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From industry to greenery: exploring how users experience the Regent's Canal

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Spending time in public places is positively associated with physical and mental health, nature connectedness and pro-environmental behavior. This is particularly important, with the ongoing climate crisis and biodiversity loss. However, many barriers exist which prevent people from accessing and experiencing greenspaces. Considering the importance of public places for sustainability, research should focus on how people experience public places, to better design them and encourage use. This study, therefore, explores how users experience the Regent's Canal in London, as an example of a successful public place. However, there are ongoing debates regarding the definition of experience and which spatial attributes of public places shape and affect it. To address this, the current study proposes a multidimensional definition of experience and applies it to a single case study of the Regent's Canal. Observation and walking interviews are adopted as research methods to collect qualitative data about how users experience the canal and how that spatial attributes of the canal shapes their experiences. Findings reveal that the canal's spatial attributes have a significant impact on the way users experience it and that the canal is a successful and flexible public place that transforms from a transportation route during weekdays to a vibrant recreational place on weekends. Also, the spatial attributes of the Regent's Canal demonstrate the complexity of experience and the need to research it from an individual perspective, contributing to current debates in the literature.

KEYWORDS

Regent's Canal, greenery, experience, green infrastructure (GI), sustainability

1 Introduction

Spatial attributes of public places and the way users experience them are important concepts which stand at the heart of urban design (Carmona, 2021). There is extensive literature on public places, their characteristics and how users experience them (Carmona, 2021). These studies contribute to our understanding of how public places function and what makes them 'work' and can also provide useful guidelines for how to design them better. Within this context, there is substantial research on the spatial attributes of public places and the role they play in shaping experience. These attributes include location, form, and natural elements (Handy et al., 2002; Kaplan and Kaplan, 1989; Gehl, 1987). However, previous studies focus primarily on common types of public places such as parks and streets, overlooking newer types, such as post-industrial canals, thus, leaving a gap in theory and practice.

As the literature suggests, experience is a complex concept that consists of various dimensions, (Tuan, 1977). Many scholars have attempted to deconstruct this complexity and examine its various meanings. Former studies about public places and the built environment focused on five main dimensions of experience: emotional (Wang et al., 2022), sensory (Ruiz

Arana, 2024), psychological (Kaplan and Kaplan, 1989; Ulrich et al., 1991), perceptual (Carmona, 2021; Bell et al., 1990) and uses and activities (Carmona, 2021; Gehl, 1987). The current study brings together the various dimensions of experience, adopting a multidimensional approach, hence, looking at how these dimensions work together to constitute experience in public places.

Historically, British inland waterways networks, such as canals, were developed to transport manufacturing goods in the eighteenth and nineteenth centuries and as a means of flood control (Buckman, 2016; Dodgshon and Butlin, 1990). However, by the 1850s, the waterways were in decline due to the development of road and rail systems (Bissell, 2016). Recent attempts to redevelop waterways as public places have led to a surge in tourism and use of these 'fluvial landscapes' (Prideaux, 2023). The Canal and River Trust aims to develop canals as 'a space where people can feel happier and healthier, nature is recovering and history is alive. A space for boating, angling, cycling, walking, paddling or just watching the world drift by' (Canal and River Trust, 2022). However, these efforts sometimes lead to conflict between different canal users, such as pedestrians, cyclists, and residential and leisure boaters (Church et al., 2007).

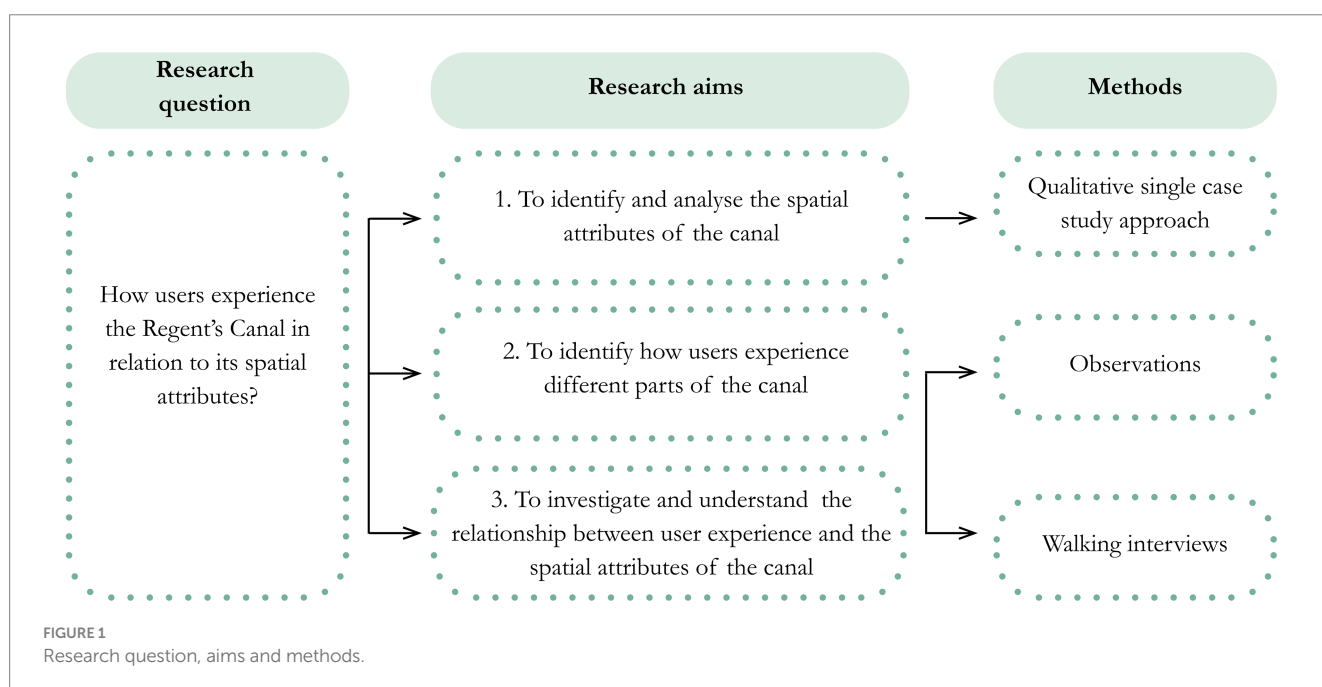
In public places, water features have been shown to reduce stress and promote relaxation (Zhang et al., 2021). Similarly, inland waterways, such as canals, have the potential to increase human wellbeing (Pitt, 2018). In his seminal study, Herzog described people's preference for views featuring water (Herzog, 1985). More recent research also suggests that in both natural and built environments, people prefer aquatic views (White et al., 2010). The restorative traits of water can be attributed to sensory experiences and aesthetic qualities (Völker and Kistemann, 2011). For instance, reflective properties combined with ripples and flows seem to encourage contemplation (Völker and Kistemann, 2015). Furthermore, these visual effects combined with the sound of flowing water contribute to wellbeing (White et al., 2010).

For several reasons, post-industrial canals offer a unique case for examining the broader debates of experience in, and spatial attributes

of public places. Firstly, they are a relatively new type of public place (Lévêque, 2021) which typically has a site-specific context. For instance, canals can be seen as catalysts for water-driven development, creating centres for leisure and recreation through walkable environments, such as the Mandalay Canal in Texas (Buckman, 2016). Further, canal redevelopment can be seen as an investment opportunity in prime urban areas (Pitt, 2018). Canals can also be part of a larger green and blue network, connecting urban and regional scales, like the Regent's Canal in London, which connects different residential neighborhoods and urban parks (Cabau et al., 2022). Moreover, growing attempts to redevelop post-industrial canals mean there is a need to understand how they work to design them better. Their distinct spatial attributes, such as being long and narrow, containing natural elements and connecting various parts of a city or town, make them of particular interest for research (Franck and Stevens, 2006). Therefore, this study aims to address gaps in the existing literature by exploring how users experience the Regent's Canal in relation to its spatial attributes. To achieve this, the study adopted a qualitative single-case study approach and collected data through observation sessions and walking interviews in the canal (see Figure 1). Through these methods, data was collected to identify the spatial attributes of the canal, explore how users experience the canal, and investigate the relationship between these.

