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Bordering Practices in a Sustainability-Profiled Neighbourhood: Studying Inclusion and Exclusion Through Fluid and Fire Space

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Abstract

Borders are essential in the current planning of cities since new forms of social relations are needed to support more sustainable ways of life. In this article, we present a case study of a sustainability-profiled new neighbourhood, Vallastaden in Sweden. We focus on how sustainability is enacted in different socio-material versions, which often include defusing borders between private and shared spaces. Shared space in Vallastaden includes spaces to facilitate meetings, such as *felleshus* (built as semi-communal, ground-level buildings, semi-indoor spaces, and greenhouses), winter gardens (built as rooftop, semi-private, semi-indoor, and social spaces), and the shared brook-park Broparken and farm-park Paradiset with rental allotments and communal gardens. Analysing how bordering practices create inclusion and exclusion, we study their consequences for the everyday lives of humans and non-humans in Vallastaden. We conceptualise these dynamics as fluid and fire space in order to make the ontological politics of bordering visible. Our study shows that the borders in the planned shared spaces are dynamic and create both fluid and fire space, depending on their socio-material relations. The research shows that planners need to take these heterogeneous socio-material relations into account when creating borders because, otherwise, they risk creating unfair exclusions.

Keywords

bordering; fire space; fluid space; neighbourhoods; social sustainability; Sweden; urban planning

1. Introduction

Neighbourhoods are neglected in studies of borders (Iossifova, 2013) and there has been a recent call to study neighbourhoods in order to develop our understanding of bordering processes (Scott, 2021a, 2021b)

and bordering practices (Iossifova, 2020). Borders are not static but dynamic and constantly negotiated spaces and it is essential to understand the ways in which bordering practices are enacted and contested, and how they intersect with issues of power, identity, and territory (Agnew, 2008). In urban planning, these issues are especially important because the built environment frames our everyday lives, making some ways of living more accessible than others. Architectural borders are filled with meanings and can aid in managing relations between the public and private and different levels of being social (Iossifova, 2020). The way in which borders create inclusions and exclusions through the demarcation of difference is foundational for how societies create categorisations, communities, and identities. Due to its many political and ethical connections, Scott (2020, p. 5) proposed "bordering" as a new paradigm for research "linking ontological and ethical questions to processes of border-making." Bordering postulates that, in practice, borders are enacted in multiple ways (Sohn, 2016). In this article, we seek to build on these notions of bordering and the salience of neighbourhoods in these processes by studying Vallastaden, a neighbourhood located in Southeast Sweden, which was recently planned and built to showcase social sustainability in the built environment. The case is especially interesting because Vallastaden was promoted as a role model for future urban planning, and it therefore comes with high stakes in terms of which lives and communities it promotes.

Sustainability-profiled neighbourhoods are relatively common in Sweden (van der Leer et al., 2023), but they have been criticised for creating enclaves for affluent socio-economic groups (cf. Iossifova, 2015; Medved, 2016). In the spatial planning process of Vallastaden, social sustainability was enacted through a range of different interventions. The architecture firm OKIDOKI was hired to plan the neighbourhood as a result of its success in an architectural competition arranged by the municipality. The winning proposition put forward *tegar* as a medium to create a diverse and socially sustainable city district. The building plots were small, and the planning was tight to create a feeling of being part of a community, while still having your own front door and garden. Social sustainability is in the planning documents described as a diffusion of private and public space and a focus on creating space for meetings between residents. The design of Vallastaden aimed to form new, more fluid borders as part of this sustainability agenda, a phenomenon that has previously been observed in other studies (Grundström, 2022; Högström & Philo, 2020).

Bordering is achieved in a multitude of ways in Vallastaden. The more veiled expressions of bordering might consist of joint narratives and historicisations, while the production of maps is more tangible, whether printed on paper or digitalised. To discuss these different practices, we suggest a framework inspired by Law and Mol (2001), where spatialities are understood as enacted within heterogeneous networks and what are referred to as regional spaces, such as cities, countries, and continents, come into existence as bounded and distinctive (Law & Mol, 2001). Thus, reality does not precede the mundane practices by which we interact with it but rather is shaped within these practices (Mol, 1999). Understanding borders as enactments in practice rather than social constructions means that they are not only perceived as different but are also enacted in different versions, sometimes separated in time and space, at other times co-existing. Mol (1999) suggests ontological politics as a concept to discuss the consequences of the choices of what, and how, realities and objects are enacted. In relation to our case study, the enactment of Vallastaden as a sustainable city district is ontological politics in the making, because it shapes, and is shaped by, mundane and professional practices in the everyday. Bringing in ontological politics, our study contributes to border studies by further exploring the ethical and normative issues of exclusion and inclusions of bordering, which the field has been argued to be ill-equipped to handle (Brambilla, 2015).

Inclusion and exclusion are sometimes elusive practices, and to further deepen our analysis we turn to Law and Mol (2001) and their understanding of space as regional space, networked space, fluid space, and fire space. Regional spaces are recognised as objects that have been clustered together within boundaries where difference is suppressed, and they thus encourage the uniform treatment of these objects. In contrast, networked spaces are defined by their internal relationships rather than their boundaries. In networked space, Euclidian space can be folded to bring the distant close and render the close distant, depending on their relations. While all space is constantly made and remade, fluid and fire spaces are yet more dynamic and in flux. In fluid space, change is always in process, albeit sometimes slowly, but always in a state of flow. In fire space, some objects are enacted that cannot co-exist without friction, thus leading to disruptive change. In relation to borders, fluid and fire space come with different processes of exclusion and inclusion, as we will show in this article.

