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1 INTRODUCTION

Urbanity, we suggest, is not so mysterious. Good space is used space.
(Hillier Cities as Movement Economies: 54)

Implicit in any urban design is a negotiation between public and private interests. Such a negotiation is articulated and made legible in the facades, fences and even more subtle edges separating *this* from *that*. As the interface is materialized differently; a complex variety of spatial situations are produced depending on how the spaces are framed. In the city, the complex interplay of open space, building and boundary produces a patchwork of subspaces, which we can consider as potential urban territories. Most of us are familiar with the results of territorial production and recognize that fences, furniture or plantings are assertions of a claim to space by an individual or group. However, the reason to conceive of this process as a territorial production may not be immediately apparent. Consequences of territorial production on perceptions and behaviour are rather under-analysed, especially in the context of the city (source). But consider the spaces unclaimed by users, spaces which incite no greater concern or stewardship even by immediate residents who might, in other circumstances use and even claim these as their own, e.g. *appropriate* them.

It is the premise of this work firstly, that reconceptualising the use of urban spaces as a form of territorial production is necessary to understanding the processes by which space ends up being used or not used. How territories are shaped and produced may influence both formal and informal practices of residents, maintenance workers, small businesses, and so on (Ståhle 2007, Ostrom 1990). Secondly, ambiguity in a territorial situation suggests that confusion about who owns and who is sanctioned to use space might arise, with distinct impact on the behaviour of people using the spaces in question. Urban territories have inherently different potential to sustain social life for instance, requiring more or less social organisation to uphold their function. It will be examined here whether *affordances* in part generated by qualities of the urban form point to reasons why spaces perform differently. Thirdly, the research looks at the problem of densification of existing urban fabrics as bound-up in territorial performance and offering possibilities for intervention that make spaces more easily used and appropriated.

Seeing densification as an opportunity to correct territorially difficult situations is something of a paradox: among animals, territoriality was once described by animal psychologist Heini Hediger, the propagation of the species by regulating density (cite).[1] It is possible that this role of territorial behaviour as a mechanism of regulating

[1] (http://www.uefap.com/reading/exercise/texts/distance.htm distance regulation in animals).

density is applicable to humans as well. Simply put, negotiating urban territories establishes the spatial arenas that city residents inhabit. By providing places for recreation, play, socialising, gardening, people watching, and so forth, territoriality organises certain activities of city living. As with animals, territorial responses are activated by congestion: as more people share a finite spatial resource, territorial markers to signify ownership and to control privacy may become necessary. Markers such as fences and hedges or furniture and plantings articulate both a need to permanent a relationship with a place, but also to communicate a sense of ownership of the space, even if only to delimit in space a zone of stewardship: as in, "my responsibility ends here". As society changes, territorial behaviour changes also. Shifts in societal norms or demographics may elicit a renewed interest in asserting ownership and privacy control or a renewed interest in altering one's environment. (Example of bostadsrätter putting up fences). Seen in this way, territoriality is not so much good or bad, rather the interesting question is whether we can better understand its patterning.

When territorial markers begin to emerge with some consistency, as phenomena with discernable patterns, one can conclude that a spatial incoherence is being addressed. Additions and interventions add meaning to the built environment. Whether to understand territorial assertion as a form of land grabbing or as a form of stewardship may depend upon whether the consequences are considered desirable or not. In some cases, a place entirely absent of territorial markers may signify a lack of agency or stewardship and be a sign of a dysfunctional territorial composition. A noticeable retreat from stewardship or use of spaces, abdicating sanctioned ownership and leaving places subject to disuse and negligence, may signal that a spatial 'mismatch' is at hand. If the spatial organization consistently undermines the performance of the territory as arena for life, then eventually the social organization necessary to uphold the territory may simply not be able to sustain itself. Understanding territorial production therefore is most crucial to recognizing spatial mismatch and making appropriate and worthwhile interventions, whether by densification or on a smaller-scale.

To study how territorial mechanisms in urban contexts actually work, we need to understand the relation between urban form and social response as is proposed in Émile Durkheim's conception of social morphology: "the form of society determines the form of ideas held by people within it" (Collins 2014). Such an understanding of space has strong relations to what Marcus & Koch (Marcus 2000, Marcus and Koch 2005) refer to as the performance of urban form, be it social, economic or environmental. Analysing the role of the urban form in creating patterns of use, of movement, of segregation and so on, is at the heart of the discipline known as urban morphology. A base assumption in the study of urban morphology is that urban form has measurable characteristics and that studying these measures as generalizable

phenomenon may be fruitful to a better understanding of the potential and limitations of different urban forms. The point is not, which should be stated from the outset, to claim that an urban form *will* generate a certain outcome in an instrumentalist or deterministic sense. Rather, urban morphology accepts that studying urban phenomenon means seeking explanatory potential in some concrete aspects of what are admittedly highly complex systems of interrelationships. Fundamentally, the urban form is intertwined with human beings living through practices imbued with both rational and irrational acts. To the urban morphologist familiar with analysing urban form, spatial patterns may be described in such a way that it is possible to link urban form characteristics to patterns of use. When empirically tested, a hypothesis about the spatial situation can be tested in relation to social behaviour. Hence it is that an observed phenomenon becomes generalizable, and thereby interesting to analyse further. The creation of knowledge comes not in describing the phenomenon (like territorial behaviour), but rather in seeking precision in connecting the phenomenon to built form factors. Supporting interventions or policy change which creates a better match between the built environment and users of that environment is a utilitarian facet of morphological study. Since urbanism professionals are tasked with shaping environments for third-party users, seeking and being informed by updated knowledge on social outcomes of spatial practices is, arguably, a duty of professional practice.

The aim of this research is to support architects and planners in the territorial design of space which if not encouraging interaction between humans and their environment at least do not act as an impediment: to use, stewardship or forming attachments to places, what is sometimes termed appropriation. The approach taken is to view the built form as not simply backdrop to life but as having performance characteristics with consequences for human behaviour (Hillier; Marcus & Koch 2005). Ambivalent territories then, in a *performative* sense, represent the disjunction between the physical and social space framed. If space that is accessible to outsiders is found to be more difficult for residents to appropriate and feel responsible for, then recommendations can be formulated on how urban form should be designed differently. Of course there might be cases when spaces not for use are sought, in these cases as well, it would serve us to be able to forecast some consequences of designing this way versus that. Where space is a premium and confusing territorial situations today lead to underutilized or undervalued open space, understanding the relationship between urban form and social response can be valuable when it comes to infill and densification proposals. In some cases, adding more built form through densification can even be an opportunity to repair existing territorial mismatch, as when the space presented for use by residents simply isn't used or appreciated at all.

In many newly constructed residential districts in Sweden, the 'freeing of the ground' paradigm of modernist planning seemingly still dominates (Levy 1999). Despite the

urban renaissance discernable in most of the developed world, promoting a mixed-use, transit-oriented and dense city[2], implementation on project level is often different. In Stockholm, a "preoccupation with endowing the periphery with the social qualities of space and environment that the traditional city always tends to retain" (Malfroy in Petruccioli, Aga Khan Program for Islamic et al. 1998) can be seen in attempts to direct planning initiatives through catch-phrases like "the walking city" (*promenadstaden*) and the ubiquitous concept of "block city" (*kvartersstad*) prevalent in planning documents like the current *Stockholm City General Plan* (Stockholm City 2010). However, unenclosed perimeter blocks, slabs and point buildings are commonplace even in recent development. Current densification in the form of infill in suburban Stockholm is often presumed to be contextual if it mimics the already-present typology, leaning on for instance the categorization in the Stockholm Building Order (Fredlund et al. 1997). Thus areas characterized by slab-buildings have tended to be intensified in a similar vein, areas characterized by higher point buildings likewise. Partly this stems from the evident difficulty in imposing for instance a grid-structure or perimeter blocks in areas characterized by buildings positioned in a field of space. Still, it is proposed here that an alternative contextual approach might be one in which densification incorporates the notion of territorial performance – in order to complement areas with what is missing territorially, rather than in the worst case repeating past mistakes again and again.

What appear to be lacking in planning and urban design practice are tools which enable a fair assessment of the territorial performance of urban design models. For this, a spatial precision is required which allows the urban form to be measured and tested in comparison with empirical findings about what people actually *do* in space. Such tools can then be used to evaluate plans before they are built to identify potential weaknesses in territorial performance. To assess the factors influencing appropriation of space the inquiry should be 'sociospatial', including both morphological and sociological research methods without attempting to venture too far into the field of sociological research, but borrowing concepts and theories from this closely related field. The question thus has to do not so much with *why* open space emerges as territory, but rather *where* such emergences take place, under which spatial conditions. Or, in other words, what spatial material ingredients need to be present and to what degree?

So, the main question is: To what extent does urban form by way of creating social territories and non-social territories influence the urban life that plays out? Explain that all is territory, it is the sociality or interaction potential which differs, e.g social territory. The hypothesis is that spatial components such as accessibility, enclosure,

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[2] In Stockholm represented in Promenadstaden – the Stockholm City Comprehensive Plan Stockholm City. 2010. Promenadstaden - översiktsplan för Stockholm - stockholm.se. http://www.stockholm.se/Fristaende webbplatser/Fackforvaltningssajter/Stadsbyggnadskontoret/Oversiktsplan/.

and size of the spaces framed (both in absolute terms and relative to population) are significant determinants of territorial performance. Urban territoriality emerges out of a structuring of space as 'urban' where not only private and public meet (in legal and social terms) but also where residents meet strangers in the street, where spaces to stay meet spaces of movement and flows, and where the permanence of domesticated space (a private good) meets the transient space of circulation and roads (a public good). Insofar as spatial mechanisms play out where private and public are negotiated, e.g. at the interface between Ildefonso Cerda's "operative poles of urbanism: habitation and circulation" this question is at the very heart of what we understand as urbanity (Choay 1997). *Territorial performance* then, refers to those aspects of the urban form that impact how spaces are appropriated and controlled either privately or collectively.

After having answered the question of how territorial performance of space can be assessed, we can linger on and explore densification from a territorial perspective. The first step thus is to understand *which* measures are involved in territoriality. The second step concerns the study of *how* these territories actually provide utility for residents. The third step is to identify *where* transformation is desirable and possible. In so doing, the research promises relevance not only for densification processes, but even for cities with less need to densify but wishing to identify which interventions at the material scale of the interface might improve the conditions for agency and stewardship.

2. WHAT IS THE PROBLEM?

> Space is used diff in the contemporary urban environment. The proportion of public space is larger, no doubt because of the car. In addition, private exterior space is displayed publicly. Historically, there was no point to setting back a building; front yards were, for all practical purposes, useless. (Habraken 151)

2.1 UNCLEAR BOUNDARIES, UNCLEAR SOCIAL ARENAS

What is the consequence for society of the historical transformation from distinct perimeter blocks to buildings set in a landscape of fluid space? According to Potzamparc, the shift from the traditional closed city to the modern open city constitute two separate ages (Age I and Age II respectively) morphologically speaking (Levy 1999). The resultant urbanity is characterized as follows:

> "Cities that were dense, compact and continuous have become diffuse, loose and discontinuous. . .A shift has occurred from a closed fabric. . .to a peri-urban fabric which is open and fragmented, with autonomous and atomized elements which do not relate to each other. This shift has been accompanied by a significant change in scale. . ." (Levy 1999)

In post-war modernist areas of suburban Sweden, which are the focus of this research, open urban fabrics of multifamily housing prevail. A popular notion of the time was that of an open democratic society with neighbourhood units as the optimal scale for planning. In this context, with large municipal housing companies and a high rate of development consisting predominantly of rental units, the plot was not seen a planning unit per se. The notion of a 'yard' was in many cases only symbolically produced. Open space on the scale of the plot was generally conceived and planned as unenclosed and connected to the fluid open space of other plots and of pastoral and park-like green belts connecting them. These residential enclaves were then connected through a network of streets and pedestrian paths linking each local centre to the next. Since development was conducted on a large scale on plentiful mainly undeveloped public land acquired affordably decades earlier (cite), Stockholm's growth was orchestrated quite intentionally as a form of "ruralized urbanity". Geographer Tage Wiklund attributes this in part to a specifically Scandinavian reverence for nature. In society-at-large as in the urban models it produced, the realm of the private receded more and more to the domain of the home.