1.1 Spatial attributes of public places

Studies show that spatial attributes influence how people use and experience public places (Carmona, 2021). These attributes include location, form, and natural elements. Some researchers argue that location and distance to a public place affect the frequency of use and the activities performed there (Schipperijn et al., 2010). Others suggest distance is not important as it relies on other factors such as the number of public places in each area (Kaczynski et al., 2008). Within this debate, shape and size are of particular importance (Corti et al.,



1996). Large-scale public places often offer diverse opportunities for congregation and group activity (Low et al., 2009). While small-scale public places might offer less diverse activities, their intimate nature can encourage social interaction between strangers (Li, 1994). Similarly, linear public places (such as canals), can offer the opportunity to experience different spatial attributes, like vegetation, paving and street furniture, cultivating various types of social interactions (Abdelrahman et al., 2018). Studies of linear landscapes, and specifically canals, speak also of their rhythmic experience (Kaaristo, 2022). This rhythmic experience can be attributed to how one perceives and engages with a public place (Wunderlich, 2013). For instance, engaging through walking, can be represented as a rhythm of spatial and temporal intersections, producing the experience of place (Edensor, 2010).

Materials are also important in public places, as they can influence the way people use and experience them (Gehl, 1987). Street furniture, such as streetlights, can encourage activity by making public places feel safer (Luymes and Tamminga, 1995). Sitting amenities can also influence the experience in public places. For instance, a study from Indonesia argues that introducing more facilities, like benches, along the East Flood Canal, can encourage use and increase social interaction (Wardiningsih et al., 2021).

Planners often borrow elements from the natural environment and incorporate them into the design of public places, referring to them as 'urban nature' (Shanahan et al., 2015). Urban nature includes various elements, two are prominent in post-industrial canals: water and vegetation. Their presence in public places provides the opportunity to 'escape from the city' and therefore promotes relaxation (Gobster, 2001). Water can influence the way users feel, and promote relaxation, health, and well-being (Stevens, 2009). Vegetation also plays many different roles in cities such as providing shade, reducing emissions and temperature and filtering pollution (Cao et al., 2010; Akbari, 2002). Plants can indicate areas for rest and activities and, therefore, influence the way people use and experience public places (Whyte, 1980).

A study looking at the Canal Nacional in Mexico City, Mexico, suggests that linear public places are usually clear in terms of directionality and many times, are contained by natural elements such as water (river, sea) or vegetation (Coello Buck and de Lourdes, 2022). Different research on the Al-Maryoutia Canal in Cairo, Egypt, mentioned the changing width of the canal path and its dysconnectivity from other walkways as affecting the way people experience it (Gamal Said and Hassan, 2016). Studies also suggest that elongated narrow parks, or those containing narrow paths, such as canal towpaths, can make users feel unsafe as the option of where to walk is limited (Carmona, 2021). This understanding links spatial attributes of public places (e.g., location, form and natural elements) to experiences, which is discussed in detail in the next section.

1.2 Experience in public places

There remains an ongoing debate about defining experience in public places, and many scholars have attempted to deconstruct the concept of experience and examine its various meanings. Former studies focused on five main dimensions of experience, as mentioned in the introduction. The perceptual dimension of experience in public places focuses on how people perceive their environment, how they

interact with it and their sense of nature connectedness (Richardson et al., 2020). The psychological dimension of experience in public places focuses on health and wellbeing, stress relief, Attention Restoration Theory, and nostalgia (Ulrich et al., 1991; Wildschut and Sedikides, 2020; Browning and Rigolon, 2018).

The sensory dimension explores the five traditionally recognized senses: taste, sight, touch, smell, and hearing (Felicetti and Fleishmann, 2022). The main debate regarding the relationship between the sensory dimension and public places revolves around the hierarchy of their importance. Some studies argue that while all of our senses react to environmental stimuli, only vision, hearing, smell and touch are important when interpreting the environment (Carmona, 2021). Initial literature from the fields of urban design, social anthropology, sociology, and cultural studies have traditionally only focused on the visual aspect (Wang et al., 2023). Other scholars acknowledge that people's relationship with the environment is more complex and can be enhanced through other sensory stimulations such as touch and smell (Jenkins et al., 2015).

The emotional dimension looks at the quality of the public realm and safety (Carmona, 2021). While emotions are defined differently by different scholars and disciplines (Cabanac, 2002), the literature links them to people's psychological states (Sharp and Kidder, 2013). Emotions can also be defined as bioregulatory reactions consisting of chemical and neural responses (Damasio, 2004), and consist of three key elements: subjective experience, psychological response and behavioral response (Mauss and Robinson, 2009). Emotions are also an integral part of everyday life, and as such affect the way people experience public places (Liu et al., 2022). Moreover, emotions can be tied to specific time and place (Davidson et al., 2005).

The uses and activities dimension focuses on the activities people engage in public places (Gehl, 1987; Gabr and Elkadi, 2023). The way people use public places is crucial to understanding if their design is 'working' (Carmona, 2021). Despite this recognition, the definition of what makes public places successful is under constant debate (Trip, 2010). The Project for Public Spaces has evaluated thousands of public places around the world and found that successful public places contain four qualities: they are accessible, people engage in activities, they are comfortable and are social places (Project for Public Spaces, 2009). Therefore, the success of public places can be seen as being directly related to how people use them.

There are various ways to characterize activities in public places. Some scholars distinguish simply between kinetic activities that involve motion, such as exercise, and static activities, such as sitting and enjoying the view (Harun et al., 2013). A similar approach was utilized by a study from China which included adults and university students, and divided activities into low-intensity (e.g., walking, sightseeing) and high-intensity, e.g., exercising, ball games (Zhang et al., 2015). A recent integrative review of urban greenspace use among adolescents and young adults (under 25) identified three categories: physical activity (sports and exercise), relaxation and leisure (walking a dog, having a picnic, rest) and social activities, such as 'hanging out' (Lyons et al., 2022). The current study adopts Gehl's classification (Gehl, 1987), of necessary activities (commuting, dog-walking), optional activities (leisurely walking, exercising, sitting alone), and social activities (sitting, walking, and interacting with others). Optional activities are more likely to occur in high-quality environments, suggesting that the better the physical settings of a place, the larger the spectrum of activities users can perform in it

(Awwal, 2020.). This definition was adopted as it enabled the study to tie activities to spatial attributes of the Regent's Canal. These categories are also relatively easy to visually distinguish from one another (e.g., a person walking a dog in contrast to a person socializing with others), hence, making them appropriate for a study which utilizes observations as a data collection method.

Another important aspect of experience in public places, which relates to uses and activities, is social interactions. Some studies suggest that public places derive their meaning from fulfilling the human need for social interaction (Ujang et al., 2018). Social interaction can occur between people who know each other, however, public places can also be designed to be more inclusive and lively, bringing strangers together (Simões, 2016). Similarly, waterways and canals can promote social interaction. For example, a study into young people in Leicester (UK) engaged school children in activities aimed at promoting understanding and care for the River Soar through various educational and group activities. They found that social activities helped promote the practice of noticing nature in waterways among these children (Smith and Pitt, 2024). Further, researchers examining the historical transformation of the Regent's Canal concluded that its social-cultural value relates to the activities people engage in while in it, thus, affecting London's identity as a city.

On the broader debate of experience in public places, scholars suggest that some dimensions of experience are more important than others. For example, early scholars argued that the visual dimension is fundamental to city planning and affects other dimensions such as the psychological and emotional (Cullen, 1971). However, later studies claim that non-visual senses, particularly sound and smell, are prominent in examining the way users experience a given environment (Porteous, 1990). These studies are valuable to understanding how singular dimensions affect experience; however, they fail to capture its complexity. Thus, a gap remains in the literature regarding the relationships between the different dimensions of experience and how these dimensions influence and affect each other.