Space and borders are inseparable because they are enacted simultaneously and depend on each other. Our focus is on how ontological politics is enacted through bordering, and consequently what spaces are made present in different constellations of social-material actors. This brings forward the multiple borders (Sohn, 2016) involved in enacting socially sustainable urban space in planning and practice, and their consequences for residents, both human and non-human. The cases of bordering in Vallastaden that we discuss below are sites of tension, where negotiations, valuations, and inclusions/exclusions are enacted. These spaces are contested and undergoing change, and will be analysed as fluid and fire space. The aim of this article is therefore to understand how bordering practices, analysed as fluid and fire spaces, create inclusions and exclusions in the neighbourhood of Vallastaden. This is studied empirically through document analysis of parts of the planning process, and interviews and workshops with residents of Vallastaden. Starting from the levels of community defined by the architecture firm OKIDOKI, we illustrate enactments of borders in socio-material relations, taking both human and non-human actors into account.

2. Understanding Bordering Through Fluid Space and Fire Space

Mol and Law (1994) use fluid space to envision space as constantly changing and in motion, with human and non-human entities becoming entangled and forming new relations (see also Law & Mol, 2001; Sohn, 2016). In fluid space, neither boundaries nor relations mark the difference between one place and another. Instead, boundaries are lucid and in constant flux. Unlike their concept of networked space, where objects are immutable and do not change, fluid space is continuously transforming. The change is gradual and incremental, enabling the performance of continuity even as associations and forms of attachment shift and move (Law & Mol, 2001). This creates a simultaneous sense of stability and adjustment. In their work on an African bush pump, de Laet and Mol (2000) show how the object changed its shape over time, losing one part and having another part added, while still retaining stability as a bush pump. The transformation was gradual and slow such that, after a while, all the parts had been exchanged, but the bush pump still remained the same object. In a similar manner, space can change its shape gradually over time. Borders can be crossed at different times and by different actors while still holding together as one space. The bonds that hold fluid spaces together lack stability. While no individual component can be singled out as absolutely necessary, the failure of all components signifies the end of what once existed (de Laet & Mol, 2000). Fluidity of space has been used, for example, to discuss periods of drought in Tanzania (Goldman et al., 2016), where fluid spaces were enacted in multiple ways depending on local settings. The number of cows using the local water and pasture, rainfall, and human movements across borders were all significant for the enactment of drought for some groups

in Tanzania, while other definitions are used in other countries, and even by other groups within the same country. Fluid space enables the authors to simultaneously follow the enactment of drought across multiple locations and networks and understand the ways in which it is the same, while also being slightly different things (Goldman et al., 2016). Moreover, following how policy travels, Prince (2012) argues that fluid space aids in understanding spaces that lack strong networks, where connections are made between different places and contexts "but not necessarily making one subservient to the other, or both subservient to the fluid space itself" (Prince, 2012, p. 328). However, not all enactments of policy are equivalent, and by thinking with fluid space we can make the transition between different spaces visible and open up opportunities for alternatives as well as critiques of acts of power (Prince, 2012). In our study, fluid space aids us in understanding how spaces are changed gradually, over time and space, and thinking of these changes as ontological politics, the consequences of these changes are made visible. This allows for a critical discussion of the interpretation of social sustainability and its inclusions and exclusions which is enacted in Vallastaden.

Law and Mol (2001) also introduced fire space as a way to explore entities "in the form of a dancing and dangerous pattern of discontinuous displacements between locations that are other to (but linked with) each other" (Law & Singleton, 2005, p. 347). The constant changes in fire space are defined by discontinuity and the enacting of different versions of an entity in different places. What becomes important in fire space is how, and where, these different versions are made present or absent, and how they still affect central entities' multiple juxtapositions (Wittock et al., 2017). What is absent has an impact on a situation in various ways and, by focusing on what is being othered, we can understand how fire space can achieve constancy by enacting simultaneous absence and presence (Law & Mol, 2001). Furthermore, it is important to note that, while fluidity relies on gradual change to ensure constancy, a topology of fire generates constancy through abrupt and discontinuous movements (Law & Mol, 2001). Fire spaces hold objects that are "flickering" in presence, being variously constituted in different locations and in versions that may be discontinuous with other versions. For example, the constitution of insurance and its consequences for everyday life and knowledge has been studied as fire space because it is sometimes characterised by jumps and discontinuities (Booth, 2021). Booth (2021) shows how the co-constitution of index insurance for farmers and development organisations is influenced by insurance as fire space. The contrasting realities of the farmers' traditional knowledge and the agencies' emphasis on adaptation and sustainability create unpredictability and otherness. Despite the threats to continuity, the disruptions to farmers' existing traditional knowledge and farming practices were enacted as necessary for integrating them into global agricultural systems (Booth, 2021). Borders change in fire space in an abrupt manner, and in Vallastaden these changes are due to frictions between contradicting needs, regulations, and interests. Studying the exclusions necessary to create fire spaces that still hold together makes normative choices visible as it shows when some interests or needs are prioritized over others.

In our study, fluid and fire spaces aid in analysing how the shared spaces in Vallastaden, with their more lucid borders, maintain or create new exclusions and inclusions. Focusing on the changing nature of borders and the collection of actors with their relations can facilitate an analysis of borders as multiple, where presence and absence are vital. It also enables a critique of bordering, as we can show how different versions of space and borders are imbued with different ontological politics, and thus affect actors unequally.