2.1.1 UNCLEAR PROPERTIES

In a context where buildings were sited more in deference to sunlight and views, property lines became increasingly arbitrary divisions separating public land of

infrastructure from the public land of housing estates. In the perimeter block the property line generally coincides with exterior wall of the building (more or less), because as claimed by Habraken at the opening of the chapter, front yards were practically "useless" (Habraken 151). However, several factors converged in post war Sweden to produce a suburban landscape characterized by buildings as solitary objects in the landscape rather than as part of an urban tissue or composition. Levy calls this a 'freeing of the ground' paradigm:

> Constructed space no longer corresponds to the plot [and] there is no longer a clear relation between one building and another. . . [or] between buildings and streets or open spaces" (Levy 1999). p 82

As it happens, this urban design fit neatly with modernist conceptions of society (Wiklund 1995). Draw here on Castex, Panerai. A byproduct of modern urbanism built up of atomized elements, is that the legibility between public and private has been tinkered with. In the modernist utopia, the urban design and the future lives of its residents were premised on a clean-slate[3]. When traditional city planning ideals such as the grid-like network of streets as planning tool were cast aside in favour of a focus on infrastructural networks[4], context became an issue of siting the building in the landscape rather than as a piece in the puzzle of urbanity. But what of the social consequences?

> "The tendency of modernisation is towards greater individualisation rather than the generation of greater community spirit....we as modern citizens increasingly lack 'social capital'. We lack that stock of associations and bonds that takes us out of our otherwise solitary existences and places us in a social context where we see how important we are to others and in turn how important others are for the realisation of our goals and aspirations". (Tormey 2004) p99, cite Putnam and Bauman

Have we, as Putnam and Tormey allege, lost "social capital"? Just as buildings were freed from their plots, the individual was freed from past context to pursue future potential. Abandoning their provincial lifestyles, new inhabitants moved from the countryside to fill the new suburban apartments, leaving behind small-town identities where as the saying goes, 'everyone knows everyone else'. Sören Olsson describes the relative anonymity and sudden freedom from conventions that met the new suburban residents as a welcome change for some, who embraced the "right not to participate" or be so blatantly subjected to the social control of smaller communities they had left (cite properly and add Mats Franzén). In the social welfare state, the government has the ultimate responsibility for its citizens, making ties beyond the nuclear family more voluntary than previously. The collective is not so much removed from the equation as it is 'scaled-up' to the level of neighborhood/district and in the

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[3] cite Corbusier etc.

[4] This included of course roads dimensioned for cars but also a rapidly expanded public transport system implemented on a regional scale in the form of subway lines, whose stations were the anchor-point of the neighbourhood centres.

postmodern world to ever-larger units of 'belonging' in a global world. In Sweden, the term *Folkhemmet* captures the utopian vision whereby the urban design became both the ends and means of actualizing the ideals of an inclusive society. The community was believed to be best served on a neighbourhood or district-scale with highly programmed district-centres complete with the shops and the public and cultural institutions needed to uphold a modest level of service (but ultimately reliant on the city-centre for employment opportunities and most services).

The scaling-up of the notion of community had the effect of disregarding the smaller-scale community of the traditional residential street or block. Where the private realm was that of the home and family, the public realm was essentially everything else. Consequently, the collective scale as a mediation between public and private is not an evident part of the spatial equation in a typical Swedish suburban neighbourhood. In the absence of collective space such as yards, for instance, there is frequently no spatial arena for interacting with neighbours, except in the nearby public parks or on the street itself. Where yards do exist, these are generally semi-enclosed, if at all, and thereby accessible and exposed to the gaze of non-residents. Only in their programmed elements of plantings, picnic tables and playground equipment is the function of yard communicated at all. Trademarks of top-down planning, the standard-issue picnic tables and benches, play equipment etc. are ubiquitous installations that invite use of the open yards, but these often appear un-appropriated, suggesting that use is sporadic rather than habitual. It is an assumption in this research that a yard, when it performs as a social arena and is actively used by residents, is an appropriated *territory*. Further, understanding how yards perform as territories is served by studying urban form parameters in combination with empirically observed patterns of use and appropriation by residents. In the following, urban form components with potential impact on territories will be discussed.

2.1.2 DIFFUSE SOCIAL ARENAS

Simon Tormey (Tormey 2004) claims that community today is wrapped up in social obligations, creating a resentment of "what we are said to owe to others," and echoes George Simmel's description of a practiced desensitivity as characteristic of the 'metropolitan type' . Going further, Richard Sennett (Sennett 1996)attributes the withdrawal from a public role or persona (e.g. protected by a formal manner) to a lack of barriers between public and private. The so-called "tyranny of intimacy" makes us so unsure of how to behave that we simply retreat into familiar territory – who and what we already know (Sennett 2008). The recent explosion of social media and internet-based community would appear to support this position. However, there are simultaneously grassroots movements in favour of returning focus to the 'the local' in line with the old adage, "think globally, act locally." Spatially, such movements emphasize locality, specificity and immediacy on one hand, but

increasingly utilize the organisational power of social media to reach a wider audience. Examples are urban gardening and sharing economies, which have been the subject of recent research (cite). The point to consider here is how the urban form underpins the emergence of social arenas in a manner perhaps analogous to the role of social media in connecting people and passing information along in an informal way. Assuming that the collective has not been prioritized in modernist planning, is this a loss for society? Granovetter weak ties, mention?

2.1.3 UNCLEAR INTERFACE

Ildefonso Cerda conceived of the relation between building and circulation apparatus as accounting for "the urban framework" on all levels (Choay 1997). However, where the two elements interface has been the site of an intricate tinkering in urban design practice and thinking over the past century. In the pre-modernist city, the intersection between the public and private realms tends to occur in a more or less distinct interface materialized at the building façade. With perimeter blocks, for instance, the exterior façade spatially frames the street as much as the building it encloses. In other words, the conceptual interface aligns with the material interface – the building wall. In this sense the façade 'belongs' as much to the street as to the building, due to the role the so-called street-wall plays in facilitating what plays out in the public realm. In the modernist planned city, a zeal to free of the ground, as described earlier meant a conceptual weakening of the notion that public and private should materially engage with one another. When the interface ceases to be the site of contact between public and private life, the opportunity for exchange between the two would appear to be weakened as well. A blind wall leaves little opportunity for exchange between inside and out, while a street-wall punctured with entrances and windows maximizes such potential.

The role of the interface is one of mediating interactions of residents, store-occupants and passers-by having different needs of access and privacy control. It is an established view in urban design that weak interfaces compromise the life of the city, one put forth by Jane Jacobs, Jan Gehl and with widespread acceptance in the field (Jacobs 1961, Gehl 2010, Gehl 2011). What has been less problematized is how the interface affects territoriality specifically. Yet how the interface is materialized, but also what is happening on both sides of the interface, has ramifications for how the different divisions of space might be used. Gone are the internal courtyards of perimeter blocks – in the modernist city, all sides of a building are exposed. A closer study of the suburban landscape of multifamily slab buildings typical to a Swedish post war suburban landscape confirms that free-standing slab and point buildings of different varieties dominate. Compare this with the description of elements of the grid city by Bill Hillier:

> The grid is the means by which a town becomes a 'mechanism for generating contact', and it does this by ensuring that origin-destination trips take one past outward-facing building

> blocks en route. That is, they allow the by-product effect to maximize contact over and above that for which trips are originally intended. (Bill 1996) p 59

In fact, in the suburban context of this study, what is the 'outside' of a building is not even self-evident. As private and public realms became stretched and in some cases detached from one another, the traditional location of building entrances precisely at the interface between them became more diffuse as well. This might be summed up as a legibility problem: Is the entrance-side(s) or the side closest to the street the outside in the event that these are not the same? Perhaps it is more relevant to identify the entrance-side as formal and other facades as informal when the notion of inside versus outside no longer differentiates the facades. What are the implications for the spaces framed somewhat indiscriminately by formal sides and informal sides of buildings? The use of building setbacks places distance between the public realm and the private; multi-storey apartment buildings with a low entrance density and terrace houses with high entrance-density have quite different potential to activate the street. Aspects like density and movement flows of the street also play a role setting the stage for different ways of relating to urban territories, evident in how open spaces are appropriated by residents or others. Simply put, the built form sends clear signals about who may use the space around it. In fact, illegibility also sends signals, as will be discussed further on.

2.1.4 UNCLEAR BOUNDARIES

In the absence of boundaries and the ensuing patchwork of spaces bounded only loosely by built form, territorial performance may have been compromised in the process. If the dissolution of boundaries reflects a change in society, how does the dissolution of boundaries in turn change society? To be precise, the boundaries are still there in a legal sense, property boundaries have not ceased to exist (even if property size has in general terms grown larger and legal borders thereby reduced). The question might better be phrased thus: "If property lines are invisible, do they cease to matter?" The answer is of course no, the boundaries are still there, perhaps not materialized, distinct or legible but human behaviour still accords them meaning. From a real-estate maintenance perspective, a lack of maintenance and depreciated environments may be one consequence (Ståhle 2008). But unbounded spaces may have social consequences as well: Since an unbounded space sends unclear signals about who is sanctioned to use a space, social coordination in collective space is likely impacted. Collective space here denotes the shared open space sanctioned for the use of a group but not located on public property (even if accessible to the public). Political scientist Ellinor Ostrom proposes design principles to facilitate collective action that include "clearly defined boundaries [for] effective exclusion of external not entitled parties" and "effective monitoring" (Ostrom 1991). These are recommendations which seem contrary to modernist planning ideals but also to current planning praxis in Sweden, which will be examined in Chapter 13. The idea of shutting anyone out in the urban design is as foreign to the planner seeking 'meeting

places' as the idea of the gated community is foreign to the Swedish urbanism context. But besides being a 'barrier to outsiders', in the case of collective space like yards in multifamily residential areas, boundaries also regulate access to a space and clarify who may appropriate (and control) it. If the group is everyone in the district or everyone in the building has impact for what type of engagement might emerge.

The boundary is also the point of departure for most discussions on territorial behaviour (Sack 1986, Kärrholm 2004). Enclosed versus open yards inherently stage different interfaces and tensions between the private and public realm, but do they perform differently in terms of utility for residents? There has been no prior research using morphological methods of analysis on territorial performance to answer such questions. It is the premise of this work that boundaries do matter to social responses; that even a lack of formal boundaries has consequences. This research seeks to understand what these consequences are. Boundaries are often reduced conceptually to being about inclusion and exclusion, not least in the urban design discourse. However, within systems theory, there is a notion of boundaries as being necessary to regulate difference (Luhrmann). This point of view is supported in ecology, where greater species diversity has been linked to a microstructure of smaller scale differentiation whereas co-called monocultures are linked to a less fine-grained structure (source?). (Comparing the biological diversity of allotment gardens with the golf course it is easy to understand this to be the case). Taking the point of view of boundary as site of exchange as a way to explore urban morphology then begs the question, whether a lack of morphological boundaries creates territorial (e.g. social) monocultures as well? Research has found that the resolution of plot size has influence on how many actors (property owners) have a vested interest in an area and that this can predict diversity over time, as large properties require larger-scale actors and investments for interventions to occur (Marcus?). A multitude of actors translates to an increased diversification at the micro morphological scale, not least due to differing maintenance cycles and less centralized decision-making. If boundaries can be found to support a sense of stewardship of space, an emergence in users of a sense of agency to use or personalize space, this of course has relevance for urbanism as it is practiced today. Especially in a market-liberal climate of reduced public investment, encouraging local stewardship and use of space becomes important.