Researchers agree that different people experience places in different ways (Carmona, 2021). Experience can be affected directly by background (Kastanakis and Voyer, 2014), age (Turel et al., 2007), social background (Binyi and Mwanza, 2014) and spatial attributes (Gehl, 1987). Studies into environmental perception have long attempted to understand the visual preferences of groups defined by ethnicity, age, gender and economic status (Rishbeth, 2001). Cultural background can influence people's aesthetic perception of public places (Todorova et al., 2004) as well as the experiences and activities they engage in (Özgüner, 2011). For example, a systematic review found that women of ethnic minority in the UK and US are more likely to associate fear of crime with greenspace use (Sreetheran and Van Den Bosch, 2014). This means it is crucial to understand how different groups perceive and use public places to develop appropriate designs (Özgüner, 2011). Also, there is a need for planners to understand how different people may interpret different designs to create more inclusive public places (Rishbeth, 2001). Since different people experience places in a variety of ways, experience ought to be researched from an individual perspective (Canter, 1977).

The five traditionally recognized senses are taste, sight, touch, smell, and hearing. However, literature has traditionally only focused on the visual aspect (Mason and Davies, 2009). More recently, this has been changing with the growth of the field of sensory studies which seeks a more holistic approach to understanding how people experience public

places (Bull et al., 2006). This approach emerged at the turn of the 1990s in what anthropologists (Howes, 2006) called the 'sensorial revolution' in which he describes an increase in researchers from different disciplines studying sensory experiences beyond just the visual.

The current study contributes to mitigating gaps in existing literature by providing a multidimensional definition of experience in public places, as depicted in Figure 2. It then utilises this definition to explore how users experience the Regent's Canal in London, a relatively new and under-researched type of public place.

2 Methods and research design

This research was designed as a qualitative case study which builds on a combination of data collection methods to address the complexity of the explored concepts. An individual approach to experience was undertaken in correlation with the importance of a personal perspective (Canter, 1977). A single case study approach was selected and utilized to research the Regent's Canal in its natural settings (Morland et al., 1992). This method is particularly relevant to this study as it provides an opportunity for theory building of an under-used case study (Yin, 2009).

In some cities, such as Venice and Amsterdam, canals have always been part of the landscape, developed in parallel with urban expansion. In other cities, like London, canals developed as 'linear strips of industrial activity that were absorbed by the city's growth' (Cabau et al., 2022). As a result, in Amsterdam, for instance, the distribution of activities derives from the interaction between the street and canal networks. In contrast, the distribution of activities in areas around the Regent's Canal in London changes depending on the distance from the canal (Alsavada and Karimi, 2023).

The Regent's Canal in Central London is the chosen case study for this research. This canal was selected as a relevant example of a 'successful' redeveloped post-industrial canal that now serves as a public place (Canal and River Trust. Regent's Canal | Canal & River Trust, 2023). The Regent's Canal is particularly relevant for the current study, as it is centrally located within London, offers diverse views and promotes different types of activities (Barnard, 2020). The canal stretches almost 14 km from Little Venice in the west to King's Cross in the center and Limehouse Basin in the east. Due to its length and the time constraints of this research, a representative section of the canal was chosen (see Figure 3).

The chosen stretch is approximately 2 km long, between Camden Market and Granary Square and was divided into three-character areas based on varying spatial attributes (see Figure 4). This section was selected following a preliminary site visit that showed it encompasses different spatial attributes of the canal, deeming it the most relevant for this research. This approach was used to address research aim 1.

Observation and walking interviews were chosen as data collection methods. This combination of methods has been suggested as a way of collecting different datasets both by social scientists (Berg et al., 2017) and those focusing on how users experience public places (Kang and Zhang, 2010). Thus, enabling the authors to provide an in-depth analysis of an under-researched case study.

Observation sessions were utilized to examine how people use the canal, what activities they engage in and where, as per research aims 1 and 2. The data was coded and documented in a field diary by

Dimension	Focus	Key authors	Disciplines
Perceptual	Interaction with environments, perceptual systems	(Bell et al., 1990) (Gibson, 1966)	Environmental psychology
Psychological	Health and well-being, stress relief	(Kaplan and Kaplan, 1989) (Ulrich et al., 1991)	Environmental psychology
Sensory	Taste, sight, touch, smell, and hearing in the built environment	(Tuan, 2001) (Howes, 2006)	Geography Anthropology
Emotional	Quality of the public realm, safety	(Luymes and Tamminga, 1995) (Carmona et al., 2003)	Landscape Urban design
Uses and activities	Form and function, quality and flexibility of place	(Gehl, 1987) (Carmona et al., 2003)	Urban design

FIGURE 2
Defining experience in public places.

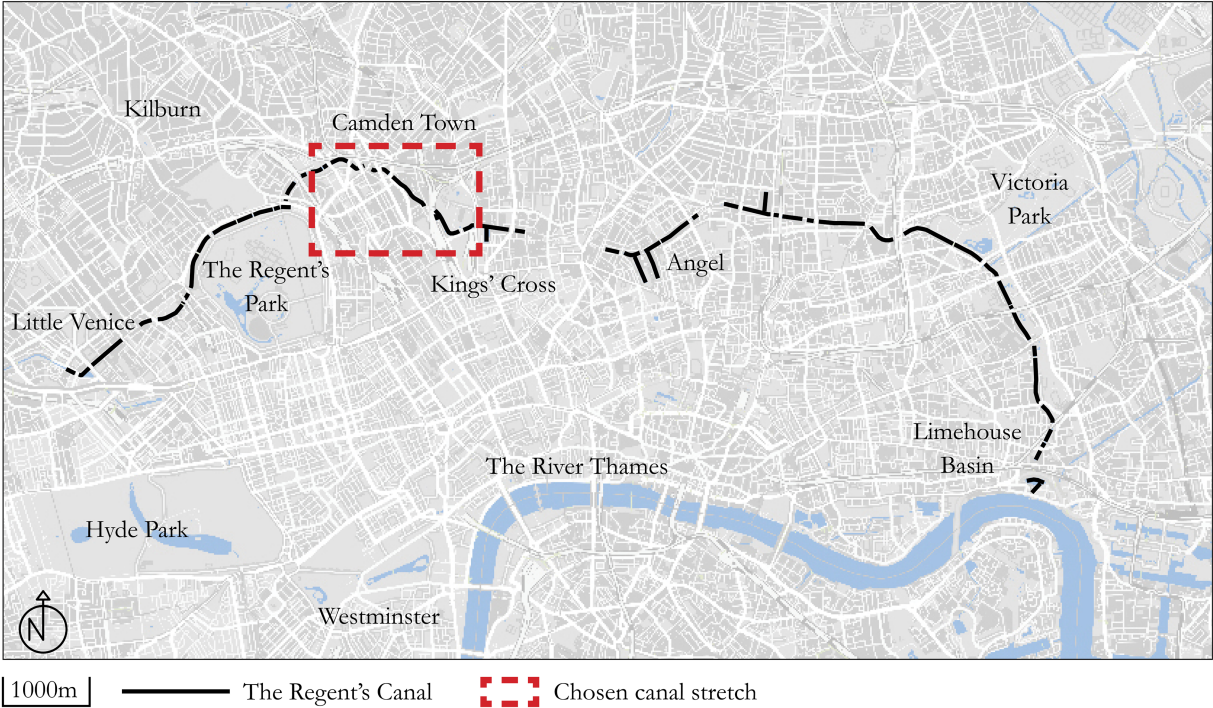
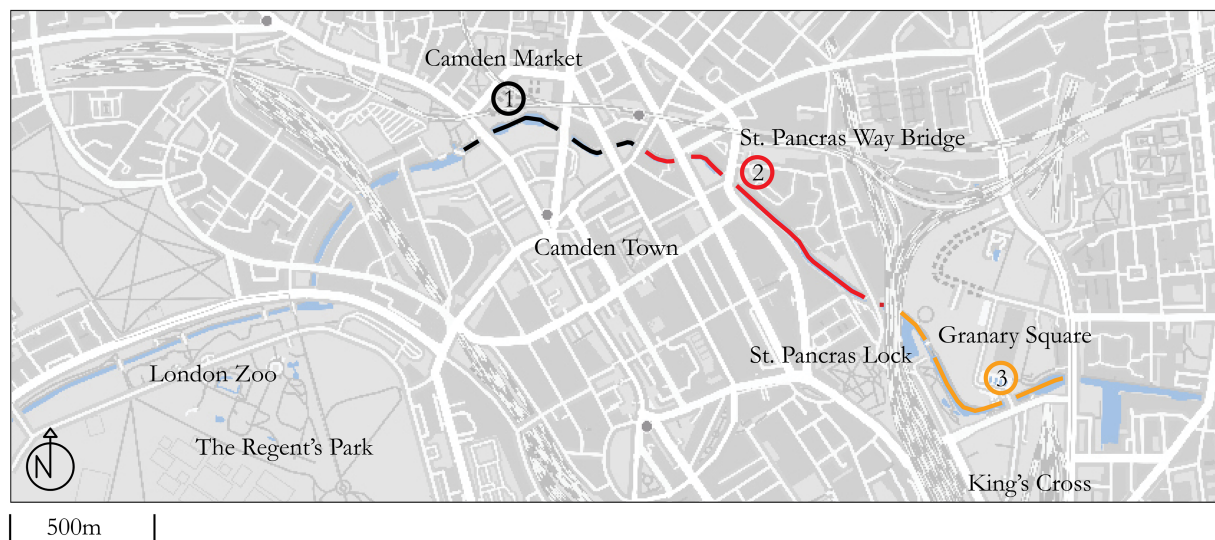