3. Method

With our aim to understand bordering practices in Vallastaden, we draw on Flyvbjerg (2006) to examine an extreme case marketed as the neighbourhood of the future and the different relationships and practices involved. The initial phase of this research focused on the planning process and the various documents used during the early stages. These documents were collected from the municipality and were used in the planning of Vallastaden. The documents include the "idea programme," which describes the vision for the district, quality documents, various policy documents, urban planning documents, documents from an architecture competition, and criteria documents for prospective clients looking to buy land in Vallastaden. In this article, the competition contribution by the architecture firm OKIDOKI is the most central for the analysis. Furthermore, we conducted workshops with 21 residents to gain insight into their everyday lives. These workshops provided a method for listening to residents' experiences and understanding how the built environment shapes everyday life. The workshops each involved between two and four participants between the ages of 20 and 62. Participants were recruited from personal connections and a Facebook group about Vallastaden, with some participants being more involved in shared activities in the district than others. The workshops took place in the home of one of the participants or in a *felleshus* and were led by one researcher while the other took notes. Participants were asked to draw a map of their own Vallastaden and then discuss which places they liked, which places mattered to them, places they avoided, and routes they travelled or walked. This methodology helped to create "mental maps" and establish a connection between the discussions in the workshops and the environments in Vallastaden. This method facilitated the collection of narratives, associations, and metaphors that carried specific content and meanings in relation to place.

We also observed the environment by walking through the area and photographing the changes that occurred over time. We focused on how borders were enacted within the environment and how they changed, as well as how people used the different spaces. Additionally, we analysed an open Facebook group created by some of the residents. This Facebook group served as a space for sharing thoughts, ideas, struggles, and complaints about living in Vallastaden. We collected written messages posted in the group but excluded any personal information. As the group is open for anyone to join, the material is openly accessible, and we did not consider it sensitive or personal; hence, we did not contact group members for consent.

4. Fluid and Fire Space in Vallastaden

In the following text, we present and discuss our empirical case Vallastaden in order to understand how bordering processes in planning and everyday life create both inclusions and exclusions. Focusing on how space is enacted and how it changes in relation to different actors, both human and nonhuman, we begin by analysing the initial stages of the urban planning process in order to understand the vision behind Vallastaden. Moving on to the built environment, we then follow how the vision was turned into practice to understand how this shapes everyday life in the city district through its inclusions and exclusions.

4.1. Planning for a Sustainable Neighbourhood

Borders are at the heart of architectural and urban planning practices, where they materialise as demarcation lines on plans and maps, creating exclusions and inclusions and separating public space from private (Iossifova, 2020). In the planning for Vallastaden, this became clearly evident because bordering was

central to the vision for the neighbourhood. The planning process for Vallastaden started with Linköping Municipality exploring an idea for a new state-of-the-art neighbourhood. After some initial planning, a contest for the master plan for Vallastaden was announced. The proposition called Tegar, from the architecture firm OKIDOKI, won the competition and their ideas guided the first stages of the detailed master plan for the neighbourhood. The *tegar* concept historicises this newly built residential area and spatialises the area with reference to Swedish mediaeval history to make present the social life of small-scale farming. It signalled a preference for local everyday life, growing crops close to home for your own consumption, and conducting your social life within your immediate surroundings. To understand how OKIDOKI planned to put this vision into practice, we first need to understand the different social levels underpinning the planning principles in Vallastaden (see Figure 1).

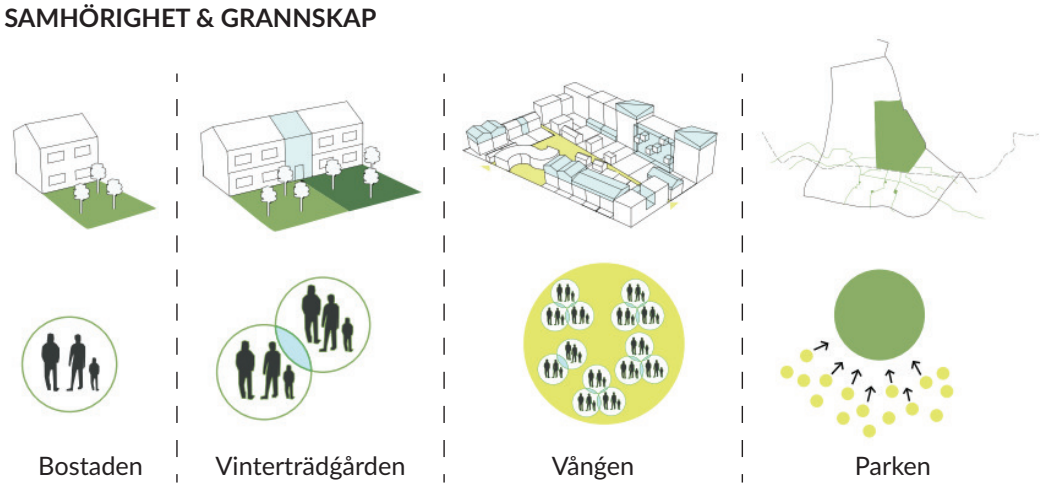

Figure 1. Image taken from the winning proposition for the Vallastaden master plan. The heading translates to "Togetherness & Neighbourhood" and the words at the bottom of the picture show the different levels of community, translating to (from left to right): "Dwelling," "Winter garden," "Close neighbourhood," and "Park." Source: OKIDOKI (2012, p. 4).