2.2 CONSEQUENCES

What then are some of the consequences in social terms of unclear boundaries and illegible interfaces? An obvious aspect to consider is how privacy is impacted. The interplay of revealing oneself and withdrawing is the choice to be more or less an active participant in urban life. As people choose to concentrate at higher population densities, the dynamic balance between private and public practices defines the

urbanity and local differences are to a great extent what makes cities unique. Privacy is personal of course, but in discussing the sharing of open space or 'yard' in multifamily housing compositions adds additional complexity – can privacy be shared with others? Evidently, since most are able to enjoy the calm of a park or garden without expecting it to be vacant of other users. Privacy is corporeal. . . The notion of privacy is multifaceted, encompassing ideas of "secrecy (information known about an individual); anonymity (attention paid to an individual); and solitude (physical access to an individual)" (Gavison, in Madanipour 2003, 37; Gavison; cited in Wacks, 1993). For the urban designer, this disparity can be quite puzzling. For instance, while solitude can be compromised by congestion, anonymity is perhaps premised on it[5]. How to accommodate privacy through design requires some sorting out of the spatial implications of privacy control.

write this section still:

> The term "privacy" is used frequently in ordinary language as well as in philosophical, political and legal discussions, yet there is no single definition or analysis or meaning of the term. The concept of privacy has broad historical roots in sociological and anthropological discussions about how extensively it is valued and preserved in various cultures. Moreover, the concept has historical origins in well known philosophical discussions, most notably Aristotle's distinction between the public sphere of political activity and the private sphere associated with family and domestic life. Yet historical use of the term is not uniform, and there remains confusion over the meaning, value and scope of the concept of privacy.
> § source: http://plato.stanford.edu/entries/privacy/#PriResAcc

> Most recently, Adam Moore (2003), building on the views of Gavison, Allen and others, offers a "control over access" account of privacy. According to Moore, privacy is a culturally and species relative right to a level of control over access to bodies or places and information. While defending the view that privacy is relative to species and culture, Moore argues that privacy is objectively valuable — human beings that do not obtain a certain level of control over access will suffer in various ways. Moore claims that privacy, like education, health, and maintaining social relationships, is an essential part of human flourishing or well-being.
> § source: http://plato.stanford.edu/entries/privacy/#PriResAcc

Legal praxis addresses and sorts out social and psychological violations on privacy in an iterative process in which specific cases challenge different readings of the law. A central aspect of privacy is the right to be left alone, although there is a degree of legal ambiguity here too in dealing with the notion of privacy. Yet legal processes force uncertainties to be clarified vis-à-vis the spatial context in which they occur, in essence "ensuring privacy may have a spatial dimension," according to Ali Madanipour (Madanipour 2003, 37). As Madanipour in fact suggests, each of the three independent components of privacy mentioned above (secrecy, anonymity and solitude) probably have their own spatial parameters. This is a point of departure for

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[5] The performative categories proposed relate indirectly to these aspects of privacy, such that *disturbed* space may be said to compromise solitude, *exposure* may be said to compromise secrecy and anonymity might be said to be compromised when the *nondisturbed* space is not spacious enough to accommodate many users at once.

the research – physical boundaries, or the lack of such boundaries, probably affects secrecy, exposure might influence solitude and congestion impacts anonymity, one might venture. Fortunately, boundaries, exposure and density (built density and density of users in a space, termed *co-presence*) are concepts that can be measured and analysed, on several levels of scale. For this reason, advocating "soft edges" rather indiscriminately may be an insufficient prescription to create more liveable cities (Gehl), ignoring the intricacy of privacy as a multifaceted and contextual matter.

2.2.1 CONSEQUENCES FOR DENSIFICATION

For the predominantly (sub)urban fabric laid out in low- to mid-density multifamily apartment buildings which characterizes the peri-urban landscape of larger Swedish cities, densification pressure presents both a challenge and an opportunity. Postwar suburban construction largely adhered to the modernist paradigm in which a fluid open space was made accessible to all. Consequently little private (or for that matter collective) open space for the express use of occupants is to be found in these suburban compositions. While nature and greenery may be plentiful, open spaces that offer privacy in all its facets are generally not. Compounding this, the perception of suburban neighborhoods as spacious and open makes them prime targets for densification. To people who do not have shared private space like a yard, densification of recreationally used open space may be quite unwelcome, laying claim to what little usable open space residents perceive they have access to. Often, the planning process is slowed by an appeal system that formalizes and attempts to address Not-In-My-Backyard (NIMBY) sentiments. Strictly speaking, however, *backyards* as such are in short supply for reasons outlined above. In some districts, what backyards there are tend to be dedicated for parking. Yet for all their green qualities, many suburban neighbourhoods lack amenities in the form of not just parks but also commercial services, restaurants and cultural facilities, mainly due to not having enough inhabitants to sustain services or to compete with external shopping centres. So while densification in theory might be welcome to generate more customer base toward mixed-use aims, *where to densify* is the question. It is proposed here, that the planning process in general and infill densification in particular would be supported by better understanding how residents view the utility of their open spaces (e.g. yards).

One issue with infill densification, especially in a climate of fast-paced housing production is that ad hoc infill prevails, in which larger-scale implications of planning proposals are not fully considered. For individual neighborhoods, this may lead to a rather rapid shift from having plentiful open space and green areas to seeing this replaced by new housing schemes. This is problematic when open space designated for immediate residents (shared yards) or designated for neighborhood residents generally (programmed parks) are simultaneously in short supply. In recent

development plans in Stockholm and Malmö, a significant amount of open space was configured in proposals that placed valuable open space in exposed strips along the street. Such configuration of open space, in ways that render appropriation, monitoring or use difficult, may produce territories with little utility for residents. Hence, opportunities are missed to use a suitable architecture to configure space in ways more attractive for occupants, either as larger patches of usable (public) space or as smaller but more controllable patches of personalized or appropriated (private) space. (show examples of space configured outside each unit or as shared space)

An adaptive *densification* is proposed as one in which densification is nuanced and molded to solve problems in the proposed context and thus able to recognize what type of intervention is relevant where. While underused spaces may not be seen as a problem per se, spaces which have a low sense of ownership and agency may become maintenance problems, look unsightly and detract from the attractiveness of the street in the case of exposed front yards, for instance. In some contexts this might actually be a 'waste of space' in the lost potential for creating attractive and territorially useful spaces. Although their potential value as green corridors should of course be considered, an excess of low-utility front yards may contribute to less attractive environments to spend time in. Another risk with ad hoc infill characterized by decisions made on plot-level by planners, architects and developers is that larger-scale transformations are not considered. For instance, property developers may be hesitant to plan for ground-floor commercial space in a climate of housing-deficit. Rather, ground-floor residential units designed with private terraces and direct outside-access provide a sure-sell development alternative attractive on the housing market[i]. However, experience has shown that developers tend to be too conservative in their estimate of the need for small businesses (Trafikverket 2010). If we wish to be serious about densification, a more holistic approach is needed which considers both needs of residents and how to facilitate small businesses and a growing micro-economy of self-employed workers (source). Otherwise suburban neighbourhoods will remain as they often do, the residential satellites of economic centres which provide the work opportunities and commercial and cultural services needed for urban vitality. Focusing on the interface with regard to street performance as well as the needs of occupants (e.g. privacy control) is a means of taking in a context larger than the plot and recognizing the role played by the building and its associated spaces in a larger urban fabric. Performance thus analyzed as an urban as well as architectural problem means considering several scales at once.

Perhaps mention shift from more authoritarian to more liberal society, requiring more initiative on the part of citizens, eg. Agency is necessary for things to happen.

2.2.2 CONCEPTUAL CONFUSION

As discussed previously, the interface between public and private performs simultaneously on many levels as the site not only of social dynamics including privacy control but also balancing at times competing interests. For urbanism, this complexity becomes quite problematic and terms such as 'semi-private' and 'semi-public' are used in architect/planner jargon often without further clarification or consensus about what these vague concepts mean. What the conceptual imprecision does suggest, is that the interface might be seen spatially more as a zone with some depth to it, rather than as a plane constrained to the width of the street-wall as urban design principles all too often focus on. A range of spatial situations, covering the most private to the most public is produced in this zone as in the city-at-large, but as the language used to convey the evident range is imprecise, confusion ensues.
ILLUSTRATE THIS CONFUSION MORE CLEARLY WITH EXAMPLES OF AMBIVALENCE.

Conceptual ambiguity is not as tolerated in legal practice of course, where jurisprudence has found other systems of classification on the issue of privacy as related to space and strict rights and obligations are supported in the law. It may be fruitful in fact, to borrow some concepts and precision from the legal framework on privacy into urbanism more generally. In contrast, in everyday jargon, private and public have multiple meanings. The terms may refer to accessibility, where public is more inclusive and private more exclusive. Private and public also connote ownership and economic responsibility, as in whether funding or management is in the 'public' interest versus by 'private' investment. Furthermore, sometimes private and public are used in terms of exposure and where private refers to that kept out of "the public eye," i.e. the intimate or personal sphere of the home and family, akin to Aristotle's aforementioned division. Lastly, private-public sometimes capture the scale of a phenomenon, in the sense of affecting or being of interest to very few (thus private) or very many, such as a 'public demonstration' where a mass of people assumes a public role by the sheer number of their voices[6]. The many nuances of the terms are relevant to a discussion on how people 'take ownership of space' in cities, which this investigation into urban territoriality hopes to address. In fact, these nuances will be taken as a point of departure, as themes for further investigation. A logical approach would then be to investigate the morphological basis of the aforementioned themes: accessibility, legal claim, exposure and size in relation to population – all distinct dimensions of the private and public concepts. First though, a case must be made for a spatial reading of privacy control.

One view holds that in the balance between exposure and privacy, "the problem of privacy [is] one of regulation of personal information, that is, as the achieving of '. . .an optimum balance. . .between the 'information' which comes to a person and that

[6] For a more extensive review of the multi-nuanced term 'privacy' and discussions on the interface between public and private, refer to Ali Madanipour's *Public and Private Spaces of the City* (Madanipour 2003).

which he puts out" (Altman 1975; Benedikt 1979). Or what Alasdair Turner calls the "relationship between visibility (what you can see) and permeability (where you can go)" (Turner m.fl. 2001). Koolhaas takes this a step further, in reflecting on current architectural 'Junkyard' aesthetic, positing that "transparency only reveals everything in which you cannot partake" (Koolhaas 2002, 139). There appears to be some agreement then that a lack of correspondence between what you see and what you have access to may be problematic. This supports taking an analytical approach that looks at access and exposure as separate components.

2.3 SUMMARY

Recap (illustrate!) the implications of urban block transformation:
1: building withdraws from street
2: more façade is exposed leading to reduction in entrance density relative to façade length, e.g. fewer sites of contact
3: more space on property is exposed leading to unframed spaces

2.3.1 WHAT IS THE TERRITORIAL PROBLEM?

The arrangement of buildings within a circulation apparatus is, according to Ildefonso Cerda's functional definition of urbanization: "the relation between rest and movement, or rather between the spaces that accommodate human repose and those that facilitate movement, that is buildings and the network of streets" (Choay 1997:237). But what of the in-between, the spaces of transition between rest (at home) and movement (in the street)? These may be front yards or internal courtyards, yards squeezed between slab buildings or yards surrounding point buildings, depending on the morphology. From the standpoint of the street, an abundance of front yards contributes to a diffuse street-wall and interface. (Clarify street as room notion, illustrate. Also mention stipo as an example of renewed interest in tools for rethinking the interface.). How the street performs is a result of the combined effect of how the space is configured, eg. depth of the front yard and scale and intensity of the street and of how space is materialized, eg. factors such as openings (entrances/windows), transparency, tactility etc. How a building *constitutes* the street refers both to the relationship of private building to public street (entrances and windows) but also to number of transitional zones (eg. topological depth) between street and building (Hillier & Hanson 1984). These are the spatial and material components of the interface which are within the designer's scope to control, assuming that design strategies based on street performance are better understood as a conceptual apparatus useful to designers. Such tools are sought in practice today, as evidenced by the largely unchallenged acceptance of design principles outlined by for instance Jan Gehl and going farther back by Jane Jacobs' seminal *Death and Life of Great American Cities* in 1961 (Gehl et al. 2006; Jacobs 1961).

A planner tasked with seeking densification potential in an existing neighbourhood in southern Stockholm would face a complex challenge. A neighbourhood like Hammarbyhöjden-Björkhagen-Kärrtorp for example, harbours a surplus of open space and at first glance holds clear densification potential, see Figure n.

Figure n. Satellite image of Hammarbyhöjden-Björkhagen-Kärrtorp in southern Stockholm.

Characterized by multifamily slab buildings of predominantly three stories connected by fluid open space and a high degree of vegetation in trees, shrubs, lawns, the general feel is of a spacious and low-density suburban fabric connected by an infrastructure of roads, public transit and bike/pedestrian paths. However, while the densification potential would appear self-evident on a district-scale, in analysing potential sites, several impediments arise:

For instance, a common situation in this mainly post-war architectural typology is that the buildings are set back from the street, commonly with something like three entry points shared by 18 or so apartment units in a three-storey building. The ‘gap’ created in the void between street and building façade or (eg. between public land and private property) consists of strips of front yard which flank the street and on an aggregate scale make up a large share (by some estimates 12-18%) of the open space in neighbourhoods such as these. In front-yard strips much of the green character so often associated with the post war Swedish building stock and much

appreciated by residents is concentrated. Due to the setbacks, paths connect the street and points of entry to the building, chopping up the front-yard even further. Here, in the setback zone, residents, postal workers, and strangers visiting the buildings in question are equally sanctioned to use the space. However, a by-product when the street is not the main artery of movement is that the setback zone is left fragmented into smaller patches by the redundant access points needed. Should anyone feel inspired to use these small zones, being in full view of the street tends to put a damper on most such practices. Moreover, returning to the densification exercise, the setbacks of fragmented green space and access paths is not space conducive to intervention of the infill variety. Thus, you might say that the setback, entirely apart from whether it is legally possible to build upon, is morphologically not easily altered, see Figure n.