FIGURE 3
The Regent's Canal. Source: © mapz.com – Map Data: OpenStreetMap ODbL.



① Touristic and commercial area with shops, lock systems and construction sites



② Residential area characterised by greenery on both sides of the canal



③ Commercial area with a large designated seating area overlooking the canal

FIGURE 4
The chosen stretch. Source: © mapz.com – Map Data: OpenStreetMap ODbL.

location to associate the use of the canal with its spatial attributes (Cosco et al., 2010). Observation sessions were conducted on different days and at different times of the week as these variations can affect the types of activities observed (Ritchie et al., 2003). Sessions took place in June and July 2017, on workdays and weekends, between 8:00–18:00. The data was analyzed based on the previous classification of necessary, optional and social activities (Gehl, 1987). Overall, 795 users were documented in 10 h of observation.

Walking interviews were chosen to collect data on how users experience the canal, as they are conversational and can provide flexibility and the potential to vary between participants, increasing the individual nature of the answers given (Carpiano, 2009). Walking interviews also contribute to the understanding of emotions, reflections and perceptions of place (Anderson, 2004). Overall, 10 interviews were conducted. Interviewees were chosen to reflect different users of the canal, such as joggers, cyclists, walkers, individuals, and families. They all lived in London and used the canal regularly. While this is a relatively small sample size, it was aimed at understanding individual experiences rather than producing generalisations (Flyvbjerg, 2006). Interviewees were asked preliminary questions before the walking part commenced and stopped at the three different character areas along the canal.

Preliminary questions were in the form of a questionnaire participants completed, and the summary of their answers is depicted in Table 1 below. Then, interviewees were asked identical questions to examine how they reacted to the changing spatial attributes of the canal. These questions included asking interviewees how they feel at each stop, which elements, if any, do they find visually appealing or unappealing and why, which sounds do they typically hear and how they make them feel, do they usually feel safe in this part of the canal and why, do they feel comfortable walking/jogging/cycling (in terms of materials, even paving) and why, would they change anything or add anything to this area and why. At the last stop, they were asked concluding questions, such as what are your favourite and least favourite parts/places/elements of the canal and why, which part of the walking interview left the stronger impression on you and why, and if there was anything else you would like to add about your experience in the canal. All these questions were used to explore the relationship between how users experience the canal and the canal's spatial attributes, addressing research aims 2 and 3. Interviews were recorded to achieve maximum accuracy and detail for the analysis stage (Rubin and Rubin, 2012). Notes were taken to complement the recordings and provide additional information such as location and nonverbal behavior (King and Horrocks, 2010).

TABLE 1 Walking interview participants.

Pseudonym	Age	Gender	Ethnicity	UK/ International	Distance to Regent's Canal	Frequency of use	Times of visit	Main purpose of visit	Who do you usually come with?
P1	25	F	Hispanic or Latin American	International	10-min walk	Several times a month	12:00– 17:00	Leisure/ relaxing, walking	Partner
P2	23	F	White	UK	Visiting the area	Several times a month	12:00– 17:00	Leisure/ relaxing	Alone
P3	27	F	White	International	Longer car journey	Less than once a month	12:00– 17:00	Leisure/ relaxing	Alone, with a partner
P4	30	F	Hispanic or Latin American	International	10-min walk	Daily	8:00– 12:00	Jogging	Alone
P5	25	F	Hispanic or Latin American	International	10-min walk	Weekly	12:00– 17:00	Jogging, cycling	Alone
P6	32	F	Middle Eastern	International	10-min walk	Several times a month	12:00– 17:00	Leisure/ relaxing, walking	Partner and child
P7	26	M	White	International	10-min walk	Several times a month	12:00– 17:00	Walking	Alone, with friends
P8	41	M	White	International	10-min walk	Several times a week	8:00– 17:00	Leisure/ relaxing, walking, jogging cycling	Partner and child
P9	22	F	Hispanic or Latin American	International	Longer car journey	Several times a month	17:00– 22:00	Leisure/ relaxing, walking, picnic	With friends
P10	31	M	White	UK	Further walk	Weekly	12:00– 17:00	Cycling, commuting	Partner and child

Overall, 10 walking interviews were conducted. Interviewees' age ranged between 22 and 41, with three identifying as male and seven as female. Two interviewees were from the UK and the remaining eight were of different nationalities. This might be explained by many of the canal users being tourists (Little et al., 2023) as it runs through tourist hot spots like King's Cross and Camden Market. Table 1 below summarizes participants' socio-economic background, the distance between the canal and their home, how often they visit the canal, when they visit it, for what purpose and with who.