The concept of the *tegar* was based on historical time when land ownership and land use consisted of a patchwork with many complicated borders between owners and farming activities (OKIDOKI, 2012). The Vallastaden master plan map and the description of the spatial planning contain frequent references to this period in Sweden, which is also found in several other European countries and the US (Rackham, 1997). Similarly, the legally binding map showing the division of properties in Vallastaden contains unusually small lots and looks like the patchwork pattern of a historical *tegar* land division (Linköping Municipality, 2013). The historicisation of the place for Vallastaden manifested both visually and in the narratives presented in the master plan. Strips were commonly present in the visual presentations and coloured to accentuate the variety and diversity of the proposed new settlement (Figure 2).

As we can see in Figures 1 and 2, there are clear borders between different spaces, enacting them as regional spaces on the maps, with spatial borders separating them from each other. However, in the text, these borders are less stable, and the openness between the private spaces and their immediate surroundings indicates more fluid spaces. The description of *tegar* stated: "Selions were originally a social insurance for crop failures and a system to share the most arable land. Simultaneously it provided prerequisites for encounters in everyday life" (OKIDOKI, 2012, p. 2). The description in the master plan signals consensus and harmony, a life lived

close to nature and your circle of family and neighbours. Equally, it might signal the hard work that is required to sustain your livelihood and social life, as the references to mediaeval circumstances also indicate. This historicisation shaped the identity of the neighbourhood and conceptualised borders as fluid in relation to their immediate surroundings. The relations connecting spaces are spatially defined social relations, whereby the close community creates the inclusion of spatially located members while excluding others. For the private space, there are thus fluid borders allowing local actors in, while, at the community level, borders are less lucid. The inclusions and exclusions are historically motivated because the idea of community from mediaeval times is enacted as being more sustainable than modern life.

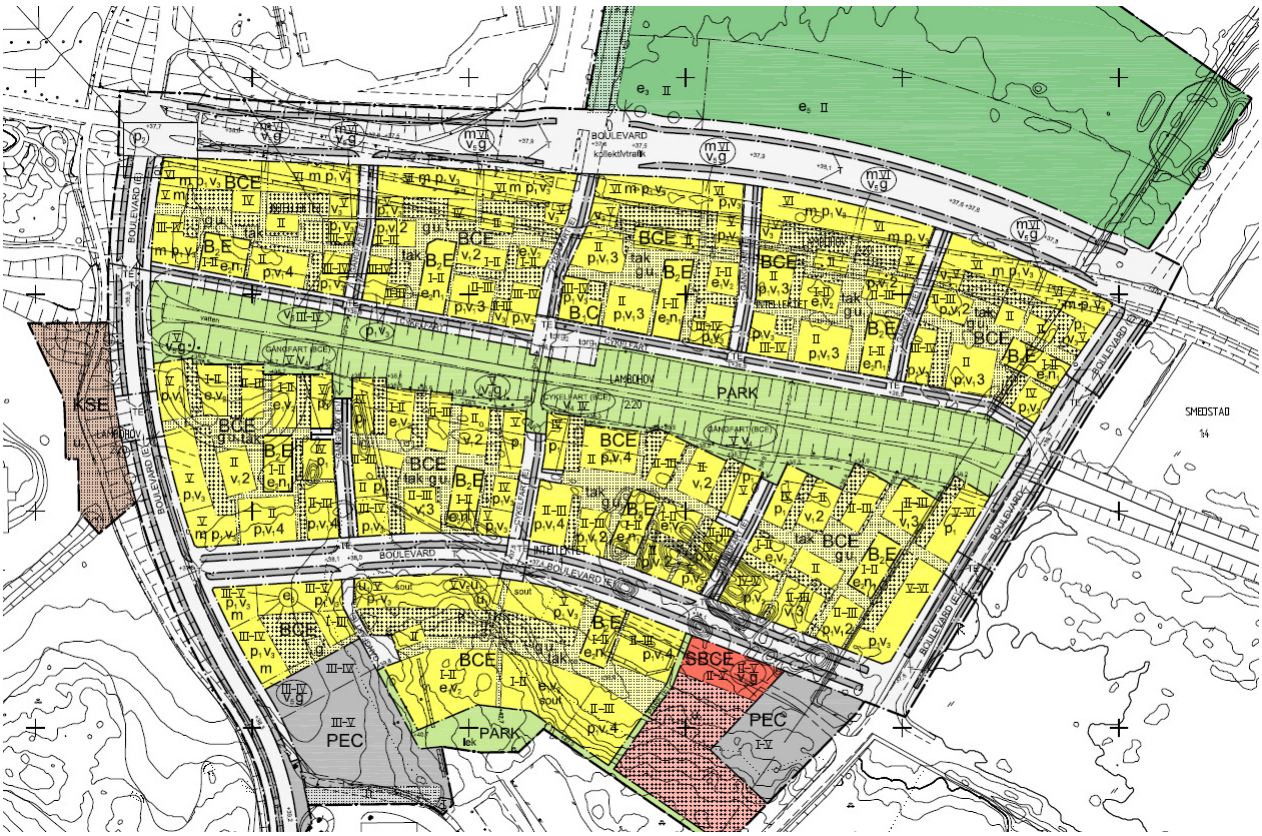

Figure 2. The Vallastaden master plan. Source: Linköping Municipality (2013, p. 1).

