Literature review

This section reviews the academic literature on urban blue spaces (UBS), and incorporates literature from wider fields like urban ecology. It also introduces concepts that are central for understanding equity with regards to UBS, namely environmental justice and accessibility.

The benefits of urban blue spaces

In an urban context, UBS have undeniable positive effects which Gascon et al. (2017) summarise as "stress reduction, increased physical activity, promotion of positive social contacts, increased place attachment and the reduction of extreme temperatures". These benefits fall under three broad categories: health and well-being, community, and climate adaptation. First, being exposed to water makes people feel better, happier, and be more active. There is an extensive repertoire of quantitative studies demonstrating these effects on people's health and well-being (Gascon et al. 2017, Britton et al. 2020). Qualitative studies also show that exposure to UBS improves mental health, regardless of how people interact with it (Garrett et al. 2019, van den Bogerd et al. 2021). Second, UBS give people the opportunity to connect with each other and with nature. UBS revitalisation projects can be an opportunity to create community bonds by engaging residents in the design and implementation process. For example, the small-scale waterfront intervention in a deprived area of Plymouth, UK, revealed that residents who participated in the project reported a greater sense of well-being and life satisfaction due to feelings of community belonging and safety (van den Bogerd et al. 2021). Lastly, in the context of climate change, UBS can naturally alleviate pollution, heat stress, flooding or drought, and increase the climate resiliency of cities (Lin et al. 2020, O'Donnell et al. 2021).

Given the potential of UBS, and that public space is highly valued commodity in the city, revitalising unused UBS into attractive environments helps make the most of all urban areas.

The social and environmental consequences of blue urban renewal

Despite the undeniable benefits of water in the city, transforming UBS into high-quality public space can have harmful consequences on people Two mechanisms of action are exclusionary planning, and neoliberal urban renewal. These reinforce socio-spatial inequalities by discriminating against people on the basis of socio-economic and cultural differences, or

by way of racist and sexist practices.

First, in contrast to the social bonds that can be fostered when residents are involved in revitalisation projects, connections between people and with nature can be disrupted if UBS are revitalised without considering the local community's perceptions. As Toomey et al. (2021) demonstrate, people do attach meaning to degraded or polluted UBS, and it can't be assumed that these hold no value for the local community. However, marginalised or stigmatised communities may find it hard to communicate their experience when consulted by planners, because they lack a common language to articulate their reality. And vice-versa: wealthy, white, males may not be capable of understanding the experience of 'others' (Anguelovski, Brand, et al. 2020). To this end, Toomey et al. (2021) propose using language like "place-disruption" and "place-protection" to promote mutual understanding and avoid privileging the values of mainstream groups over those of marginalised communities.

Second, cities are prioritising economic growth over well-being and community. Local governments are exploiting nature-based solutions to brand their cities as green and liveable, and to promote greening (which includes blue space) as a win-win strategy where "no one is left behind by the trickle-down of benefits from green infrastructure" (Anguelovski and Connolly 2021). Anguelovski et al. (2021) explain that with "glitzy green" renewal projects, cities try to attract a new creative class rather than addressing public UBS as a common good and prioritising the concerns of existing residents (Wessells 2014, Anguelovski, Brand, et al. 2020). These strategies perpetuate inequalities by privileging the values of white, environmentally privileged upper classes who can afford to live near nature. This phenomenon is referred to as green gentrification, where upgrading green space causes the exclusion and displacement of residents, who are priced out to a neighbourhood with less attractive nature. Given the similarities in benefits and attractivity of living near blue space, it is not farfetched to assume that *blue gentrification* also takes place.

The environmental justice principle

To articulate the phenomenon whereby natural spaces provide social and environmental benefits but at the same time discriminate against vulnerable populations, scholars have used the concept of environmental justice (EJ). EJ has evolved into the principle that everyone should have equal opportunities to access clean, healthy, unpolluted spaces, and in turn, share environmental burdens. As Agyeman et al. explain (2016), it started as a social

movement in the US in the 1980s at a time when it became obvious that ethnic minority and low-income populations were disproportionately exposed to polluted and degraded land.

Since then, EJ has concretised into an academic discourse and is typically broken down into three categories: distributional justice, procedural justice, and recognition justice. Applied to public blue-green space (BGS), distributional justice refers to where these are situated in the city. Procedural justice deals with questions of discrimination in public participation and decision making. Recognition justice addresses individual and community perceptions and preferences which may influence how people interact, or not, with the space.

The applications of EJ on blue spaces are limited in comparison to green space. One study that stands out is Raymond et al.'s (2016) research on the diversity of people, activities and perceived unpleasant experiences in Helsinki's blue spaces. The wide range of opinions they find show the importance of considering a multitude of perceptions when planning UBS, because people of different age, income, gender, ethnicity, etc. have varying preferences.

It follows that environmental (in)justices take place in public space. Although there is no direct economic barrier to public space (there is no entrance fee), rarely is it fairly accessible to everyone. There exists both physical and non-physical barriers which can prevent individuals, or whole communities, from benefiting from urban nature.

Geographical vs. perceived accessibility

To date, studies that evaluate the degree to which people can make use of BGS have focused on measuring geographical accessibility, such as spatial distribution and proximity to people's homes. However, this ignores the fact that accessibility is a multidimensional concept which cannot be reduced to purely a physical dimension (Wang, Brown, and Liu 2015). Perceived access is also important to consider when studying social benefits of BGS. Are people happier and healthier because they live near nature, or because they can afford to? As Anguelovski et al. (2020) put forward, environmental justice must go further in understanding "how [...] people's experiences of place shape their perception of access".

To this end, Wang et al. (2015) suggest focusing on perceived accessibility, ie. "the quality, diversity, and size of the green spaces or socio-personal characteristics including age, income, safety, and cultural concerns", and suggests that perceived accessibility is a better determinant of green space use than proximity to home (Wang, Brown, Liu, and Mateo-Babiano

2015). This shows that in the context of environmental justice, recognition can be more influential than distributional justice in detecting unequal access to nature.

Research intention

Although evidence shows that perceived accessibility is significant in determining use of parks, there are limited studies that translate this idea to UBS. However, UBS are particularly interesting because natural water bodies like rivers or lakes are relatively immobile and cannot be planned in the same way as public parks. Thus, when it comes to providing equal opportunities to access UBS, perceived accessibility becomes more relevant than geographical distribution. This makes it worthwhile to explore the subjective experiences of UBS users, in order to understand the barriers to achieving environmental justice.

Problem Statement

The principle of environmental justice entails equitable access to clean, unpolluted environments, such as high-quality public UBS. This is important because exposure to water bodies improves people's health and well-being, and being at the waterfront can build relationships within a neighbourhood or community. In reality, a multitude of barriers exist which may prevent individuals or communities from visiting UBS even if they live nearby. The barriers include physical characteristics like preferences for the quality, size, or infrastructure of the site; and non-physical characteristics like socio-economic and personal factors including income, age, gender, ethnicity or cultural concerns. Understanding this phenomenon is important because public UBS are places of community, identity, attachment, and well-being. Ignoring subjective experiences that differ from the mainstream can contribute to social inequalities, discrimination, and displacement.

Given the above, my research aims to answer the following question: **to what extent do subjective experiences and perceptions shape how (un)fairly accessible high quality, public blue space interventions are, and what does this mean for the environmentally just city?**

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