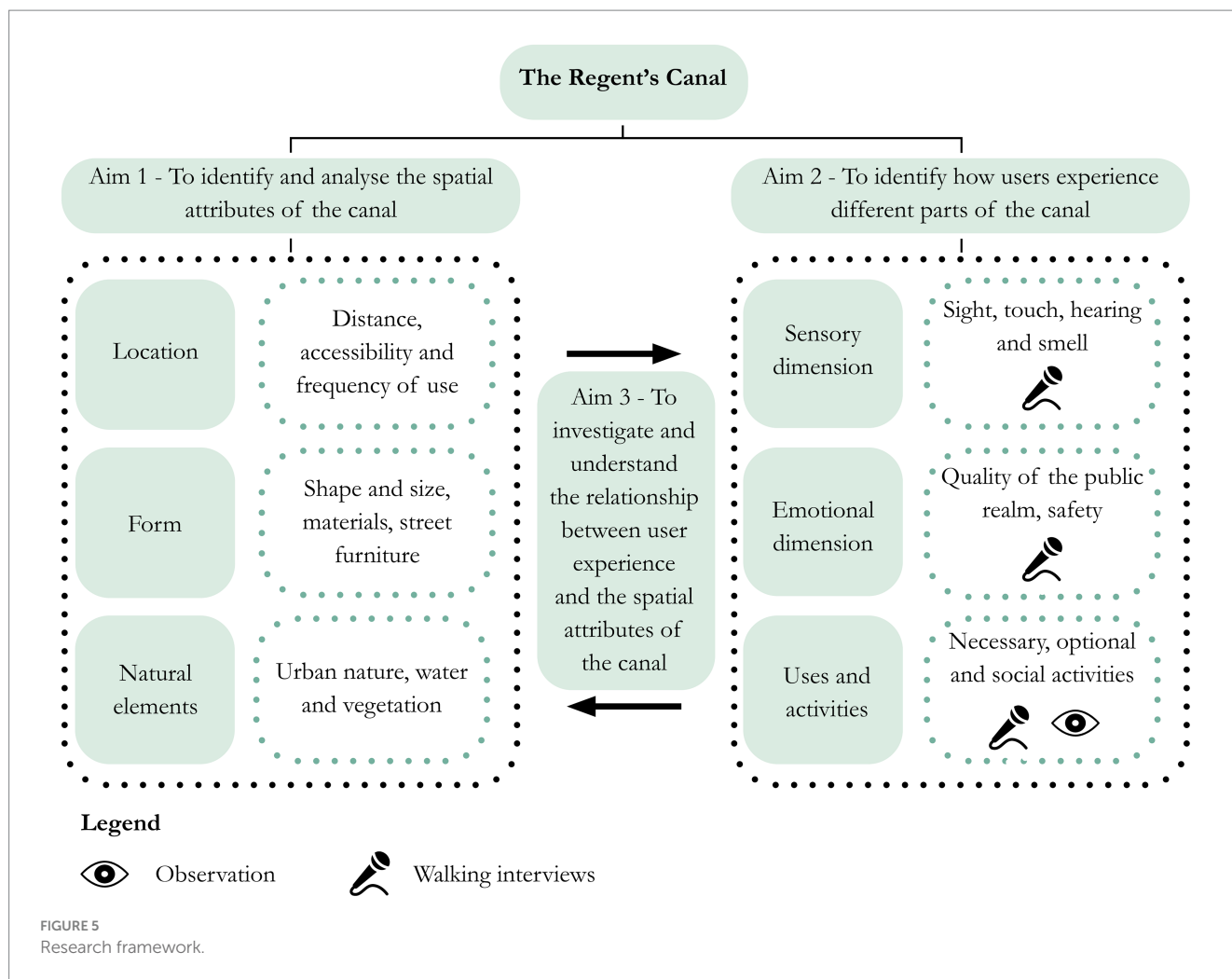
For the walking interviews, participants were asked questions about how they experienced the Regent's Canal. Preliminary questions included asking participants to describe their typical canal visit route and its purpose, how they usually feel while using the canal and who they usually come with. During the walking interviews, participants were asked identical questions in all three character areas, to try and tie their experiences to the canal's spatial attributes. These questions included how do you feel walking on the towpath, do you find this area visually appealing, which elements in this area do you like and do not like, do you ever notice sounds and smells when you are here and how do these make you feel, do you feel safe in this area, would

you come here after dark, do you ever come here alone, do you feel the canal provides you with your needs when you walk/cycle/run, and, is there anything about this area that you would change. For all questions, participants were prompted to provide as much detail as possible and reasoning.

Due to time and resource constraints, a decision was made to focus on three key dimensions of experience, deemed most relevant to answering the research question: sensory, emotional and uses and activities. Figure 5 illustrates the study's framework, highlighting the relationship between research aims and methods. This section is then followed by a detailed discussion of the study's findings.

3 Findings and discussion

This research explored how users experienced the Regent's Canal in relation to the canal's spatial attributes. Key dimensions of experience and spatial attributes were defined, and the relationship between them was analysed. This section discusses the key findings, reviews research implications and limitations and highlights areas for



future study. Research findings suggest that spatial attributes of public places influence experience (Zakariya et al., 2014). Particularly, the findings illustrate which spatial attributes of the canal affect each of the dimensions of experience: the canal's location affected the way people used it, and the activities users performed in it while its natural elements influenced both the sensory and emotional dimensions. Findings also show that the form of the canal was the most dominant factor which influenced all three key dimensions of experience.

3.1 Spatial attributes of the Regent's Canal

The Regent's Canal was constructed in 1820 and used to deliver goods across London until 1956 when the railway surpassed it as the primary means of commercial transportation. By the late 1970's the towpath was used as an underground route for electricity cables. In 1996 the Canal and River Trust partnered with British Waterways to regenerate the canal and reintroduce it as a linear public place (London Canal Museum, 2023). Despite changing its function over time, the canal maintained most of its original spatial attributes.

3.1.1 Location

The chosen canal stretch is situated in Central London and has multiple entry points, making it accessible. It contains two major entry

points: Granary Square and Camden Market. There are six other entry points distributed evenly along the three character areas, two accessible to wheelchair users. The excellent accessibility of the canal enables individuals to use it as part of their daily routine. This was supported by P4 (F,30): 'I come daily because I live 10 min away', confirming findings from previous studies that proximity to public places encourages use (Carmona, 2021).

Data also suggests the canal transformed from a transportation route during mornings and afternoons of weekdays to a vibrant recreational place in the evenings and weekends. This finding aligns with previous research which found a difference in how people use public places during weekdays and weekends (Pinto et al., 2021). The combination of the canal's narrow towpath, excellent connectivity, central location, and a car-free environment encourages commuters to use it during mornings and afternoons of weekdays, while others use it for leisurely walks and cycles during weekends. P10 (M,31), for example, discussed cycling through the canal during weekends: 'I used to cycle with my wife for leisure... we have done a lot of bike trips through the canal. It's the best way to travel through London to the west.' Both walking and cycling are considered 'soft' methods of transportation, promoted by the Regent's Canal car-free environment (Cabau et al., 2022). This finding sheds new light on how the Regent's Canal is experienced during different days and times, expanding on what literature on canals as public places has found to date.

3.1.2 Form

Originally designed for horses, the canal's towpath spans one and a half to three and a half meters wide and is paved primarily with concrete slabs. It runs along the canal uninterrupted providing a linear and barrier-free experience. This continuity appealed to some of the canal users, as mentioned by P2 (F,23): *'The canal has a sense of continuity throughout which is really nice'*. P10 (M,31) agreed and added: *'I like that you do not have barriers when walking along the canal'*. This finding relates to the concept of rhythmic experiences, which helps shape experiences in public places (Edensor, 2010) and canals in particular (Kaaristo, 2024). Moreover, it provides new insight into how people experience the Regent's Canal, by demonstrating the importance of visual and physical continuity for experience. Furthermore, a recent study of people's experiences in a heritage canal in China found that they prefer larger water surface areas with fewer barriers (Jiang et al., 2025).

Along the canal, street furniture is limited; there are no designated sitting amenities. Only two rubbish bins are available to users, and streetlights are rare and concentrated primarily near or under bridges. P7 (M,26) mentioned the lack of bins in Camden Market as a possible explanation for litter he noticed *'I really hated seeing the garbage on the canal paths and in the water. There were no bins'*. In contrast, P4 (F,30) described Granary Square as a clean area due to bins she saw there: *'It is nice because it is an open space, the canal is clean, there are rubbish bins'*. This relates to a more general debate on maintenance and incivilities. A recent report on community-led canal-side spaces in the UK found that in several canals across London, full bins contribute to a visually unappealing environment (Grosman et al., 2024). Hence, aligning with the current study.

The lack of resting stops and sitting amenities along the canal might discourage users from lingering (Gehl, 1987). For example, P4 (F,30) mentioned this as a reason for why she does not linger on St. Pancras Way Bridge: *'On other parts of the canal when you see benches the places are beautiful. So, I think this part is just merely for transit'*. This was corroborated by the observations, which showed most people chose to sit or loiter in the other two character areas and can be of particular importance to organizations such as the Canal and River Trust which are dedicated to regenerating canals as public places. As the literature suggests, amenities such as benches can encourage people to use public places (Doick et al., 2013) and canals in particular (Benton et al., 2021). Moreover, wider towpaths and designated seating areas in Camden Market and Granary Square character areas encouraged users to perform a broad range of activities, highlighting the canal's diversity as a public place (Gehl, 1987). This was also noticed by interviewees, such as P2 (F,23) who mentioned the appeal of having places to sit: *'I think visually appealing we have got some benches with a lot of greenery'* Granary Square P2 (F,23). This finding aligns with research that shows providing different spatial attributes can encourage more diverse uses of public places (Wang et al., 2021).

