own future, I have taken away the insight that "caring is always a practice of worlding" (Van Dooren, 2014, p. 294) and I hope that I will remember to stay critical of the things I care about and the ways I care for them.

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# Appendix I: Overview of Respondents

| No. | Date | Interviewee(s) | Key narrative themes |
|---|---|---|---|
| 1 | 19. May | Visitor (aged 40-50) | Regular visitor; nature and river aesthetically pleasing; meeting and talking to people; consuming cannabis |
| 2 | 22. May | Visitor (aged 25-35) | Regular visitor; consuming cannabis; enjoying urban nature; litter pollution; relaxing; cleaning up |
| 3 | 22. May | 3 Visitors (aged 25-35) | Former regular visitors; relaxing; calming effect of water; litter pollution; cleaning up; strangers; social safety; cannabis and tobacco |
| 4 | 22. May | Dog walker (aged 75-85) | Regular visitor; family; memories; dog |
| 5 | 6. June | Visitor (aged 75-85) | Regular visitor; enchanted by the Dommel; memories; urban nature is important |
| 6 | 6. June | Visitor (aged 18-25) | Regular visitor; relaxing; spending time; visiting alone; comparing to Eritrea; consuming cannabis |
| 7 | 13. June | Garden maintenance workers (60-65) | Work; maintenance, vandalism; working circumstances |
| 8 | 16. June | Visitor, unhoused (aged 40-50) | Sleeping at the Dommel; mosquitos, wanting to go back home |
| 9 | 16. June | Restaurant Employee (aged 30-40) | Attracting customers; happy with location; responsibility |
| 10 | 27. June | Visitor (aged 65-75) | Former regular visitor; social safety; privacy; concern; being attuned to nature |
| 11 | 6. July | Visitor (aged 35-45) | Tourist; (in)accessibility; responsibility; importance of urban watery and green spaces; more space for children |
| 12 | 6. July | Visitor (aged 20-30) | Regular visitor; student; consuming cannabis; relaxing and calming; meeting friends; atmosphere and soundscape; museum building; comparing to Azerbaijan; geese |
| 13 | 10. July | Dog walker, neighbour (aged 65-75) | Vandalism; walking the dog; happy with redevelopments |
| 14 | 13. July | Visitor (aged 18-25) | Work break; relaxing; visiting regularly; social encounters; party people; vandalism |

| | | | |
|---|---|---|---|
| 15 | 13. July | Museum Employee (aged 35-45) | Work break; enjoying urban nature; relaxing; animals; need for greenery; vandalism; social safety |
| In-depth Interviews | | | |
| 16 | 25. July | Urban planner | Meaning of Dommel for the city; spatial developments around Dommel; nature services; vandalism; social safety; maintenance; (in)accessibility; challenges of combining recreation and nature conservation; making Dommel more accessible |
| 17 | 31. July | Landscape Architect | Background on UNaLab project; design of area and planting scheme; challenges with project; vandalism; challenges of negotiating between cultural and natural values; negotiating with stakeholders |
| 18 | 9. August | City Ecologist | Ecological restoration of Dommel; maintenance; pollution; challenges of combining recreation and nature conservation; biodiversity; unbelonging species; disturbing nature |
| 19 | 22. August | Citizen | Health of water and wildlife; awareness around sustainability; atmosphere museum; invasive human behaviour and man-made structures; pollution; careful balance between nature and culture required; (illegal) claiming of space; caretaking; responsibility |
| 20 | 25. August | Citizen | Going for walks and spending leisure time at Dommel; meeting people; vandalism; rats; pollution; soundscape; responsibility; atmosphere museum; social safety; caretaking; careful balance between nature and culture required; turtles; (illegal) claiming of space; (in)accessibility |

# Appendix II: Interview Guide

**Questions for informal street interviews:**

- Do you regularly come here? How often?
- What do you usually do here?
- What does this place mean to you?
- What do you like about this place?
- What do you dislike about this place?
- If so, what would you like to change about this place?
- How is this place maintained and who is responsible?
- Are places like these important to you within a city? Why?

**Questions for in-depth interview participants:**

- What is your role regarding this place?/ How are you connected to the place?
- How often do you visit and what is your purpose for visiting?
- Can you elaborate on the elements of care you defined at the Dommel?
- What does care mean to you?
- Can you elaborate on the elements of concern you defined at the Dommel?
- What does concern mean to you?
- How is this space maintained?
- Who is responsible for which element of care?
- How is a balance found between nature conservation and recreation?
- What are further challenges regarding this place?
- What are your hopes regarding the future of the Dommel?