Figure n. The set back building creates a territory between building and street, but what kind of territory is it?

The aforementioned scenario begs the question, what kind of territory is the setback? Further, comparing a point or slab building with windows on all facades to a building set into a perimeter block another difference becomes apparent. The lack of blind walls in the freestanding building means that development cannot encroach closer than a culturally accepted distance from the existing building. The result is an implicit 'Buffer Zone' which in Sweden is rarely less than 12 – 15 meters[7]. What these examples illustrate is that not only the urban form and the configuration of buildings in space impact the role that the surrounding spaces may play, which practices may ensue there, but also how the interface is articulated matters. A blind wall might allow development immediately adjacent, while a point building with windows all around in essence claims a swath of space all around it from future development.

[7] In metropolitan Asia, however much closer buffer-distances are the norm, and it is not rare to see high-rises 4-5 meters apart or less.

- Ambiguous gaps: Space is sandwiched between building façade and street in an ambiguous zone accessible to all, but formally on private property. (inhabitant/stranger problem)
- Buffer zones: Space is 'claimed' by buildings with windows and entry-points all around their perimeter, there is a general lack of party-walls to abut to. (building and public space problem)
- Front/rear mismatch: Buildings face streets with their informal side (eg. balconies) while the formal side (eg. entrance side) is around the back from the point of view of the street. (conflicting scales of movement problem)

2.3.2 WHAT IS THE DESIGN PROBLEM?

Creating knowledge on use and appropriation of space is one step toward making territorial performance assessments possible. Some critics might consider this to be flirting with normativity, but the fact remains that practitioners of architecture and planning impact how people use space and move through it, how many people will inhabit a neighbourhood and whether open space is accessible to a few or to many. With more refined approaches for assessing probable outcomes of design decisions, a convincing case may be made for why precise strategies for tackling difficult territorial situations are justified. One gain is that overly optimistic predictions might be avoided in densification schemes, for instance. A better-informed practitioner is able to make more contextually relevant decisions in the production of space, which is central to the notion of *adaptive densification*. Addressing the conceptual gap is one way to introduce better procedures into urbanism practice in order to evaluate urban design proposals. Recently, urban theorist Stephen Marshall has argued that urban design theory also needs a more scientific knowledge-base and calls for "reform from within" whereby theories and solutions are tested and evaluated in relation to others and not, (as now) uncritically incorporated into the discipline (Marshall 2012). One problem currently, besides the use of an imprecise terminology (e.g. semi-public, semi-private) is that instruments for assessing the territorial performance are lacking. Since the use of open space (in terms of social or economic needs) is not understood to have a spatial logic, such analytic approaches have not been pursued. (However, a growing field of spatial analysis is doing just that). Another problem is that approaches rarely take a perspective larger than the plot and thus *ad hoc* infill prevails.

2.4 DISCUSSION

As the shift from traditional to modernist planning exemplifies, urban form to a great extent encodes future intervention. In suburban Stockholm, which consists of x% slab or point buildings, the possibilities for the open space left in existing neighbourhoods is limited by the existing urban form. One option is to tear down the existing urban fabric in order to start with a clean slate, adjusting the street-network

and updating the architecture to current thinking in the process. But in many cases, more nuanced and affordable solutions are sought, which address problems but still preserve what qualities there are in existing areas. Densification strategies might also look to the existing public space for developable land. Stockholm City owns x% of the land reserve within the city. However, what to a planner in a rapidly growing city constitutes a 'land reserve,' are nearby parks and nature to the local resident. Selling public land for private development is a position fraught with ideological issues but also morphological complications. A trend already apparent is for new infill proposals to eat away at the perimeter of parks and nature where existing infrastructure of roads and public transit can be optimized. Residential buildings of the mid-rise slab typology described above commonly flank large swaths of recreational green areas near the green belts of Stockholm and other Swedish cities. Development in these areas is never problem-free. That such proposals are still frequently put forward speak to the appeal of having a 'clean-slate' as point of departure. It goes without saying in an era of smart growth and sustainability awareness that a green-field site cannot be considered a blank canvas anymore. Whatever gains are made in terms of new housing and profit for the city in selling off lucrative land come at a price, for local flora and fauna and residents alike. Further, while this approach may appear to provide easy solutions by avoiding taking on the morphologically challenging "relic of an outdated paradigm" that are post war modernist urban fabrics (Hillier 59). Seeking strategies to densify even in territorially complex situations is likely necessary in order to preserve existing green areas.

3. THE EMERGENT AND THE PLANNED

> As in the pseudoscience of bloodletting, just so in the pseudoscience of city rebuilding and planning, years of learning and a plethora of subtle and complicated dogma have arisen on a foundation of nonsense. (Jacobs 1961)

In *Social Justice and the City*, David Harvey argues that it is "crucial to reflect on the nature of space" in order to understand urban processes. His tripartite division of space into absolute space, relative space and relational space in dialectical tension is useful because it considers what he calls relational geometries and the constant interplay of the different scales. In subsequent works he has positioned his tripartite division in relation to Lefebvrian conceptions of space as well as others (Harvey 1969; Harvey 2009; Harvey 2006; Lefèbvre 1991) but finds that "relational terrain is extremely challenging and difficult terrain in which to work" and that "measurement becomes more and more problematic the closer we move towards a world of relational space-time" (Harvey 2006, 124). If the relational terrain encompasses the realm of social responses to environment, how to go about tracing these back to absolute space e.g. to measurable properties, is not immediately apparent. However, by way of relative space, in which configurative analyses such as network integration in space syntax can be sorted, certain proxy measures seem able to 'bridge the gap' (Hillier and Hanson 1989; Bill Hillier 1999). Hence, making use of Harvey's concepts becomes easier in combination with a *morphological* approach to the different levels of scale. "Processes at one level of scale give rise to emergent forms at another level that can be recognized and formulated into conscious design ideas" (Caniggia & Maffei and Saverio Muratori (1910–1973) in Kropf 2003, 2011). Territorial behaviour in urban environments exemplify such a process, in what Karl Kropf describes as an interplay between the emergent and the planned.

3.1 SPACE AND THE CITY

At the moment, territorial effects are under conceptualized and therefore hardly planned at all, something which this research seeks to address. However, understanding emergence in urban situations means considering also relational properties having to do with perceptions of open space and territoriality. Traditional morphological research has focused more on "the connection between the network pattern of routes and the patchwork pattern of tissues" (to simplify a bit) but adding the social component to the spatial analysis adds a dimension of relevance to planners and architects working with urban design (CITE!). Rather than simply describing a phenomenon in great detail, taking a socio-spatial approach thus may produce more robust knowledge on territorial urbanity with potential to describe *what is* but also to inform *what might be*. To move from analysis to structuring

intervention, connecting morphology to social processes is the only way to inform strategies that can claim to be truly *performative*.

Like sociology, urban morphology, especially the French school (Moudon, 1994), seeks patterns but not between human interaction based on demographic and cultural patterns but between built fabric, institutional regimes, owners and occupants. Roots of these patterns can then be traced to social, cultural and institutional change (Mugavin 1999:96). Further, in terms of producing a system of metrics, morphological research allows for a "system of variable relations that can be identified between those elements" (Malfroy 1995: 24). However, both fields tend to look to society (or praxis) to explain space, rather than look to space to explain society. The focus is on space as an abstract concept and as vessel of social relationships rather than as producer of social relationships, asking "if space embodies social relationships, how and why does it do so?" (Lefebvre cited in Mugavin 1999:97). And in fact, Lefebvre's triad of lived-conceived-perceived space concern how space is produced but is not necessarily as useful in terms of understanding how space *produces*. CLARIFY LEFEBVRE, INCLUDE MATS FRANZÉN AND TIE IN TO HARVEY BETTER. Though "Lefebvre conceptualizes space as 'social space' [it is] unrelated to Cartesian references" and like Foucault, he has "no 'grand theory' of space/place" (Mugavin 1999:97). In the absence of a science of space, according to Mugavin due to a failure of epistemological-philosophical thinking, then a statement such as "the extent to which a space may be decoded lies on an ability to read it" becomes difficult to support (Mugavin 1999:97). A reading of space is made the ends rather than the means for understanding of social phenomena. This research in fact, is premised on the following question being a relevant one to ask: *By what mechanisms does space produce society*? Urban morphology, it is argued, can be used to understand how one spatial entity affects another, and how they should be analysed and measured.

To return to the question of urban territoriality specifically, previous research on the topic has been more discursive or theoretical than morphological, such as Mattias Kärrholm's use of Actor-Network-Theory (ANT) to explore territoriality in public space (cite). (A literature review in chapter 6 will discuss theories on territoriality further). A difference in premise should thus be clear: rather than focus on space relative to other people, e.g. relational space, here the focus is on space relative to buildings. To understand the social component, first the spatial must be better described. Of course, this thesis too will look at social responses in such spaces, such as a relationship with place expressed by the notion of "taking ownership". In other words, the focus is less on fleeting territorial behaviour of strangers in public space and more on practices of residents with sanctioned rights to space (whether these are enacted or not). The presumption is that in more everyday settings in immediate proximity to the home, spatial factors relating to the urban form will have far greater

bearing on territorial response, as well as the obvious fact that neighbours are not strangers but also are representative of recurrent and sustained relationships over time. These need to be accounted for in the research methodology.

3.2 SOCIALITY IN SPACE

Lasse Suonperä-Liebst has argued convincingly that the relationship between society and spatiality, while under-theorized in current sociology, was present in early Durkheimian sociology as the concept of 'sociomorphology'. In fact, this "forgotten dimension of sociology" all the "founding fathers of sociology – Marx, Weber, Simmel and Durkheim" understood as the context of modern society (Suonperä-Liebst 2011). All the more interesting then, that it was as architectural theory in *The Social Logic of Space* that this spatial connection was once again picked up, whereas modern sociology has largely ignored this "detached material 'flirt'" in Durkheim's earlier writings, argues Suonperä-Liebst:

> Social morphology concerns the study of what is termed the "material substratum" or foundation of society and "is to be understood in the broadest possible sense as including the size of the social territory, the nature of the geographic space that society appropriates, the form of the territorial and spatial boundaries, and the population volume, density and distribution in societal space" (Durkheim paraphrased in Suonperä-Liebst 2011).

Moreover, social morphology is *obliged* to be not just descriptive but "to give causal explanations of spatial urban questions" (Suonperä-Liebst 2011). Here then is a sociological foundation that can provide on a micro material level a framework for seeking cause and effect relationships between morphology and social response. Draw on Legeby here!

If urban territoriality is taken to encompass individual use and appropriation of space as well as collective or shared use and appropriation of space, it should be clear that it is not so much socializing we are after. Certainly that is a component of human practices played out in urban environments, however the interactions may be as much between human and environment as it is between human and human. To understand the more collective social effects, however, it is necessary to dig further into sociological concepts such as the concept of copresence. By way of a spatial reading of Randall Collins' model of *interaction rituals* in synthesis with Space Syntax (add figure?), Suonperä-Liebst links the concepts of *co-presence* (as well as *barrier to outsiders*) as ingredients generating outcomes that include *group solidarity*, *symbols of social relationship* and *standards of morality* (Collins cited in Liebst 2011:31). Incidentally, these match some of the criteria for collective action as outlined by political scientist Elinor Ostrom – namely "clearly defined boundaries (effective exclusion of external unentitled parties)", "effective monitoring", and "a scale of graduated sanctions for resource appropriators who violate community

rules"(Ostrom 1991)[8]. What Ostrom is describing is, in fact, social coordination on a scale between the institutions of government and public good on one hand and private institutions and interests on the other – known as the commons. Whether shared territories like yards in urban settlements are strictly speaking commons is perhaps beside the point, the key here is the attempt to tie in to spatial concepts like boundaries as necessary to support a social outcome. Collins' use of standards of morality echo Ostroms position that sanctions for those who violate 'community rules' must be accommodated by the design point to one potential problem with modernist urban planning's attempt to do away with boundaries – exclusion is not possible. Whether open morphologies are an impediment to social organization remains to be seen.

Interestingly, post war modernist housing configurations are pointed to by morphologist Malfroy as a prime object of study which have actualised interest in how to affect social dynamics through urban form:

> According to Malfroy "the phenomenon of massive post-war suburbanization brought about by the construction of public working-class housing combined with the difficulties faced by designers in conferring a more than superficial degree of urban character on these quarters generated a renewed interest in the subject of urban tissue" (Malfroy 1995:22).