Due to Vallastaden's location, relatively distant from the city centre and separated from other neighbourhoods, urban planners gave it the role of bridging different parts of the city. This made it into a form of urban borderland (Iossifova, 2019). From another perspective, Vallastaden could be perceived as an enclave (Iossifova, 2015), with only newly built homes for those who can afford them, and spatially disconnected from other neighbourhoods. These different versions of Vallastaden can only be simultaneously enacted without causing friction by the displacement of the other in time or space. Therefore, the idea of Vallastaden as a junction, in line with its sustainability agenda, but socio-economically and visually enacted as an enclave, was criticised by residents in our workshops, who questioned the homogeneity of the neighbourhood. The ontological politics intertwined in the planning for Vallastaden thus come with problematic ideals, creating tensions and sometimes reinforcing traditional borders. In the following sections, we further unpack the ontological politics of Vallastaden by focusing on how the built environment creates inclusions and exclusions in practice.

4.2. The Changing Borders of the Home

The private home is sometimes enacted as a protected sphere in the documents (such as in Figure 1), while in other spaces the aim to create a diffusion between the private and public is evident. Certain public spaces, located beyond the walls of the private home, are deliberately designed to extend the home. These include pathway patterns resembling carpets, squares referred to as "outdoor living rooms," and Fredrik Norén's public art piece Break which features furniture positioned in the "large living room of Vallastaden" (Linköping Municipality, 2017).

In addition, the idea of building community through *tegar* created a dense neighbourhood where the borders between the private home and public spaces were easily crossed. Some residents are closely connected to the life of the neighbourhood through large windows at ground level alongside the well-used pathways. Participants in our workshops and in the Facebook group for residents living in Vallastaden talked about how they sometimes feel that people passing outside their windows are present in their living rooms. Likewise, the dense planning gives residents close visual access to each other's homes. As one resident explained: "And if you're supposed to have one metre between the houses, why do you put windows in the middle of someone's…opposite each other? I have someone's kitchen in my bedroom…why?" (Viola, healthcare worker, 35 years old).

The visual crossing of borders enacts the home as fluid in ways the urban planners did not anticipate. Borders between houses are not just dependent on walls, but also on spatial separation. Having more space between the houses would enhance the feeling of privacy, but it would also prevent other types of border crossing. In one of the cooperative multifamily buildings, a small openable window was installed in a bedroom, but its handle was removed because the space immediately outside was needed for a fire escape for a neighbouring building. The residents in the multifamily building experience problems with overheating during summer and the loss of the opportunity to ventilate became an issue. The densification of Vallastaden thus created a need to cross borders between buildings, with the regulations for one building reaching into the bedroom of the residents in another. The change for the residents who cannot open their window is disruptive, with a handle being removed between one day and the next. The change was needed to remove the risk of people being burned alive in other buildings, and thus the enactment of this space is dependent upon absence (of risk). In this sense, the home is enacted as a fire space, because the fire regulation created a disruptive change and presence was dependent upon absence (Law & Mol, 2001). The discontinuity of window opening to reduce temperature is a result of planning for high density, but also a consequence of other sustainability measures taken in Vallastaden. As we discovered in our research, overheating is a significant problem for many residents because higher demands for energy efficiency than the national regulations mean that the houses have more insulation, but the design and direction of the buildings pay little attention to this problem. The ontological politics of enacting sustainability as community built on spatial closeness, energy-efficient houses, and excluding overheating issues can lead to a small window becoming a large disruption and thus creates fire space.

While borders between private homes sometimes become an issue for human residents, other residents have very different conceptions of home, as the cat Sixten shows. Sixten lives in a house close to Vallastaden but has a habit of walking into homes in Vallastaden in search of attention or food. In fluid space, animals might move freely, disregarding borders set by humans (Bear & Eden, 2008). Bear and Eden (2008) show how fish

move across human-made borders, changing their identity by belonging to different stocks at different times and thus requiring the certification of the fishery to enact space as fluid. In the case of Sixten, he not only moved between different outdoor spaces but entered buildings and even homes (Figure 3). Sixten does not care about lines on a map or material marks of separation, such as doors (as long as they are left ajar), or traditional borders between homes, such as hedges. He enacts most spaces as fluid without considering that not everyone shares his view of spatial relationships. He has his own hashtag (#Sixten) in the local Facebook group and, while most people seem to appreciate him, he sometimes disrupts the lives of other residents with his lack of respect for borders. Some residents fear that he will trigger their dogs, or that he needs food or care that his owners are not providing. His crossing of boundaries creates friction and discussions in the Facebook group about who should care for his well-being and whether it is in his best interest to be let into homes as he might forget where he actually lives. Sixten shows how borders and space are made and remade depending on the subject's agency and the arrangement of actors. A student working on an assignment sitting alone in their apartment might find Sixten a welcome distraction, while a couple with dogs fear that their dogs could hurt him, and his presence therefore becomes disruptive. The presence of dogs has the potential to enable Sixten to create fire space, while in most other situations his smooth gait will allow him to flow through life and space.