# Appendix III: Code Book

| Code | Grounded | Code Groups |
|---|---|---|
| ○ (in)accessible | 17 | Care<br>Concern<br>Spatial |
| ○ admiring | 5 | Sensory perception |
| ○ aesthetically pleasing | 20 | Sensory perception |
| ○ agency | 1 | Perspectives |
| ○ ambitions + desires | 7 | Perspectives |
| ○ animal species | 64 | NonHumans<br>Social |
| ○ appealing | 23 | Sensory perception |
| ○ appearance | 8 | Sensory perception |
| ○ architecture museum | 24 | HumanMade |
| ○ art | 4 | HumanMade |
| ○ art pieces | 4 | HumanMade |
| ○ artificial | 11 | HumanMade |
| ○ atmosphere | 20 | Sensory perception |
| ○ attentiveness | 7 | Relating |
| ○ backside building | 1 | Spatial |
| ○ balancing between interests | 27 | Negotiating<br>Biocultural Diversity |
| ○ barriers | 12 | Obstacles |
| ○ belonging | 17 | (un)belonging |
| ○ benches | 11 | HumanMade |
| ○ benefits of nature | 18 | Sensory perception |
| ○ biodiversity | 16 | Biocultural Diversity<br>NonHumans |
| ○ blue space | 40 | Spatial |
| ○ boating | 13 | Practices |
| ○ borders | 7 | Spatial |
| ○ bridge | 5 | HumanMade |
| ○ bringing people together | 2 | Practices<br>Social |
| ○ broken window theory | 1 | Concern |
| ○ café | 7 | HumanMade |
| ○ calming + relaxing | 18 | Sensory perception |
| ○ capability to care | 4 | Care |
| ○ care boundaries | 16 | Care |
| ○ care definition | 4 | Care |
| ○ caring about | 9 | Care |
| ○ caring for nature | 16 | Care |
| ○ challenging | 37 | Obstacles |
| ○ changing | 13 | Temporal |
| ○ claiming space | 8 | Spatial |
| ○ cleaning up litter | 15 | Practices |

| | | |
|---|---|---|
| ○ cluttered | 7 | Sensory perception |
| ○ combining nature + culture | 51 | Negotiating |
| ○ common kingfisher | 5 | NonHumans |
| ○ comprehensible | 4 | Perspectives |
| ○ concern boundaries | 18 | Concern |
| ○ concern definition | 2 | Concern |
| ○ concerned | 22 | Concern<br>Perspectives |
| ○ connecting | 20 | Relating |
| ○ conservation | 8 | Care<br>Practices |
| ○ contrast | 10 | Sensory perception |
| ○ creating space | 3 | Spatial<br>Practices |
| ○ crowded | 5 | Sensory perception<br>Perspectives |
| ○ cultural heritage | 3 | HumanMade |
| ○ defending territory | 3 | Spatial<br>Practices |
| ○ design | 22 | HumanMade |
| ○ developing something | 6 | Practices |
| ○ dirty | 4 | Sensory perception |
| ○ disbalance | 3 | Perspectives |
| ○ disrespecting | 2 | Perspectives |
| ○ distance | 17 | Spatial |
| ○ disturbing | 20 | Sensory perception |
| ○ diversity of interests | 12 | Biocultural Diversity |
| ○ ecological connection zone | 17 | HumanMade |
| ○ ecological redevelopment | 17 | Biocultural Diversity<br>Spatial<br>Practices |
| ○ enjoy | 9 | Sensory perception |
| ○ enjoying the sun | 2 | Sensory perception |
| ○ enough space | 22 | Sensory perception<br>Spatial |
| ○ examplar | 4 | |
| ○ exclusive | 3 | (un)belonging |
| ○ experience | 17 | Perspectives |
| ○ explaining elaborating education | 9 | Practices |
| ○ familiar | 8 | Perspectives |
| ○ fauna passage | 1 | HumanMade |
| ○ fear | 2 | Perspectives |
| ○ financial costs + constraints | 10 | Obstacles |
| ○ fish ladder | 6 | HumanMade |
| ○ frequency | 11 | |
| ○ friction | 5 | Perspectives |
| ○ gazing | 14 | Practices |