What constitutes urban character is of course up to debate, but in *Space is the Machine*, Hillier uses the term disurbanism to denote the settlement type which result from what he describes as a 'broken' urban structure (cite). He describes three specific interfaces that independently have been tinkered with in modernist planning, (not uncommonly all three interfaces are broken): namely that "between building and public space; between localized and less localized movement; and between inhabitant and stranger" (59). While urban life may emerge in these situations in spite of the weak interfaces, the point is that the urban form, rather than being a support to human activity, becomes an obstacle to be overcome[9]. This is an important point, since it emphasizes that space sets a stage, but human practices in that space can trump the spatial mismatch and adapt to an extent.

Legal geographer Nicholas Blomley points to the invisibility of urban collective space claiming that "the analytical absence of the commons from our mental maps constitutes an analytical failure, for we miss important dimensions of urban politics" and further, "the tragedy of the commons, from this perspective, is less its supposed

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[8] According to 2009 nobel laureate Ostrom, user associations can be formalised as institutions for "collective action." Her research focuses primarily on stable local commons, defining in her landmark "Governing the commons: The Evolution of Institutions for Collective Action" a number of "design principles" of stable and sustainable management of common resources.

[9] For instance, ample research indicates that large housing estates in particular, in direct contrast with the openness and accessibility of the open space as per the modernist ideology, are actually quite segregated when the street network is considered. Refer to Ann's research here!

internal failures than its external invisibility" (Blomley 2008:322). Of course we cannot analyse what we do not see. So it is perhaps no surprise that precisely this intermediate realm between private and public has not been the focus of architects and planners, who in some cases in spite of good intentions wreak havoc on social processes like territoriality. Understanding territoriality as a mechanism that the urban design directly impacts recognizes that use and identification with, for instance yards whether by individuals or groups only occur *if certain conditions are met*. As Hillier writes:

> "elementary relationships between the form of space and its use suggest that the proper way to formulate the relation is to say that space is given to us as a set of potentials, and that we exploit these potentials as individuals and collectivities in using space" (Hillier, Cities as Movement Economies 44).

"Space is not merely produced socially, but produces, in it's capacity as a configurational movement economy, the vital conditions for social dynamics" is a position highly contested in sociology today, according to Suonperä-Liebst, (Liebst 2011:38).

3.3 MEASURING SPACE

Space, according to Doreen Massey should be conceived as the "product of interrelations; as constituted through interactions, from the immensity of the global to the intimately tiny" (Massey 2005). She stresses however that the world is no more composed of atomistic individuals than it is composed of fixed social entities as "an always already completed holism" (Massey 2005). Massey's contention that space is produced by interrelations seems aspatial in comparison with Inhelder's view that (1956): "children automatically progress from perception of the topological characteristics of objects (characteristics such as proximity, separation, order, enclosure, and continuity), through perceptions which encompass perspective and projective relationships" (Harvey 1969, 193). This is a more holistic view, which considers the perception of space as the backdrop for interactions with others. In an article in *Urban Design International* entitled "Science, Pseudo Science and Urban Design", Stephen Marshall contends that urban design literature uncritically accepts the validity of certain key texts, including Jacobs *Death and Life of Great American Cities* and David Lynch's *Image of the City* in a manner which points to a pseudo-scientific approach rather than asking for the rigor and testing of results which a truly scientific approach demands. He attributes this tendency to an ongoing uncertainty within the field of urban design "about its status as an intellectual discipline" (257). Consequently, theories are translated into urban design guidelines, without a process of testing whether the theories are borne out by experience.

> "Our interventions in the city can only be based on understanding of the city. Where this understanding is deficient, the effects can be destructive, and this will be more the case

> according to the degree that this false understanding is held in place by a value system" (Hillier SiM article 58).

Society today is a technocratic one in which that which is measurable is championed by our political and economic systems. "The act of measuring can be defined generally as the process of estimating the magnitude of an observation. . .only 'quantitative sciences' need advanced measurements" (Joutsiniemi 2010, 43). As a science, the study of space requires appropriate metrics, but taken literally, space is empty and "a void has no thingness" (Suonperä-Liebst 2011, 13) clearly posing a challenge for measurement. Early morphologist Benedikt identifies as a central difficulty to spatial perception research the difficulty in making the description of architectural space quantifiable as space is seen as environment that is difficult to objectify for purposes of analysis. Moreover, "in practice. . .it may be politic to recognize that 'the laws which control. . . social actions and interactions may themselves be subject to rapid change'" continuously affecting the production and reproduction of space (Kendall 1961 cited in Harvey). The advancement of analyses like network integration used in Space Syntax (Hillier och Hanson 1989; Hillier 1999) enable "relative measures of urban space that eventually provide us with tools for measuring the connectivity and more generally the configuration of spatial entities" (Joutsiniemi 2010, 42). Enabling quantification of urban data thus opens new possibilities of connecting spatial parameters to social emergence.

3.4 DISCUSSION

4. DISPOSITION AND DELIMITATION

This chapter will be written later and discuss the organization of the thesis. As the empirical study comes quite late, in the second half, some of the implications of that study will require revisiting some concepts and theories presented in Part II. This setup is based on the notion of "grounded theory" in which the theory is continually revisited during the research. The focus is initially on social territories as products of spatial environments in general terms, but the findings in the empirical study, especially the correlations between residents who felt they had a "yard" and certain morphological characteristics, shifted the focus a bit to the role of enclosure and interface characteristics. This is reflected in which concepts are discussed, even before the empirical study is presented. If there appears to be a focus on yards as territorial type, it is due to an assumption that by understanding what is a yard, we may better understand what is not. This does not mean that yards are, by definition good or that yards are necessarily intended in design.

Note that many references have become unlinked and are therefore missing in list below:

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5. A TRIANGULATED APPROACH

> It is the function of the metropolis to make a place for the conflict and for the attempts at unification (Simmel in Bridge and Watson 2010).

Georg Simmel argued in *The Metropolis and Mental Life* (1903) that in living in cities, we learn a guarded distance (antipathy) which serves individualism by preserving our qualitative uniqueness, but which also serves society at-large, since we are made tolerant of others' differences (Simmel in Bridge and Watson 2010). The dialectical relationship between conflict and unity and handling complexity is part and parcel of civic life, according to this line of thinking. Urban territoriality, correspondingly, is challenging to pin down. Given that human beings are social creatures, we take for granted in our daily lives that we navigate a terrain, in cities especially, which has innumerable cues and expectations we must adapt to and adopt if we are to live in close proximity. If we concede (which we do) that the built form cannot in a deterministic sense predict territorial responses, in so doing, we broaden the scope of study to consider greater complexity. For one thing, different people behave differently in the same spatial situations. For another, context will always vary in ways that are difficult to account for. And yet, the whole notion of territoriality is premised on there being some consistency in how we read and adjust our behaviour depending on the territorial domain. If there were no common understanding, there would be no point in communicating boundaries, spatial or social, since no one would understand these as cues. What we are looking at therefore is to what degree there is consistency in perceptions and behaviour that can be traced in part to the built environment and more specific parameters of the urban form. That being said, studying territoriality means considering not just consensus, but also conflict, since territorial claims may very well create discord for some as it supports community for others. Taking boundaries as an example, a theme that will be discussed more thoroughly in chapter 7, enforcing boundaries implicitly means that something is communicated about who is included and who is excluded from access.

5.1 TRIANGULATION

The methodological basis for studying territorial effects of urban form is the questionnaire. In terms of evaluating the utility of varied configurations of open space, whether the open space is used, to what extent there is attachment to the open spaces and if the open space constitutes a yard, asking residents themselves is the most direct approach. Interviews might arguably have the same intent, but considering the urban form means also committing to certain locations as objects of study. Hence mailing out

questionnaires to specific areas was considered to have higher efficacy and ensure more comparable results than what structured interviews, even on-site might produce. With the questionnaire as the point of departure, knowing that connecting precise descriptions of the urban form in a morphological analysis was the route to take in order to come up with findings on the role of urban form in effecting territorial outcome, a triangulated methodology was investigated. In the *Sage Encyclopedia of Qualitative Research Methods*, *triangulation* is described as approaching a phenomena with a combination of research methods (Given 2008). In effect, the aim of triangulation is to end up with more robust knowledge by way of more credible and valid results than one method of analysis could produce. The concept stems from navigation, where the location of an unknown point may be determined by its geometric relationship to three known points. In the social sciences, however, triangulation is generally understood along the lines of Norman Denzin's concept of "methodological triangulation," in which several types of data collection are utilized (Denzin 1978). For purposes of this study, it is the methodological approach of gathering different types of empirical data from the same areas, which in combination make for greater generalizability than each method alone might render, that is meant by triangulation.

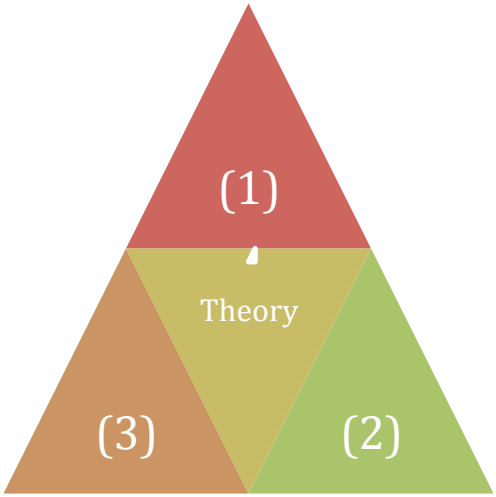

Figure n. Triangulation model where separate methods converge to produce theory.

Linda Groat and David Wang emphasize the role of triangulation in particular for case study research, drawing on Robert Yin's definition of a case study as "an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundary between phenomenon and context are not clearly evident" (Yin 1994). Groat and Wang include "a reliance on multiple sources of evidence, with data needing to converge in a triangulating fashion" as a one of five primary characteristics of a case study (Groat and Wang 2002). The other four characteristics are:

(1) a focus on either single or multiple cases, studied in their real life contexts

(2) the capacity to explain causal links
(3) the importance of theory development in the research design phase
(4) the power to generalize to theory

(Groat and Wang 2002)

The need for a triangulated research design stems from the attempt to take an evidential approach to the urban design question at hand. Urbanism is fraught with standard operating procedures and trial-by-error practices, which has tended to place a significant amount of responsibility in the hands of practitioners who may or may not have adequate knowledge about how urban design affects social behaviour at different scales. Even when the profession lauds the architectural result at the level of individual building, the *urban design* may not perform its part satisfactorily. Yet architects often make urban design decisions implicitly, based on assumptions about what has worked before. Further, the architectural profession as a rule has not kept pace with advancements in (nor is there in the course of the average practice time or budget for) pursuing methods of spatial analysis. The use of spatial analysis methods, like GIS (Geographic Information Systems) is widespread in the fields of geography and regional planning where it provides a degree of precision in describing urban form at different scales. GIS is yet to be tapped fully at the level of municipal and plot-level analysis by practitioners, however. In part, this is due to a good deal of scepticism in the profession toward quantifiable approaches, which seem counter to the principles of architecture as art. Leslie Martin considered this the "doctrine of the visually ordered city" whose early advocate was Camillo Sitte (1889), author of *City Planning According to Artistic Principles* (inMartin 2000). The other camp, Martin contends, is the "doctrine of the statistically ordered city" one in which quantification of population density and explicit zoning are self-evident (Martin 2000). For purposes of this research it is neither the quantitative nor qualitative view that is interesting in and of itself; rather how the urban forms *perform* in a territorial sense for human beings inhabiting them is of interest. Move performance discussion here from Chapter 7?

In order to discern patterns in how urban form affects perception toward and use of urban territories, three specific types of insight were sought: (1) how do residents perceive the spaces associated with their residential complexes?, (2) how can the urban form characteristics in each case be described in a succinct and objective (and hence comparable) way? And (3) is there evidence on-site that residents use spaces in accordance with how they perceive them? It might be tempting here to recall Lefebvre's spatial triad, in which case (3) represents space as it is lived, (1) attempts to capture space as it is perceived and (2) captures aspects of space as it is conceived or produced (by society, by planners and architects, developers and any other third parties involved in

residential development). The purpose of the knowledge production undertaken here is to aspire to produce a synthesis of these different nuances of territoriality. The following techniques were therefore implemented:

(1) A questionnaire inquiring into themes such as frequency of use, types of use, competition, safety, and clarity of boundaries and other qualities,
(2) spatial analysis for describing urban form precisely at many scales, and
(3) site audits documenting evidence of practices (appropriation).