The Camden Market area has a curvy and relatively wide towpath. Several bridges, construction sites and lock systems line the canal. The bridges are low, and the towpath under them temporarily narrows, allowing only one person to cross at a time. These attributes, along with the curvy nature of the path, make it hard to see ahead. Such characteristics (e.g., bridges and towpaths) are representative of post-industrial canals in England (Fathers, 2012; Fisher, 2012). The St. Pancras Way Bridge area has the narrowest towpath, averaging only one and a half metres wide. Mixed-use developments are present

along the canal, along with designated areas for boat mooring. Vegetation can also be seen along the towpath. Granary Square character area also has a few lock systems within it. The towpath is the widest in this section and is adjacent to a designated seating area covered with artificial grass and accessible by stairs. A temporary floating bridge connects the square to the towpath in the west, and a new pedestrian bridge is under construction to connect the two sides of the canal.

3.1.3 Natural elements

Vegetation such as trees, bushes, shrubs, and water plants, is present throughout the canal. The canal's waterfront is accessible throughout as there are no barriers between the towpath and the water, except for railings under bridges as previously mentioned. Camden Market is a built-up commercial area, yet its spatial attributes reflect the canal's character as a place of urban nature. The market has matured weeping willow trees and a pedestrian bridge that crosses over the canal, visually strengthening the waterfront experience (Benton et al., 2021). St. Pancras Way Bridge character area contains mixed-use developments along its southern bank. This was also mentioned by P6 (F,32): *'I find this is a very urban part, the buildings are right on the canal'*. This area also has more vegetation than the others, which is visible on both banks. During observation sessions, there was also a significant presence of wildlife (fish and waterfowl). This validates previous studies which highlighted the importance of canals to promoting biodiversity in urban areas (Tölgyesi et al., 2022). Furthermore, it provides a novel insight into the potential role the Regent's Canal might play in the local ecosystem.

The area surrounding Granary Square is more urban, with vegetation on one side of the canal and buildings on one or both. The adjacent gas holders are part of a residential redevelopment that contains a local park and is accessible directly from the canal. Some interviewees enjoyed it as a contrast to the urban environment, as detailed by P2 (F,23): *'I think visually appealing we have got a lot of greenery... it looks really nice. It's a break between the canal and much more city-like buildings'*. This aligns with previous research that looked at people's preferences and perceptions of a canal in China and found that aesthetic preferences were linked to increased vegetation visibility (Jiang et al., 2025). Figure 6 summarizes the spatial attributes of the three character areas of the Regent's Canal and is followed by findings relating to how users experienced the canal.

3.2 Experience in the Regent's Canal

The way interviewees experienced the canal was researched and analyzed using three key dimensions (sensory, emotional and uses and activities), as detailed in the methodology section. All findings are presented by location to analyse the relationship between their spatial attributes and the way interviewees experienced them.

3.2.1 Sensory dimension

Interviewees experienced the Camden Market character area primarily through sight, sound, and smell. Visually, some of its natural elements were described as appealing, such as the weeping willow trees. Observation sessions confirmed this as people were seen taking pictures of and around the trees and bridge. P3 (F,27), for instance, referred to the trees and described her overall visual experience and

① Camden Market



Location: Main entry / exit point to the canal, wide towpath, shopfronts and construction sites



Form: stone bridges with railings, curvy tow path made of concrete slabs, no street furniture.



Natural elements: mature Weeping Willow trees, access to canal and pedestrian bridges over it, access to lock system

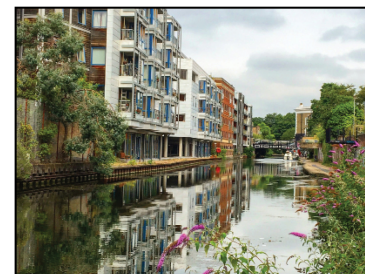
② St. Pancras Way Bridge



Location: both sides of the canal are built (partly residential and partly industrial / commercial), multiple local access points to the canal



Form: narrow towpath, low concrete bridges with railings, no street furniture



Natural elements: waterfront mixed-use development, vegetation on both sides of the canal, wildlife sightings (fish and waterfowl)

③ Granary Square



Location: main entry / exit point to the canal, wide towpath with large sitting area for individuals and groups.



Form: several lock systems, no street furniture beyond Granary Square, wide towpath



Natural elements: far bank is covered with lush vegetation, Camley Street Natural Park attracts fish and waterfowl

FIGURE 6
The spatial attributes of the Regent's Canal.

how it made her feel: *'Camden is busy, but you can hear water running and see the large willow tree. I like the lock; it has a rustic look, [and] it looks old and authentic.'* Her experience supports observations made of people coming to the canal to relax and is aligned with the argument that public places can provide a temporary escape from the city (Gobster, 2001). Moreover, this aligns with research that emphasizes

the potential of canals to promote various wellbeing behaviours (Benton et al., 2021). It also sheds new light on the significance of the Regent's Canal as a place of relaxation for the people using it.

The multiple lock systems in Camden Market provide repeating encounters with the canal's waterfront, shaping the experience through sound. P9 (F,22) mentioned this: *'I would usually pick a spot*

in the shade to eat in; the sound of the water is very soothing'. This finding validates previous studies which established a relationship between the sensory and emotional dimensions (Sabido, 2023). This was also the only character area where interviewees mentioned experiencing the smell, with P1 (F,25) saying: *'It did not smell very good, I wasn't afraid but it wasn't a pleasant place to be'*. This experience was evoked by a homeless camp under Camden Street Bridge and validates the critical role the sense of smell plays in the way people feel in the environment, and further validates the relationship between the sensory and emotional dimensions of experience (Xiao et al., 2020).

Some of the interviewees described the St. Pancras Way Bridge character area as the most visually appealing. P6 (F,32), for example, enjoyed the graffiti: *'There is a lot of graffiti which is really nice as it creates a different atmosphere'*. The tiles which make the towpath in this area were also perceived as pretty by P3 (F,27): *'I prefer the darker bricks; I think they are more visually appealing than the concrete tiles that seem to have been here for a very long time'*. This affirms studies by previous researchers who argued that materials can be used to create a sense of place by distinguishing an area from its surroundings (Ewing et al., 2006). Paving materials can also be used as visual and tactile guides along canal towpaths (Kaaristo et al., 2020). Nonetheless, not all interviews felt the same about the towpath. For some, the canal's paving was experienced as visually incoherent and unattractive, as described by P1 (F,25): *'The pavement is quite ok for me because I'm healthy and young but I think it changed a lot, it wasn't very even all the way'*. This finding relates to previous work on accessibility and barriers experienced by canal users (Langridge and Johnson, 2006). However, more research needs to be done to provide tangible design tools for enhancing the accessibility and inclusivity of the Regent's Canal as a public place.

Beyond the visual, the canal's towpath also influenced users' sensory experience of touch, as different users experienced the canal differently. While some pedestrians found it pleasant to walk on, joggers described a very different experience. P2 (F,23) who walks in the canal several times a month said: *'... mostly I found [the paving] very pleasant, it's a flat level surface which is very easy to walk on'*. However, P4 (F,30) who jogs in the canal daily had a different experience: *'The paving is uneven and you feel it especially when you are jogging, you feel your steps 'moving'. Some blocks are not quite fixed and in winter they had water underneath and when you stepped on them you would get wet'*. This varying experience might stem from these two interviewees using the canal for different reasons (leisure vs. jogging) and in different frequencies (several times a month vs. daily). It also validates, once more, the importance of individual experience in public places, and expands on existing literature by suggesting that frequency of use and experience are linked.

In contradiction, almost all interviewees experienced the character area of Granary Square as visually pleasing. Specifically, the sight of vegetation was perceived as a positive. P5 (F,25) mentioned: *'I do like this space, its green and beautiful landscape'*. Similarly, P7 (M,26) said: *'I like looking at the canal and all the green'*. Observation confirmed this as individuals, couples and groups were seen using the seating area throughout the sessions, watching the canal and taking pictures. This relates to findings from former studies which showed that in public places, vegetation can increase visual appeal (Smardon, 1988) and promote relaxation (Krisantia et al., 2021).