| | | |
|---|---|---|
| ○ giving to Dommel | 2 | Relating |
| ○ graffiti | 4 | HumanMade |
| ○ green | 21 | NonHumans |
| ○ greening | 11 | NonHumans<br>Practices |
| ○ hang out spot | 3 | HumanMade<br>Spatial<br>Social |
| ○ healthy | 4 | Care |
| ○ homeless | 5 | (un)belonging |
| ○ incomprehension | 12 | Relating |
| ○ indifference | 2 | Relating |
| ○ insufficient knowledge | 5 | Obstacles<br>Perspectives |
| ○ interruption | 3 | Relating |
| ○ invading | 12 | Relating |
| ○ invasive species | 7 | NonHumans |
| ○ let nature do its thing | 5 | Perspectives |
| ○ litter | 31 | HumanMade |
| ○ location | 28 | Spatial |
| ○ maintenance/ caretaking | 43 | Care<br>Practices |
| ○ making Dommel visible | 7 | Practices |
| ○ meaning Dommel | 24 | Relating<br>Perspectives |
| ○ meeting current challenges | 2 | Obstacles |
| ○ memories | 10 | Perspectives<br>Temporal |
| ○ natural scenery | 4 | |
| ○ neat | 1 | Sensory perception |
| ○ needing time | 9 | Obstacles<br>Temporal |
| ○ neglected | 5 | Sensory perception |
| ○ nice place | 12 | Sensory perception |
| ○ nighttime | 9 | Temporal |
| ○ no influence | 1 | Perspectives |
| ○ noise | 3 | Sensory perception |
| ○ not allowed | 8 | (un)belonging |
| ○ only in interest of a few | 4 | Justice |
| ○ other people | 3 | Relating<br>Social |
| ○ peaceful + quiet | 1 | Sensory perception |
| ○ perception | 2 | Sensory perception |
| ○ personal thoughts | 10 | |
| ○ plant species | 25 | NonHumans<br>Social |
| ○ policy | 16 | HumanMade |

| | | |
|---|---|---|
| ○ private property | 8 | HumanMade<br>(un)belonging |
| ○ public space | 8 | Spatial |
| ○ rain catchment | 4 | HumanMade |
| ○ rats | 4 | NonHumans |
| ○ reasons for visiting | 23 | Perspectives |
| ○ recreation | 19 | Practices |
| ○ responsibility | 21 | Relating |
| ○ restaurant | 25 | HumanMade |
| ○ risk + danger | 18 | Sensory perception |
| ○ rules | 10 | HumanMade |
| ○ security cameras | 1 | HumanMade |
| ○ shadow | 4 | Sensory perception |
| ○ skaters | 1 | Practices |
| ○ skills + knowledge | 2 | Social |
| ○ smoking | 6 | Practices |
| ○ social encounters | 17 | Practices<br>Social |
| ○ social safety | 11 | Relating<br>Social |
| ○ sounds (of river) | 16 | Sensory perception |
| ○ spatial practices | 30 | Practices |
| ○ special | 3 | Perspectives |
| ○ stadshuistuin | 9 | HumanMade |
| ○ static | 1 | Perspectives |
| ○ succesful development | 11 | Perspectives |
| ○ surveillance | 12 | Relating |
| ○ technology | 10 | HumanMade |
| ○ too little green | 12 | Perspectives |
| ○ too little use | 9 | Perspectives |
| ○ town hall | 1 | HumanMade |
| ○ unappealing | 3 | Sensory perception |
| ○ unawareness | 1 | Relating<br>Perspectives |
| ○ unbelonging | 24 | (un)belonging |
| ○ uncare | 6 | Concern |
| ○ uncertainty | 1 | Relating<br>Obstacles |
| ○ unfamiliar | 1 | Perspectives |
| ○ uninviting | 5 | Perspectives |
| ○ unsatisfied | 14 | Perspectives |
| ○ urban heat island | 4 | Sensory perception |
| ○ vandalism | 17 | Concern |
| ○ way of looking | 41 | Perspectives |
| ○ weird | 5 | Sensory perception<br>Perspectives |
| ○ windy | 6 | Sensory perception |

| | | |
|---|---|---|
| ○ young people + children | 8 | Practices<br>Social |
| ○ zeitgeist | 3 | Temporal |
| ○ zoning plan | 3 | HumanMade |