In truth, the categories are overlapping where the spaces of territories are concerned; reality is simply not deconstructed so easily. For instance, besides de facto traces of use, such as toys and plantings, site audits must consider markers that help to define the programme of the spaces in question (picnic tables, barbecues). These programmatic elements are arguably as much *conceived* by planners and architects as ultimately *lived* by residents. Further, methods of spatial analysis also are able to capture aspects of space as *perceived*, albeit at times unconsciously so, as with space syntax analyses which analyse network integration and capture, the cognitive experience of orienting oneself in the city (cite Lars Marcus, forthcoming?). The point being that while Lefebvre´s triad is useful to bear in mind, these should not be taken too literally as distinct categories. As it happens, the very idea of collective private space as an object of study is enigmatic, having inherent ambiguity when it is the site of overlapping public and private realms, as is often the case. This topic will be discussed further in Chapter 6.

5.2 DISCUSSION

The purpose of using three overlapping methods in the manner outlined here is to take advantage of both qualitative and quantitative strengths. In merging quantitative and qualitative methods, case study research now bridges the methodological gap between the two, argues Rolf Johansson, illustrated in Figure n (Johansson 2007). The strength of qualitative analysis in this context is to flesh out and inform the otherwise quite abstract quantitative analysis of built form. Conversely, in order to make any assessment of how territories perform, human perception of the built environment is essential. The strength of quantitative methods in general and the spatial analysis proposed here is that correlations are possible, which suggest relationships even if causality cannot be proven. A high degree of overlap in terms of location is ensured by pinpointing questionnaire responses to specific address points. These locations may then be analysed morphologically with a degree of precision and automation that makes spatial analysis a powerful tool.

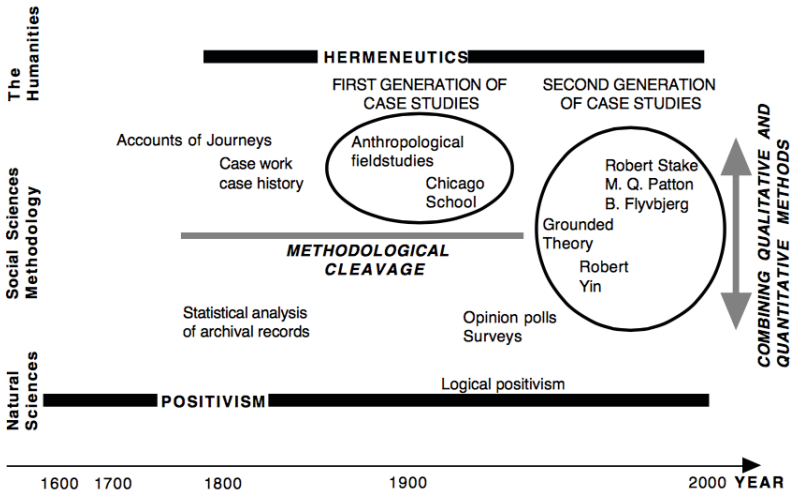

Figure n. The history of case study methodology according to Rolf Johansson (Johansson 2007).

Another benefit of triangulation is that weaknesses in each method are accounted for. In this research, the two qualitative methods might be said to do just that: one (the questionnaire) looks at what residents report as their perceptions and use; the other (the site audit) looks at what residents actually do, as reflected in evidence of practices. Drawing again on Robert Yin (cited in Groat & Wang), each method (e.g. questionnaire, spatial analysis and site audit) has *descriptive* potential on its own, but *explanatory* potential is best served by combining methods (Yin 1994, Groat and Wang 2002). As the research question will be illuminated piece-meal, the theory building will be as well. This is the essence of so-called *grounded theory*, described by Glaser & Strauss in 1967, in which generalisations derive from inductive theory-generation, resulting in a "theory normally consisting of a set of related concepts" (Johansson 2007). In this thesis, the theory building will emerge chapter by chapter, as will be seen.

It has been argued here that a *performative* assessment of urban territoriality must tie into the social consequences of certain design decisions, such as whether the open space is configured in open or closed configurations, in front or in back of buildings, as well as how the location of entrances inside or outside the "block" as well as density measures all interplay to produce territorial effects. Leslie Martin was talking about the grid as generator, but may as well have been talking about morphology generally, when he wrote: "it is only through the understanding of that structuring framework that we can open up the range of choices and opportunities for further development" (Martin 2000). Martin's point was that how we configure density, whether as tall buildings set in open space or in the form of an enclosed court with the open space centred in the middle (not to mention any derivate in-between these poles), is driven as much by how society conceives of itself as by the

spatial framework. Karl Kropf (Kropf 2011) in a similar vein argues for urban tissue to be used as an operative planning tool, in the service of many ideals. A triangulated methodology is proposed to come up with an evidential assessment of territorial performance. By combining qualitative and quantitative assessments of how urban form affects territorial utility in terms of the open space served up for use, it is hoped that a non-ideological set of criteria for producing various types of territories will result. In order to be useful to designers, this is key: the findings must illuminate options, not dictate a one-size-fits-all solution. Chapter 8 will describe the materials, methods and measures used to get there. ~~Part III will outline the results and their implications.~~

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6. ARCHITECTURE AND TERRITORY

> *By far the best known candidate for a theory which treats space directly as a distinct kind of social reality, and the one that has influenced architects most, is the theory of 'territoriality' (Hillier and Hanson 1984).*
>
> *One of man's most critical needs, therefore, is for principles for designing spaces that will maintain a healthy density, a healthy interaction rate, a proper amount of involvement (Hall 1966, 157)*

Still missing:
- position research in relation to Newman's Defensible Space
- more on morphology and its impact on territoral behaviour based on Castex/Panerai.
-Kärrholm

Territoriality is a useful place to start to uncover a theoretical framework for the research since it encompasses a body of theory regarding social behaviour in space. Within territoriality theory, recurrent themes are control (of access and of information), privacy regulation and boundaries (to access and to behaviour), which will be discussed in this chapter. Given a post war suburban morphological landscape in which openness rather than closed perimeter blocks prevails, it is relevant to ask: *What happens to territorial behaviour in environments where control is not easily asserted, where boundaries and the corresponding mechanisms for privacy control have been intentionally left out of the design?* As should by now be clear, this is at the heart of the research question – namely *what social territories are produced, and where, in relation to urban form?* It will be argued that territoriality and privacy regulation are necessary to understand what the realms public, private and intimate mean. After reviewing the literature on territoriality, the next chapter will pursue concepts and theories indirectly related to territoriality, merging the morphological and territorial theories into a conceptual framework for the research.

6.1 TERRITORIALITY THEORY

Territoriality theory derives from studies on animal behaviour. Different species of animals are more or less territorial, but also more or less social, ranging from solitary individuals to social groups. The term *ethology* denotes the study of human behaviour, including social organization, taking as its point of departure the biological origins. Critics of territoriality theory, including Bill Hillier & Julianne Hanson, question its applicability due to the foundation in a biologically determined impulse, more specifically it is the

assumption of *universality* that is criticized as overlooking the intricacies of human interaction, while the assumption that group behaviour can be extrapolated from individual behaviour is considered to be problematic (Hillier and Hanson 1989, 6). Human interaction, it is argued, is too dynamic and context-sensitive to be seen as operating by the same logic as that of animals. From within the field of architecture, interest in territoriality has been only moderate. Anthropologist E. T. Hall is credited with bringing territoriality into the frame of architects with *The Hidden Dimension* from 1966, in which the spatial parameters of territoriality were sketched out (Hall 1988). Although Hall contends that "territoriality is relatively fixed" with "boundaries of the territories" largely constant, he discusses at great length the cultural variations in how we relate to our environments, for instance with regard to enclosure[1]. Among Hall's contributions was to consider the dynamics of cultural exchange and look at how for instance the notion of *personal space*[2] varies in different cultural contexts; what is seen as stand-offish in one culture may be considered crowding in another (Figure n).

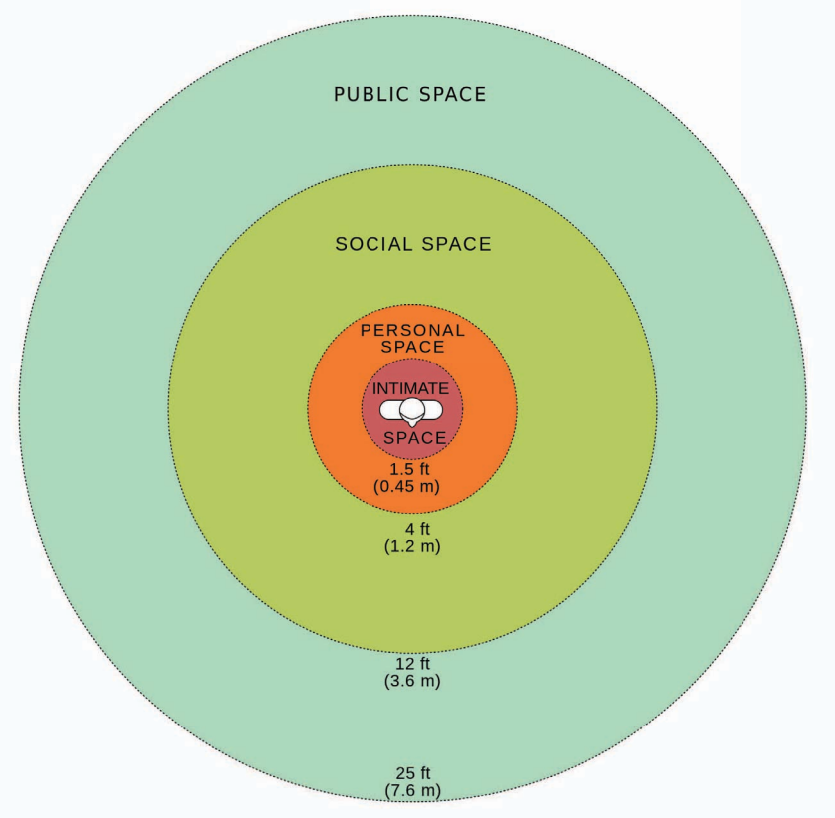

Figure n. Hall's diagram of territoriality emanating from the corporeal, e.g. intimate space by way of personal space, social space and public space.

[1] Allegedly an enclosed space is considered tomb-like in some cultures unless spacious enough and with high ceilings to keep the frame of vision clear.

[2] According to Hall, the term "personal distance" was "originally used by Hediger to designate the distance consistently separating the members of non-contact species"

Hall coined the term *proxemics* to describe study of how people use space (Hall 1966, 1). There are four types of human territory according to Proxemic theory as outlined in the 1967 journal article entitled "Territoriality: A Neglected Sociological Dimension" (Lyman and Scott 1967), paraphrased below:

> (1) Public territories: Individual has freedom of access, but not necessarily of action.
> (2) Interactional territories: areas where social gatherings may occur, generally mobile and fragile.
> (3) Home territories: Where regular participants have a relative freedom of behaviour and a sense of intimacy and control over the area.
> (4) Body territories: Space encompassed by the body and immediately surrounding the body; the most private sphere.

Lyman & Scott argue that it is our perception of these four territories that suggest which type of behaviour is expected and appropriate, termed "situated action" (Lyman and Scott 1967, 249). It is unclear, based on such a categorization, whether yards fall into the category of interactional territories or home territories, but more likely the latter, since the authors conceive of interactional territories as unbounded and socially defined spaces, moving as a group conversing moves, for instance. Interestingly, the risk of public areas being "vulnerable to conversion into home territories" is mentioned, being "due to their officially open condition" but in this thesis, it is rather the opposite that is the subject of study – namely home territories being converted to public by virtue of the same open condition (Lyman and Scott 1967, 239). Interactional territories may be more or less interchangeable with social space. However, in some ways *interactional* is a more useful adjective for purposes of this thesis, since it conjures images of not only social interaction with others, but also interaction with the environment itself.

In a study of territoriality and behavioural convention in archaeological contexts, Donald Sanders contends that Hall's focus on strict distancing zones is too simplistic, emphasizing that aspects like "function of the space, the activity of the group, the users' role(s), learned cultural responses, experience, personality, age, and sex" matter to a great extent (Kent 1993, 48). Admittedly, we use space differently depending on our age, gender and past experiences, which also include our use of body language to communicate, which ample research within sociology and cultural anthropology bears out. Rather than rehearse the body of theory on these demographic aspects, we will stick to the more spatial components of territoriality. Argues Sanders, "architecture provides physical reminders of accepted sociocultural rules and conventions. Architecture acts to reinforce and make perceptible those conventions by providing repetitive cues to acceptable behaviour in any given

situation" (Sanders in Kent 1993, 45). Worth noting also, are that modern societies tend to present many highly differentiated settings, non-overlapping activities and redundant cues compared with more pre-modern societies with fewer settings and overlapping activities. Four aspects of cultural convention reflected in organizational features of domestic spaces are important to recognize – namely personal space, territoriality, privacy regulation, and boundary controls (Sanders in Kent 1993, 45). This is reminiscent of Edward T. Hall's separation of proxemic theory into two umbrella categories – namely personal space and territory: "Personal space describes the immediate space surrounding a person, while territory refers to the area which a person may "lay claim to" and defend against others" ("Proxemics" 2015). We might understand privacy regulation as an extension of personal space and control as an implementation of territoriality, although all are interrelated. As a set of organizing concepts, personal space and privacy regulation will be discussed first. After this, informal control (sometimes referred to as social control) will be discussed along with boundary control.