Sound also shaped users' experience in the canal, and it was mentioned concerning the water. P7 (M,26) said: *'The sound of the*

water flowing always relaxes me and that's why I come here'. P9 (F,22) had a similar experience: *'I love the trees...the sound of the water is very soothing'*. This finding supports the relationship between the sensory and emotional dimensions of experience. As shown by previous studies, the sound of flowing water promotes relaxation within the built environment (White et al., 2010). This link has also been established by researchers looking specifically at canals (Pitt, 2018).

3.2.2 Emotional dimension

The Camden Market character area evoked various emotional responses from interviewees, primarily related to its form. The combination of the narrow towpath and low bridges resulted in low visibility and caused some interviewees, like P7 (M,26) to feel unsafe: *'[under the bridge] I was kind of scared, looking for cyclists that were going to run over me...they are dark....'* During observation sessions, pedestrians were seen slowing down before going under bridges. Cyclists, however, seemed more confident and went straight through. Safety was also mentioned by users when talking about the tow path, as mentioned by P2 (F,23): *'At night, in the dark there are no lights, some parts are narrow so you are very close to the water, I'm a bit clumsy so might fall in'*. This aligns with other studies that found some people fear falling into canals, particularly when paths are wet and slippery (Pitt, 2018).

Interviewees' experiences in the canal were sometimes contradictory, demonstrating the complexity of the experience (Davidson and Bondi, 2004). In some locations, especially when the towpath was narrow, users expressed concerns about their safety. This aligns with other studies that found a link between canals and other waterways' spatial attributes and people's experiences in terms of safety (Pitt, 2018). Despite this, participants rejected the idea of having railings along the canal and justified this by saying railings would harm the canal's visual appeal. This further validates the tension between safety and visual appeal in public places (Gold and Revill, 2014). Further, this contradiction reflects the connection between users' feelings (emotional dimension) and opinions on visual appeal (sensory dimension), shedding light on the relationship between the dimensions of experience.

As expected, users responded positively to the natural elements in the canal, particularly the trees. For instance, P8 (M,41) said: *'The canal is always pleasant to walk in, even when it is sunny, you can find shade under trees'*. Shade and microclimate made interviewees feel physically comfortable while being by the canal, validating previous studies which tied comfort to the quality of the public realm in linear landscapes (AlMohannadi et al., 2015).

Physical and perceived safety were also emotions many of the participants mentioned during the interviews. As previously discussed in the literature, linear public places (such as waterways and canals) are often perceived as unsafe, particularly by female users (Luymes and Tamminga, 1995). Both male and female interviewees said they avoid the canal after dark. For instance, P8 (M,41) said he does not jog in the canal after dark as: *'there is lack of visibility and that's why I did not continue to run in the nights'*. In contrast, P1 (F,25) said: *'In the daytime totally safe, alone and everything, because it's full of people... I would not come here in the dark'*. Other participants said similar things, making it clear that their reasoning behind not going to the canal after dark is different; female interviewees felt personally unsafe and exposed to harm by others while male interviewees were more nervous about possible injury due to low visibility. This ties in with

existing debates in the literature about the relationship between the perception of safety in public places and sex/gender (Navarrete-Hernandez et al., 2021). A more recent study from Manchester, UK, found that there is a need to improve public safety on the canal, through measures such as improved lighting and fencing (Kaaristo et al., 2024).

Several female interviewees also said they felt physically uncomfortable passing under bridges as they had to bend to avoid overhead injury and could not see the path ahead. P4 (F,30) addressed this: *'I usually feel unsafe, and especially under the bridge because you cannot see what is coming, because the bridge is so low and narrow and the path bends.'* This was corroborated during the observation sessions, as pedestrians were seen slowing down before going under bridges to make sure the path ahead was clear. Cyclists, however, seemed more confident and went straight through. Perhaps the combination of being mounted on a bicycle and travelling at speed made them feel less susceptible to the danger of being hit by pedestrians. This aligns with early research about canal users conducted in Liverpool, England, that found cyclists are perceived by other users as a possible threat to their safety (Banister et al., 1992).

Despite this, other participants mentioned positively experiencing the bridges. P3 (F,27), for instance, felt quite comfortable under the bridges: *'I liked the lower overpass bridges; they had a cosy feel of the canal which I enjoyed.'* P1 (F,25) had a similar view: *'I find the trees and pedestrian bridge visually appealing.'* P2 (F,23) shared her view having visited other canals: *'I do not think the bridges change how I feel, I'm quite neutral about them. As I was saying when I lived in Birmingham I used to be in the canal a lot so the bridges you kind of get used to it.'* It is interesting to note that these three participants were speaking of the St. Pancras Bridge Way character area, validating previous research that argued different people experience public places in different ways (Carmona, 2021). Thus, further emphasizing the importance of researching experience from an individual perspective (Canter, 1977).

Interviewees' emotional responses in St. Pancras Way Bridge also focused extensively on the interaction between canal users, like the Liverpool study mentioned above. Some interviewees felt uncomfortable whenever cyclists were passing by on the narrow towpath. This finding aligns with previous research which highlighted mobility conflicts between pedestrians and cyclists in the Regent's Canal (Kaaristo et al., 2020). Conflicts were also visible during observation sessions, particularly during mornings and afternoons of weekdays when some people use the canal for commuting. P1 (F,25), who comes to the canal monthly for leisurely walks, described one encounter: *'The bicycles were going too fast, it was scary when they approached you.'* Despite this, interviewees said they prefer the waterfront to be visually free of barriers when asked if they would rather have had railings as a safety measure along the canal (and not just under bridges). This finding describes a tension between aesthetic and safety considerations, which can be of interest to planners (Mambretti, 2011).

3.2.3 Uses and activities

Activities users engaged in were documented and grouped into three categories: necessary, optional, and social. People were observed using the canal for some necessary activities, primarily commuting. Commuting was inferred by people's clothes (e.g., suits and smart

clothes) and time of day (between 08:00–09:00 and 17:00–18:00). While this is not always accurate, similar assumptions have been made by other scholars utilizing observation as a method to explore uses and activities in public places (Lim et al., 2021; Munoz-Mendez et al., 2018). The largest volume of users engaged in optional activities. Approximately two-thirds of them were seen during weekends, suggesting that the canal transformed from a transportation route during weekdays to a place of leisure during weekends, thus, providing a new and exciting understanding of the canal as a public place.

Activities varied from walking for leisure and exercise, jogging, dog-walking, cycling, sitting, eating, and playing. Such a broad range of optional activities usually occurs in high-quality environments (Gehl, 1987). Camden Market had a substantial amount of people observed performing optional activities. This is not surprising as its towpath is wide and provides areas for resting. Visually attractive features such as trees, pedestrian bridges and locks contribute to the overall quality of the public realm. During observation in Granary Square and Camden Market, people engaged in social activities, such as having conversations, eating, playing, and meeting other people.