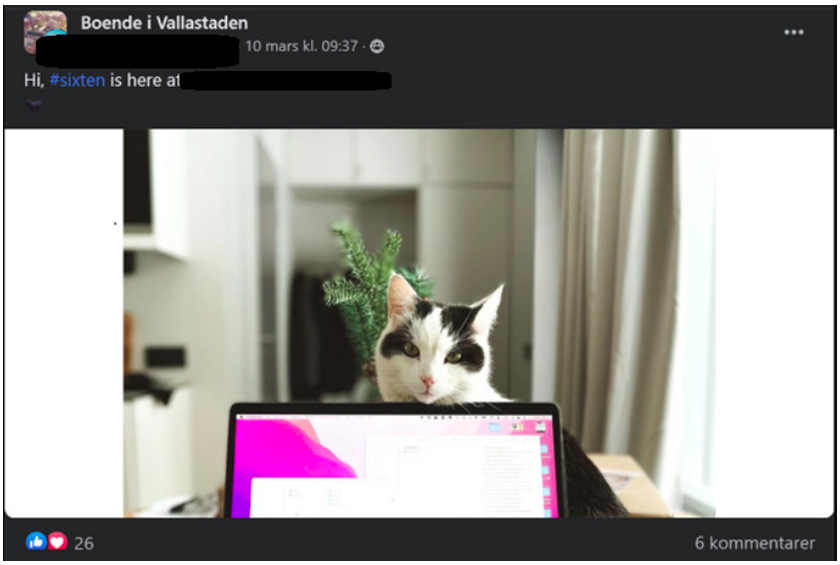

Figure 3. An image posted on Facebook by a Vallastaden resident showing the visiting cat Sixten in this resident's home.

The sustainability agenda enacted through the built environment has the potential to create fire space in human homes, causing the residents to become overheated and unable to remain indoors during summer. Sixten, on the other hand, seems to have all of Vallastaden as his home and only occasionally creates fire space with his unwelcome presence. Unaware of the urban planner's efforts, he has taken the social sustainability agenda to heart and thrives in the dense and open neighbourhood. Understanding borders and their ontological politics can thus only be done with regard to agency in socio-material relations, as they can make space suddenly change shape. While this is the case also for human border relations, including the cat Sixten broadens the scope of the analysis of bordering by considering non-humans as residents on, at least analytically, equal terms as humans. In the current situation of climate and environmental crisis, non-human subjects need to be made more visible in planning processes.

4.3. Enacting Shared Space as Winter Gardens

"Within each *teg*, the neighbours share a winter garden. Here social sustainability meets ecological sustainability. The winter garden forms the interface between the public and the private, and functions as a semi-private zone" (OKIDOKI, 2012, p. 2).

The next level in the local community building in Vallastaden, as suggested by OKIDOKI, consists of the winter gardens. Property developers were committed to some sustainability efforts in Vallastaden, and one such option was to build a winter garden. Winter gardens were built primarily on rooftops (Figure 4a) and occasionally at ground level (Figure 4b). While winter gardens provide protection from the wind, they also allow residents to view the surrounding landscape, creating a connection to the neighbourhood. These spaces are fluid in the sense that they enable meetings between residents of a building and blur the borders between their private homes. However, the residents attending the workshops told us that these spaces had failed in this effort: "Our winter garden is like a skeleton. It kind of works but it should be greener and have more plants. It's used sometimes during the summer, but the rains comes in" (Valdemar, IT professional, 32 years old).

While we found some well-kept winter gardens, another resident told us that only one person cares for their winter garden, which is not enough. In addition, only residents of the building where the winter garden was located could access these spaces, creating a sense of exclusion for people who lived elsewhere. Borders were created by the stairs where the winter gardens were located on the roofs, by locked doors to which only residents had access, and sometimes by signs stating that these spaces are "private" (Figure 4b). The enactment of community in winter gardens is thus also one of separation and depends on the absence of uninvited guests. In line with Law and Mol (2001), winter gardens can be conceptualised as fire space because the community of these winter gardens is dependent on absence (of "outsiders") and it requires disruptive efforts to cross the borders (either breaking open locked doors or violating the social border by ignoring signs). However, at second glance, the space is more fluid, as some types of visitors, such as lost birds, can occasionally fly in through small openings. When this happens, borders are crossed not only by non-humans but also by residents from other houses. For instance, when a bird entered but could not exit a winter garden, a resident from an opposite building sought assistance through the Vallastaden Facebook group. The resident received help from someone living in the building and thus managed to cross the border to the winter garden, although not in person, with assistance from technology.

These examples involving the winter gardens show that the reshaping of borders can be enacted in different ways and that conceptualising borders thus needs to be done with different actors and different forms of border crossing in mind. The role of technology in enacting space is becoming ever more influential as many city districts have a space on the internet connected to them. The Facebook group for residents of Vallastaden is such a space where connections are constantly made, but also where disruption appears when opinions differ. The Facebook group is not only both a fire and fluid space at different times but also part of the identity of Vallastaden. It enables border crossings between houses as part of a common (geographical) ground and creates new arrangements of actors. In this case, the enactment of winter gardens is dependent on the heterogeneous networks of birds, humans, the built environment, and technology collectively.

Figure 4. Winter gardens on a rooftop (a) and ground (b) with a sign saying "Private." Photographs by Wiktoria Glad.

4.4. Enacting Social Sustainability Through Parks

Two parks were important in the enactment of social sustainability shared space (Lang & Mell, 2020) in the planning documents: Broparken (in English, the Bridge Park) and Paradiset (in English, the Paradise). Broparken acts as a backbone for the area, containing the brook Smedstadbäcken at the centre of the neighbourhood, and Paradiset was designed as a separate space and an escape from the high-density housing area. Both parks were planned as a nod to past times and connect contemporary lifestyles with the social life made possible in the *tegar* small-scale farming communities. When we asked Vallastaden residents to make a drawing of their neighbourhood—of their "places," "routes," and "meeting places"—all the drawings included the brook, and most placed it at the centre of their drawing (Figure 5). Some of the drawings included a heart close to the brook, as we asked all participants to show in their drawings: "Where is your heart in Vallastaden?" The brook was drawn among the first features drawn on the sheet of paper that we provided for each of the workshop participants of the workshops, and, in several cases, other features were added and drawn in relation to the stream of water.