6.2 PERSONAL SPACE & PRIVACY

It is important to discuss privacy in the context of territories to bring the theoretical background squarely into the realm of human behaviours. Unlike territorial behaviour, which is shared with most animal species, privacy is a decidedly human construct. In 1975, Irwin Altman spurned an offshoot of territoriality research with his "privacy regulation theory" (Altman 1975). Like Hall's conviction that personal space and interactional space are culturally relative, Altmans's view of privacy regulation is a nuancing of the traditionally held view of privacy as enacting avoidance and withdrawal from social life. Privacy, according to Altman is "a selective control of access to the self or to one's group" (Altman 1975, 18). Altman stresses the dialectic nature of "dynamic boundary regulation" in that we choose more or less openness in response to different circumstances, sometimes preferring solitude, but other times actively seeking out interaction with others. Citing Wikipedia:

> According to Altman, "dialectic" refers to the openness and closeness of self to others (i.e., seeking and avoiding social interaction); while "dynamics" indicates that the desired privacy level (i.e., the ideal level of contact at a particular time), which varies due to individual and cultural differences, continuously moves along the continuum of openness and closeness in response to different circumstances over time ("Privacy Regulation Theory" 2015).

Seen in this way, the aim of privacy regulation is to find the optimal level of social interaction. In the absence of an ideal balance, we may feel lonely when we have more privacy than we want or crowded when we have less. In order to successfully regulate privacy levels, individuals combine social and

behavioural mechanisms with *environmental mechanisms* in communicating how much engagement is desired (Altman 1975). Personal space, for instance, clearly involves behaviours including verbal and non-verbal communication, like averting one's eyes in an elevator or when having a private phone conversation as well as body language like adjusting walking pace to signal not wanting to stop and talk, behaviours discussed as "civil inattention" by Erving Goffman in *Behaviour in Public Places* (Goffman 1966). This notion bears resemblance to what Georg Simmel in 1903, in his well-cited essay *Metropolis and Mental Life* described as a practiced de-sensitivity as a means of finding tolerable the constant intrusion of stimuli inherent in urban life (excerpt in Simmel 1972). Ali Madanipour interprets Simmel as viewing as refuge from the onslaught to inhabit an impersonal and "rationalistic envelope" (Madanipour 2003, 103).

To be sure, environmental mechanisms include the architecture which surrounds us: The home is a larger bubble of personal space (see Figure n) extended to be able to house also other people close to oneself. Lieven de Cauter has proposed that architecture is like a "third skin" after the body's skin and clothing (de Cauter in Graham, ed. 2004)[3]. We might venture that urban form, in its capacity to frame space, may in some cases serve as a "fourth skin" following a similar argument. Here, the *exoskeleton* is a useful metaphor, since the defence against stimuli is sometimes as crucial to survival as intake of stimuli, which echoes Altman's conception of privacy control (and Simmel's) as being a regulation both of information put out and information taken in. Other environmental mechanisms include boundaries (fences and the like) and, it is ventured here, the urban form itself. Features of boundaries are outlined by behavioural scientist Marjorie Lavin and include *permeability* (to the senses or to movement), *sharpness* (the amount of discontinuity between entities on either side of the boundary), and *symbolic markers* (used to define the limits of the boundary) (cited by Sanders in Kent 1993).

6.3 SOCIAL SPACE & CONTROL

In the preface to *Public and Private Spaces of the City* (2003) Ali Madanipour introduces the scope of his broad inquiry into the "subdivision of our social world," as moving successively outward from the corporeal to personal space and what are termed "the domains of privacy, intimacy and property, followed by inter-personal spaces of sociability among strangers, communal spaces of the neighbourhood, the material and institutional public sphere and the impersonal spaces of the city" (Madanipour 2003). Having here briefly

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[3] Cauter refers also to Fredric Jameson's use of the concepts envelope & enclave in a discussion on heterotopian urbanism in which we are separated and turned inward unto ourselves (source).

discussed personal space and the domains of privacy, it is time to turn toward the inter-personal spaces of sociability and communal spaces. These are the spaces that Hall too termed "social spaces" (Figure n). If our most private domains can be understood as articulations of privacy control, these "social spaces," of interaction are on one hand about informal control relating to group size and to what is understood within the group as acceptable boundaries to behaviour and on the other hand about the more formal control brought about by physical boundaries. The former might be said to relate to control within the group, while the latter relate more to control of unwanted i by non-members of the group. Territorial scales will here be treated thematically and not, as is the dubious custom in urbanism, laid out according to a territorial gradient, as in Figure n. For purposes of this research, it is the zones of transition commonly labelled semi-public, semi-private and public space that are of interest, however these zones are not seen as fixed in relation to one another, but being relative to the morphology, at least in part.

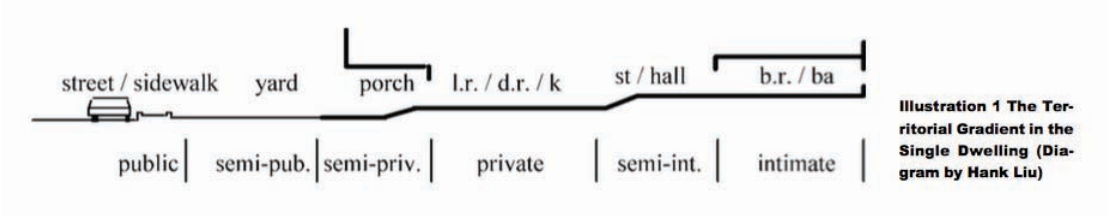

Figure n. Territorial gradient according to Julia Robinson (Illustration by Hank Liu) (Robinson 2001).
Alternatively Boverket's image of private, half-private, public.

The semi-public territory as conceived here by architect and researcher Julia Robinson (Figure n), is one gradient of many between the intimate and public sphere. In the case of apartment buildings, the semi-public realm, which requires that neighbours can be distinguished from non-neighbours, may be negated Robinson alleges (Robinson 2001). Or more precisely, the distinction between semi-public and public space is negated. Most useful to draw from in Robinson's approach is the discussion on group size, thereby introducing density into the territoriality equation[4]:

> Although the scale of the group and of the space it occupies are not the only determinants, there does seem to be an important relation between group size and the ability of a group to function with informal governance (Robinson 2001).

[4] Swiss biologist Heini Hediger, cited by Edward T. Hall claimed that "Territoriality. . . insures the propagation of the species by regulating density. It provides a frame in which things are done . . . [and] co-ordinates the activities of the group and holds the group together (Hall 1966, 8). Hediger argued that animals in captivity should be viewed as having *ownership* of their enclosures; were their territories designed adequately, the animals would feel at home and see no need to escape, even if opportunity arose.

Robinson goes so far as to suggest thresholds at which social interaction is optimal for the various domains (Figure n). This may prove useful in assessing density measures later on. While Robinson's approach is spatial and also morphological, hence potentially useful to this research, the territorial gradients are simply too reductive:

> Three general realms of socio-spatial concern can be defined: ***public***, where anyone has a right to be, ***private***, which is under the jurisdiction of ownership or other more limited control, and ***intimate***, which is the area of the individual (Robinson 2001).

What begins as three general realms quickly grows to seven subtypes, as seen in Figure n. It is evident from the elaboration of the subtypes that the territorial gradient is paradoxically too precise and too imprecise to handle the complexity at work in the transitional domains between public and private. The trouble, it would seem, is that the categorization is not spatial enough, only in the column of environmental controls do references to accessibility and visibility allude to a spatial dimension not pursued outright.

Domain (urban analogue	Terri. Access	Dist	Use	Occupancy	Responsible Entity	Social Control	Environmental Control
1.Public-Urban (city, sub,town)	Everyone	500'+	500+	Temporary	Municipality	Hired staff/ police, Formal rules/ laws	Accessibility Visibility Implied boundaries
2. Public-Neigh (neighborhood)	motivated	1-500'	100-500	Intermittent	Neigh Org	Hired staff/ police Formal rules/ laws	Accessibility Visibility Implied boundaries
3. Semi-Public (street/block)	motivated	1-300'	30-100	Intermittent	Street/block neighbors	Recognition Cultural conventions	Accessibility Visibility Implied boundaries
4. Semi-Private (lawn, porch)	sanctioned	1-100'	5-30	Intermittent	Adjacent neighbors	Recognition Cultural conventions	Accessibility Visibility Implied boundaries
5. Private (lr, dr, kit, etc.)	Invited by group	1-40'	1-12	Permanent	Household	Household conventions	Enclosure, Locked door
6. Semi-Intimate (hall to br& ba)	Invited by group	1-25'	1-6	Intermittent	Household	Household conventions	Visibility, Implied separation
7.Intimate (br & ba)	Invited by individual	1-15'	1-2	Permanent	Individual	Household conventions Personal dominance	Enclosure Door (Lock- toilet/ bathroom)

Figure n. Robinson's territorial gradient, described in terms of social control and environmental control.

The club good discussion in Chapter 7 may possibly move here! Worth noting in Figure n, however are the distinction between social controls and environmental controls for each type of domain, the precision in narrowing down group size, whether use is temporary or permanent and who has access in each case. For purposes of this research, it is the so-called "semi-public" territories or "collective domain" which are the focus. In Robinson's usage, this might include the street, block and approximately 5-30 people. However, in institutional settings (such as complexes with apartment buildings) it seems that the distinction between semi-public and public territories are often negated. Hence, in spite of the apparent redundancy in sub-territories or *domains*, none are really able to capture what we are after – namely the collective-entity yard. Is there another approach possible than the territorial gradation described here? Can we perhaps conceive of the territories of collective open space as emerging out of the configuration of space?

> . . .we need a theory that within its descriptive basis is able to describe not only systems with fundamental morphological divergencies, but also systems which vary from non-order to order, and from non-meaning to meaning (Hillier and Hanson 1989, 5).

What Hillier and Hanson stress here is the need to consider territorial domains independent of "determinative subservience" to what we call them, e.g. a *descriptive autonomy* (Hillier and Hanson 1989, 5). This points to why the territorial continuum is problematic in practice, leaning on this manner of identifying domains is shaky ground, since we do not know why some territories achieve meaning and some do not. It is not as simple as the placement in conjunction with a building defines the social role of the domain. Nor does how we name spaces necessarily predict future usage.

While useful in theory to understand the overlapping scales of human interaction, territoriality theory has so far had limited applicability as a tool for architects. The so-called "territorial gradient" approach to understanding territoriality, which architects often allude to, is confusing, reductive and conventions surrounding the use of semi-private and semi-public especially are lacking. Robinson defends the usefulness of the territorial gradient, while giving credence to critics like Hillier & Hanson who contend that "if human beings behave in one spatial way towards each other, then how can the theory be used to account for the fundamental differences in physical configuration" (Hillier and Hanson 1989, 6). Robinson's counter argument is that by considering the size of the user group, as well as the social role of the user and the syntactical structure[5], the territorial gradient is still useful (Robinson 2001).

A further limitation with Robinson's approach from the standpoint of the research presented in this thesis is that it is nestled in the North American suburban context with single-family homes as the point of departure. As a consequence, it emanates spatially from the intimate sphere of home and interior spaces in more or less direct contact with outside spaces. It is likely that the more indirect relationship with the outside space from an apartment building has implications for feelings of control. [Mention Newman here?] Although Robinson considers institutional architecture, these are understood to be more like dormitories and work places, not specifically dealing with the open space in apartment building configurations that are the focus of this research. Robinson deserves credit for the clarity of her categorization and calling out some key concepts and potential variables which do seem to narrow the focus in terms of morphological variables to look at. These include access to the territory, use (group size), occupancy (temporary or permanent), social and environmental control as well as responsible entity (ownership). Moving forward, beginning with the next chapter, these variables will be

[5] Syntactical structure refers to the so-called topological depth and will be discussed further on.

developed further in terms of this research as key components in territoriality, e.g. a territorial framework. First, the relevance of territoriality theory to urbanism will be summarized.