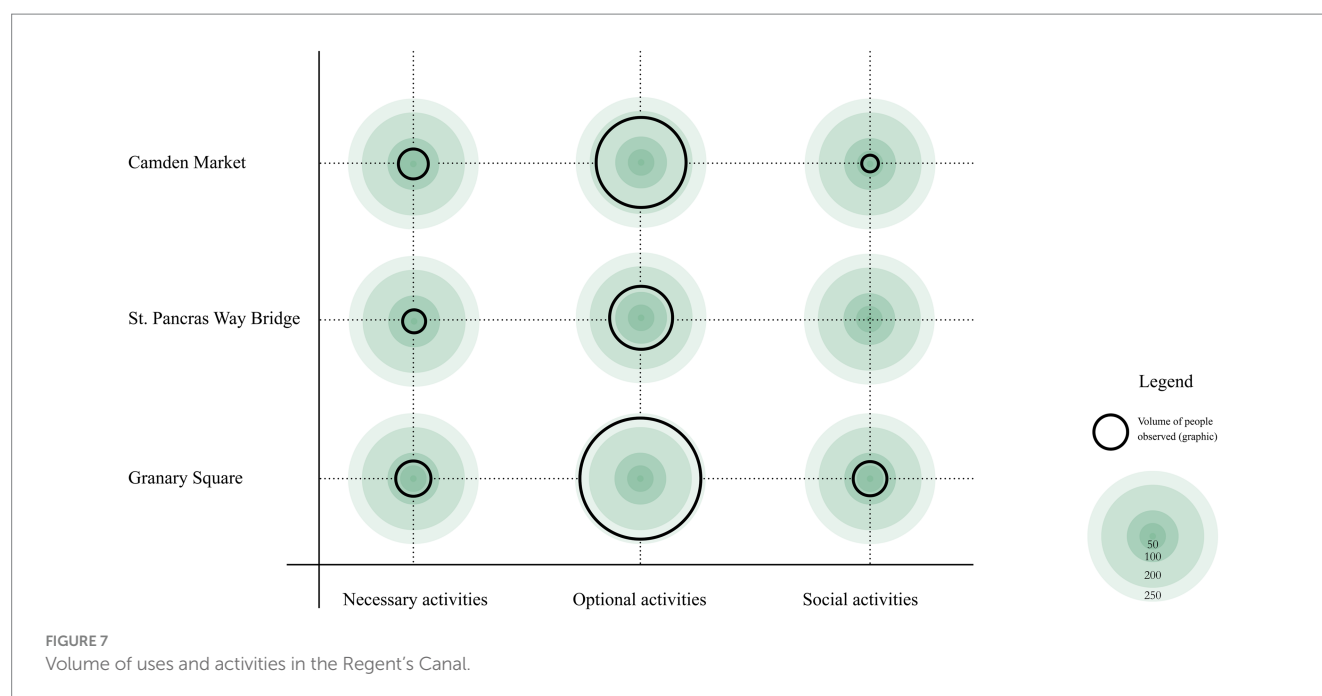
The type and volume of activities which were observed in the character areas of the canal are detailed in Figure 7, following Gehl (1987) classification. The numbers next to each circle represent the number of individuals observed engaging in activities from that category.

The changing spatial attributes of the canal's character areas did not seem to affect commuters who benefit from its Central London location, multiple entry points and car-free environment. However, findings show that they did affect the other two types of activities. St. Pancras Way Bridge had a substantially smaller volume of users engaging in optional activities despite it being experienced by interviewees as the most visually appealing section of the canal. Moreover, no social activities were observed in this section of the canal. The explanation for this may lie in the narrow towpath and the lack of sitting amenities, as this combination of physical characteristics can discourage users from lingering in this area long enough to engage in optional activities (Gehl, 1987).

Camden Market and Granary Square character areas had the largest number of users performing optional activities. This could be due to both encompassing spatial characteristics deemed appealing by interviewees: a wide towpath, high visual quality and designated sitting amenities. Social activities depend on having other people to interact with, explaining why they took place in Camden Market and Granary Square.

It is also important to note that the ratios between the three user groups (necessary, optional, and social) are somewhat similar between sites despite differences in total visitors. While this can be interpreted as being a result of ease of access, the fact that access points are evenly dispersed between the three character areas led the researchers to conclude it is the spatial attributes of the canal which are the main cause for the different ways users experience it.

To summarize, findings show that users' activities were influenced primarily by two factors: location and form. The canal's Central London location along with the narrow towpath and excellent connectivity encouraged people to use it as a transportation route during mornings and afternoons of weekdays. Sitting amenities and a wider towpath in Camden Market and Granary Square character areas created a platform for optional and social activities to take place



during evenings and weekends. Findings also revealed that most activities were concentrated on the two locations at the edge of the chosen stretch, while the actual canal is used primarily for walking, jogging and cycling.

4 Conclusion

This study examined how users experience the Regent's Canal in relation to its spatial attributes. First, it describes in detail the spatial attributes of the Regent's Canal, including its location, form, and natural elements. Specifically, the study demonstrated how the canal's central location in London, unique features (such as being long and narrow) and combination of water, vegetation, and wildlife influenced users' dimensions of experience. Then, the study describes users' experiences in the Regent's Canal, in terms of the three dimensions of experience: sensory, emotional and uses and activities. In most cases, the spatial attributes of the canal were experienced by interviewees in different ways, aligning with previous research which argues experience is shaped by individual factors and therefore should be researched similarly. This finding also adds to our understanding of the complexity of experience in the Regent's Canal.

In addition to validating the individual nature of experience, findings expand on current literature by indicating that the type of activity and frequency of use are also important factors that affect experience. Some spatial attributes, such as the floating bridge, made pedestrians, joggers and cyclists uncomfortable. Other spatial characteristics, such as bridges, affected different users in different ways, resulting in conflicts between the various users of the canal. Similar conflicts have been previously described by other researchers looking at public places and canals. This study also found the important role vegetation plays in shaping experience, and its contribution to the visual appeal of the canal, thus, aligning with previous studies.

This research is empirical and focuses on a relatively unexplored type of public place. In particular, the study contributes to the literature on post-industrial canals as public places. While some findings align with previous research, this study presents novel insights on how these findings are translated within the context of the Regent's Canal as a public place. Building on previous literature, this study expands our knowledge by suggesting a multidimensional definition of experience in public places. Further, professionals in the fields of planning and urban design can also benefit from this research as it highlights how specific spatial attributes influenced the way people experienced the canal. Bodies such as the Canal and River Trust are constantly working to redevelop derelict canals as public places, making the findings of this research invaluable at this point in time.

5 Limitations and direction for future research

It is important to note that the scope of this study was limited in time and resources which resulted in focusing on one stretch of the Regent's Canal. This limits the generalization of findings to other sections of the canal or similar public spaces. Expanding the study to different stretches of the canal or even other canals to explore how experiences vary based on different spatial characteristics could contribute to a more generalized view for conclusions. Furthermore, more time and resources could have been used to expand the number of interviews and observation sessions, as well as examine larger stretches of the Regent's Canal. Field research was conducted during daylight hours of summertime which might have affected the way people experienced the canal, and the volume of people observed using it. Extending observations and interviews across different seasons, as well as during day and night, could provide a more comprehensive perspective for concluding. Also, while interviewees were of different user groups (marital status, use of canal), they were

all relatively young adults and of three ethnic groups (white, Hispanic or Latin American and Middle Eastern). Interviewing people from other age groups (such as children, teenagers and the elderly) and ethnicities might have resulted in different findings about how they use and experience the canal, presenting possibilities for generalizing the results to other canals and public places. Furthermore, focusing on specific groups (i.e., by class, ethnicity, gender) might have shed light on possible shared sense of the appropriateness of canal spaces for various public activities, like different experiences of safety and inclusion.

Future studies can utilize the multidimensional definition of experience presented in this study as the empirical basis for comparing different stretches of the Regent's Canal or different canals, furthering our understanding of how people experience this unique type of public place. Further research can also focus on different age groups that were not covered in this study, such as children and the elderly, and increase the number of interviewees to enhance the data set. Prospective scholars can also examine how people experience the canal during various times of the day and the year. While this research has highlighted the relationship between spatial attributes of public places and the way people experience them, there is scope to develop the definition of experience further and explore it concerning other types of public places. The authors believe this research sheds new light on how users experienced the Regent's Canal and hope it inspires other scholars to research post-industrial canals as a unique and under-explored type of public place.

Prospective scholars can utilize and adapt the research framework to further expand our understanding of the relationship between experience and spatial attributes of different types of public places. Professionals in the fields of planning and urban design can also benefit from this research as it highlights how specific spatial attributes influenced the way people experienced the canal.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

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Ethics statement

The studies involving humans were approved by UCL Research Ethics Service (University College London). The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

YW: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Resources, Software, Visualization, Writing – original draft, Writing – review & editing. MS: Conceptualization, Project administration, Supervision, Validation, Writing – original draft, Writing – review & editing.

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