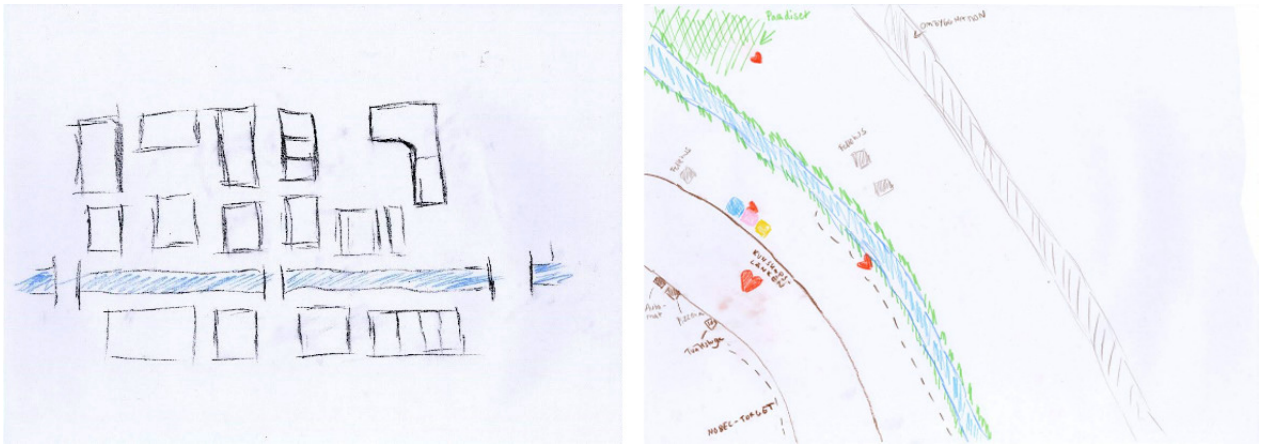

Figure 5. Drawings made by residents participating in our workshops in Vallastaden.

In this fluid space, the water in the brook runs independently of the borders imposed on the stream. Smedstadbäcken had been straightened into a ditch in previous centuries, but when social sustainability became the theme for the Vallastaden development, the stream was included as a part of the Broparken designs and its meanders were recreated. Broparken balances the functionality of the brook as an open stormwater catchment basin with the park as a recreational area. The park is equipped with paths, bridges, outdoor seats, and boardwalks to facilitate social interaction, and has been described as the "lifeblood" of Vallastaden (Swedish Architects, 2020). This is also where our workshop participants walk their dogs, enjoy a picnic, and use the paths for moving within and outside of Vallastaden. The brook could have acted as a barrier or border between different parts of Vallastaden, but residents in our workshops enacted it as a space for recreational and social practices. Even so, the park also stirs up strong emotions with its changing nature. Vallastaden was launched with a public exhibition in 2017, and at that time the park was carefully tended and neatly ordered. However, over the following years, unruly nature was allowed to take more control. Some residents saw the vegetation as too wild and complained that the park was poorly managed. The planners, on the other hand, argued that it was always in the design to have it as meadowland rather than a manicured lawn. While the changes in Broparken have been slow, through centuries of crafting and controlling by humans to a less tightly kept version today, the absence of control turned it momentarily into a fire space. However, the complaints were only voiced by some and, compared to the social connections the park makes possible, have to be recognised as a less prominent feature of the park.

Paradiset Park was designed as a "farm park," where rented allotments for hobby growers and a public park were woven together. Historical references were made to the agricultural past of this area, with its small allotments and shared facilities for urban micro-scale farmers. Old patterns of farming and living would be imitated in the park, and would especially showcase the traditional agricultural products of the region (OKIDOKI, 2012). In the master plan, Paradiset was presented as the new big park for Linköping and the plan described how the park would nicely connect to existing nearby outdoor recreational areas. In contrast to other allotment areas in Linköping, Paradiset is not fenced off, it is open all year round and accessible to visitors. The borders of Paradiset have been left to eventually become defined and made visible in answer to the needs of the park's users. Such a need eventually arose for the hobby growers when their crops were—accidentally or deliberately—harvested by visitors (Krook, 2021). In fluid space, both visitors and crops had uncertain identities because the lack of fences and walls around the park signalled accessibility and availability, but invisible borders were present for the inclusion and exclusion of humans and non-humans. Visitors might be one of the 79 gardeners of Paradiset, occasional visitors who enjoyed a walk in the farm park, or visitors who came with the aim of harvesting someone else's crops. Crops may be someone's private property, but in some places in Paradiset crops, fruit on trees, and berries on bushes are free for everyone to pick and enjoy. Depending on exactly where these crops, trees, and bushes are situated within the farm park, and your own status as a visitor or hobby grower who rents an allotment, you could harvest and pick berries and fruit in some of this space. Incidents involving the unwanted harvesting of crops spurred the posting of signs with messages like "Private" (Figure 6). In this fire space, parts of the public park were enacted as private land and borders between public and private were established. After the signs were posted, crops were left alone and the Paradiset gardeners were able to harvest them (Krook, 2021).

Figure 6. Sign in the "farm park" Paradiset says "Private: We who farm here in Paradiset work hard all year round to be able to enjoy our harvest, please respect that!" Photograph by Maria Eidenskog.

4.5. Felleshus and the Responsible Residents

Felleshus in Vallastaden come in many designs and shapes, but can be identified through their occupation of a central place in each quarter. They are described in the master plan as hubs for a variety of services for the residents, such as household waste recycling, allotments for gardening, and sports facilities (e.g., ping-pong tables). The master plan suggested that each *felleshus* should be unique and not only serve residents from the immediate surroundings but also provide social activities to attract residents from the entire Vallastaden neighbourhood (OKIDOKI, 2012).

The building designs are inspired by large-scale greenhouses and "houses within greenhouses" as *felleshus* include a mixture of spaces for socialising, gardening, cooking, and overnight guest rooms (Figure 7). *Felleshus* are prominent structures in the Vallastaden neighbourhood and are part of shaping Vallastaden as something tangibly different from conventional city districts. The *felleshus* are owned and managed by quarter-based associations, and all residents are members of a *felleshus* association in their quarter. The responsibilities for daily maintenance and care, for the energy, water, and sewage bills, and for organising events for members fall on the association. Different *felleshus* reveal different ways of dealing with these responsibilities, and this is visible partly from just passing by or by looking at the individual *felleshus*' Facebook pages. When you pass by, several of the *felleshus* look unused and with their prominent appearance as massive glass constructions, they create a void. The absence of humans and artefacts that could signal human presence is conspicuous, as is the lack of social activities that could be expected to take place, especially during the cold seasons.

Figure 7. Examples of *felleshus* in Vallastaden. Photographs by Wiktoria Glad.

In fluid space, the artefact *felleshus* continues to be a *felleshus* even when some parts of it are changed. Some residents in Vallastaden tinker with the interior and exterior of these buildings, equipping the glazed facades with sunshades and the inside with furniture for relaxation and socialising. Gardening is a popular activity in some *felleshus*, and the large greenhouse designs make it possible to grow small trees, climbers, and various edible plants. Through the glazed facades, these *felleshus* appear to be accessible, because most of the space is visible from the outside, but access to *felleshus* is strictly managed through the quarter-based associations. Incidents, often connected to parties hosted by some of the many university students in the area, have made some *felleshus* unavailable for any activities during certain periods of time. In this fire space, *felleshus* are the opposite of what these artefacts were planned and designed to be: a locked, inaccessible space without any social activities. Affected by events in the past, *felleshus* in fire spaces are unused and stand as monuments to failed management.

Felleshus were planned and designed to be gradually developed, to evolve into spaces that would fit the specific residents of the neighbourhood, thus a fluid space experiencing incremental, ongoing changes (Law & Mol, 2001; Mol & Law, 1994). The *felleshus*, through their materiality, prominent possession of space, and shaping of borders, make certain of the activities proposed in the plans present and other activities absent. The imagined residents, as described in the master plan of the OKIDOKI architects (Figure 2) and planning documents from Linköping Municipality, were sociable, with a predilection for meeting other residents and engaging in gardening, sports, and park life. Some current residents might fit this description, but residents are individuals, something that the architects and planners failed to acknowledge in their plans for Vallastaden. This shows how the ontological politics involved in the planning and building of Vallastaden is one of exclusion, where unwanted residents are made absent and where access to (partially) shared space is highly constrained.

5. Conclusions

Studying bordering practices of both humans and non-humans in Vallastaden in terms of fluid and fire space (Law & Mol, 2001; Mol & Law, 1994) means acknowledging the movement, fluidity, flickering, and constant change taking place within the socio-material. The ontological politics (Mol, 1999) of enacting borders in Vallastaden has become visible through our focus on how inclusion and exclusion create different forms of

space. This approach has aided us in studying bordering by attending to the multiplicity of borders and space with an openness towards different and unexpected actors. Bordering comes in many different versions and to analyse this complexity we need to study bordering in practice with a wide range of actors in mind. Animals and their relationships to space provide an opportunity to further understand the role and creation of fluidity, but we need to centre the analysis on these animals' subjectivity by focusing on the animals themselves, rather than the systems of which they are a part (Bear & Eden, 2008). In our study, understanding the socio-material relations involved in bordering in Vallastaden, and its consequences for human and non-human residents, allowed for a critical discussion of the ethical choices made in the name of sustainability. This study furthermore contributes to discussions on bordering by presenting a theoretical approach which makes a broader array of socio-material relations and the ethical choices interwoven in planning processes visible.

Relations between buildings, residents, animals, and ways to practise borders create border multiplicity in Vallastaden. One example is the public park Paradiset, where accessibility for all should not be interpreted as permission to "enjoy everything" available there. Fruit from one tree might be available to eat, while fruit from an adjacent tree might be forbidden. Everyday life in this neighbourhood implies different approaches to borders of inclusion and exclusion, which are not always obvious to either residents or visitors. Space can also change shape dependent on the arrangement of actors, such as hot temperatures changing a home to a place to escape from or the cat Sixten who easily crosses borders while also creating chaos dependent on his encounters. The difficulties involved in bordering are also revealed in the planning process, where, in the efforts to create an identity of social sustainability for Vallastaden, the neighbourhood could also risk becoming an urban enclave (cf. Iossifova, 2015), socially, spatially, and functionally separated from the rest of the city. In line with previous research (Grundström, 2022; Högström & Philo, 2020), we agree that, in future spatial planning, architects and planners should work towards more fluid or porous borders, despite the difficulties they bring. In addition, we argue that they need to consider the tensions and challenging tasks of creating room for fluid and fire space in relation to both humans and non-humans, as well as considering the political consequences of exclusion when planning for fluid spaces that risk turning into fire space.

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Conflict of Interests

The authors declare no conflict of interests.

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