6.4 LAYERS OF TERRITORIES: INSTITUTIONAL, MORPHOLOGICAL AND SOCIAL

As Ali Madanipour writes, the space of private property is:

> "hidden behind fixed, often visible boundaries and is protected by the owner and the others as sanctioned by law. If personal space was a sociopsychological and interpersonal space of protection and communication, private property is an institutional and legal entity, which combines personal and impersonal dimensions" (Madanipour 2003, 34).

In the context of urbanism, from the standpoint of this research, all is territory. That is, any land, whether public or private, will be considered a territory. Overlaid on the territories are human constructions including infrastructure like roads and pathways, property divisions, built form and open space. These morphological configurations produce subspaces within the territories of public space and private space. Property lines and paths may be more or less invisible, but human practices accord them meaning (for instance in maintenance routines and patterns of movement) and they therefore come to matter territorially regardless of whether boundaries are materialized.

Figure n. Layers of territories: institutional, morphological and social.

Human practices find ways to appropriate space, to use and personalize the domains and subdivide these further, if need be. Here, in *appropriated* space, social life plays out, either individually or collectively and we can speak of a social or interactional territory forming. However, in the cases when appropriation does not emerge, we still can identify the institutional and morphological territories. Figure n is also helpful to illustrate what is perhaps obvious, but bears mention – namely that the production/transformation of territories differs at different scales: If plots (properties) are the unit of transformation of the institutional territory and the configuration of built form to open space is the unit of transformation of morphological territories, then materializations of control, including boundaries are a unit of transformation of social territories. These are more overlapping than nested categories, to be sure. At each level of scale, whose vested interest and whose scope of action to initiate change are important to understand. Modern architecture has been criticized by for instance Amos Rapoport (Rapoport 1990) for creating too controlled environments of "universal space," which to the extent that it is a

valid critique[6] stems from this condition of territorial production operating at several levels of scale simultaneously. Generally speaking, planners and developers work at the legal scale, architects and urban designers at the morphological scale and inhabitants and users at the material and social scale. Hence, control and situated action mean different things depending on where in the process of production one looks.

That control is a theme so recurrent within the territoriality literature has to do with both informal social control and formal control by exclusion being parameters of territoriality. Elements of control relating to group size, *informal control* are defined mainly by density parameters and the exchange-potential between building and associated territories. For instance, a building with many windows and direct access to the associated open spaces would be expected to have more informal control of the adjacent territories than a blind façade with no direct-access concentrating comings and goings of residents. Control elements in the category of boundaries, whether these limit access to or transparency of territories are here considered as aspects of *privacy control*. Informal control represents the notion of an implicit effect, where the control of the territory is a by-product of the design of the built form. Privacy control, in contrast represents explicit control, being a scale of intervention that allow for individuals to make adjustments and additions. Mention social boundaries as part of informal governance, relate to commons in nxt ch.? Material interventions arguably imply a higher sense of ownership than recurrent use. Hence, evidence of appropriation in the form of material "traces" [7] can be read as cues as to whether people feel possessive of a space – that is, taking greater ownership than one would in an urban park or public square. Taken to it's extreme, appropriation may signify the perception of not just communal ownership, but rather exclusive ownership. This is considered privatization. It is important to consider ownership as separate from use, since the perception that a space is "mine" or "ours" does not necessarily mean it will be used. Figure n illustrates quite well how this may be the case.

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[6] Russ Bradley argues that Rapoport has some valid points, but is selective in his scholarship and questions many conclusions Rapoport makes about the role of the architect in producing "grand designs" (Bradley 1970).

[7] The notion of traces is a concept used in archaeology to denote artefacts or other evidence of human cultural practices and differs from mapping in that it captures an existing situation rather than an intended one (Foucault 1972).

Figure n. Assertions of ownership, not necessarily use.

Exclusion of others may be asserted in spaces even when there is not necessarily an evident potential to use them. Exerting spatial control is more tied to ownership than to use, hence when appropriation is referred to in this thesis, ownership and use should be seen as distinct concepts included under the umbrella of appropriation behaviour.

It is a point of departure for this research that in order for a territory to be considered a social territory, active engagement and practices under the umbrella term of appropriation need to be in evidence. Hence, un-appropriated spaces cannot then be *social* territories. This is a dimension that is lacking in most territorial theory, which often seems to presume a best-case scenario, as with the territorial gradient. This is true in practice as well, as if willing a social territory to emerge is enough. It is the position of this research that it is not. Therefore, understanding the mechanisms of territoriality as stemming from the urban form is a dimension that could strengthen urbanism practice.

Figure n. Project in Annedal outside of Stockholm. The strip of lawn separating the private terraces of the ground-floor apartments from the public pathway are not clearly defined in terms of ownership. Is anyone sanctioned to use this zone or is it simply a visual buffer to separate spaces of movement from spaces or rest?

Some recent developments on one hand seek to create meeting-places but in the next turn configure buffer zones, by appearances using physical distance to minimize potential for disturbance. Figure n is an example from a northwestern suburb of Stockholm, Annedal, completed in 2010. The image shows a lawn separating the private realm of the terraces flanking the building on the right from the public pathway on the left. Residents may not find the intermediate zones easy to territorialize; neither may the population at-large decide that this is a good spot for a picnic, for example. It is unclear, in short, for whom the space is produced. Is it, as is tempting to believe, a materialization of the conceptual gap in an urbanism which does not adequately address territorial outcome? The next chapter will set out to produce a conceptual framework that may aid us in better understanding how a spatial logic of social territories might operate.

Hillier, B. and J. Hanson (1984). The social logic of space. Cambridge Cambridgeshire ; New York, Cambridge University Press.

7. CONCEPTS AND CONFUSION

> *First then, we must see of what parts our inquiry consists. Now if we were to grasp with reference to how many, and what kind of, things arguments take place, and with what materials they start, and how we are to become well supplied with these, we should have sufficiently won our goal (Aristotle, Smith et al. 1997).*

Still missing:
- relate to correspondence versus non-correspondence in territory article (Hanson and Hillier 1987) and in general draw more on Social Logic of Space to support interface argument, which needs to be introduced earlier in the chapter.
- flesh out control in relation to (Ekelund and Koch 2012) page 28

Consider the urban form in a traditional urban layout in which streets frame blocks, which in turn frame the aggregate plots within. The blocks contain individual buildings in the subdivision of plots as well as open space in some measure. These are so-called morphological levels of scale (Kropf 2011) whose interplay produce complex settings depending on the configuration of the urban tissue. This is where the public realm of routes meet the private realm of property. In pre-Haussmannian Paris, for instance, the following relationship was generally the case:

> The block, in its entirety, was divided into an edge and an interior. The dense edge was directly connected with the street, understood as the place for exchange and as the presentation space controlled by rules. The interior of the block, on the other hand, was a zone at a distance from the street, cut off from it, which had the characteristics of a space that was not necessarily seen, i.e. hidden. It no more had the function of public representation. It was malleable, transformable, marked by some loose rules, which contrasted with the strict rules on the public front. It was offered to private appropriation. (Castex, Castex et al. 2004)25

Here are served a number of concepts that will relate to the question at hand, namely how urban form produces urban yards now that this traditional logic of city-building is not necessarily observed. In the quotation, an interior and exterior of the block are implied, where the outside is a place of exchange with and (re)presentation to the public realm. The interior, on the other hand, is transformable, less rule-laden and offered to appropriation, we are told. But what of the spaces which do not seem yard-like, being open to public access for instance? Naturally, open space may have recreational possibilities and perform as social space whether or not it constitutes a “yard” in a conventional sense[1], the question is whether it still retains it’s meaning for the collective who actually “own it”. Is it still a territory [2]if it is seen as

belonging equally to everyone with access? Ownership in this context has not so much to do with legal claim in the case of multifamily apartment complexes, but more with the territory belonging ('tillhörighet' in Swedish) to residents renting an apartment there. In a sense, the belonging is a two-way street, people belong as much to the places that mean something to them as the places belong to them (Olsson?).

7.1 THE YARD

Randall Collins description of interaction rituals, lists "barriers to outsider" as a key component of group identity. Elaborate and cite! A key notion is that of co-presence or what Bill Hillier calls "encounter density" (Hillier 1996) cite Ann and Goffman etc. Without copresent individuals to constitute an "us", the distinction with "them" is pointless. Except that when it comes to habitually used spaces like yards, it would seem that to the extent that the yard is a socially meaningful space, it may take on a life of its own, sustaining this meaning even when empty. But then there are the associated open spaces of buildings which do not reach this level of meaning, either due to disuse or a lack of distinction with spaces in the public realm, or a combination of the two. It is proposed here that it is not the practice of control, of actively controlling a space that is essential to the social function, but perhaps more so the informal control of recognizing neighbours and strangers and the mechanisms of informal surveillance described in depth by Jane Jacobs more than half a century ago (cite). Focused versus unfocused interactions cite. Jacobs was of course referring to the social life of streets and sidewalks, e.g. the public realm, in which strangers are not a threat but rather an asset. A yard is a social territory that gets it's meaning by being different from street-life however (topology theory). When everything flows together, copresent residents and strangers passing through open morphologies without legible boundaries, something yard-like is lost. The public realm may not suffer for it, although in some areas, a lower intensity of copresent individuals may be a result, which may be a detriment in some contexts (legeby). The problem is more likely to be that yard-like behaviours don't feel right in spaces that appear to be part of the public realm. Sun-bathing, gardening, dining al fresco and other informal activities may not play out in places which are too "busy." This may point to why yards may be perceived quite differently, as more restful perhaps, when separated from the movement spaces of the public realm of streets and sidewalks, versus fully integrated in the public realm. Here Cerda's dialectic between spaces of movement and rest are worth recalling (cite).

"Al Fresco Dining" by Richard Peat - originally posted to Flickr as Al Fresco Dining. Licensed under CC BY-SA 2.0 via Wikimedia Commons - https://commons.wikimedia.org/wiki/File:Al_Fresco_Dining.jpg#mediaviewer/File:Al_Fresco_Dining.jpg

Awkward transition! Or, if they are, we might suspect that the "tyranny of intimacy" as a decline of civility or sociability may be a consequence (Sennett) (Misztal 2000). Informality theory contends that an imbalance between formality and informality is as detrimental to the public as to the private realms of intimacy. Retreat of third place (oldenbourg). Elaborate! This gets to the next aspect of social territories to consider – namely those connected with self-identigy and meaning referred to earlier. How we behave in space is not just tied to who else is there, but also to what meaning the spaces in themselves hold for us. We may consider not just the spaces of sociality, but also the more personal and individual meaning accrued in our practices there. DeCerteau. If control gets at *what* is a social territory, by way of objectifying and hence making an entity of a spatial setting, identity (group and individual) gets at *who*, as in who is involved in the sociality, and inversely, *who is not*. From the standpoint of the designer, understanding whom we are designing for is essential to considering whose control and group identity the design must serve. This sounds to obvious to emphasize, but territories like yards have even in recent history, at times tended to be designed for everyone, from the standpoint of access.

Turning then to our personal relationships with space, we will consider meaning as perhaps shedding light on *why*: in what ways do social territories come to mean something to us? Sara Westin, in her thesis entitled *Planned, All Too Planned* contends that too often in recent development, often with political undertones, built *forms* substitute for *functions*: hence dwellings are translated to housing, work is translated to workplaces, recreation to open space and so on (Westin 2010). Westin's critique is that in spite of being

armed with good intentions, by aiming directly at the objectified vision of what we are seeking, we miss that these are actually not targets to be met from checklists, but rather byproducts of other processes. Instead, contends Westin, architects are complicit in producing a reality for society that spells *alienation* for the individual (Westin 2010):

> The failure of modern society lies in our alienation – a sense of powerlessness in trying to influence the world in which we live; of meaninglessness in our search for guides to conduct and belief; of isolation from others; of estrangement from one's self. For modern society to have meaning, to convey a sense of coherence, it must find some purpose beyond consumption. (Wander in preface Lefebvre 2000)

Following this line of thinking, in terms of social territories, alienation may stem from not being invited to influence the open space along Westin's argument, perhaps due to being over planned, perhaps due to being under planned. This remains to be seen. In effect, the resident is confronted with a space that does not match the perceptions about what a yard is and is left confused about how to use the space that is offered up. Meaning, it seems evident, can only emerge out of the personal relationship one forms with a place and people in it by way of using it. Sociologist Sören Olsson reminds us that there is a tension between individual autonomy and community solidarity; most are content with a balance between a level of neighborliness in which neighbours greet one another, exchange information and solve problems that arise, without necessarily becoming too friendly (Olsson 2007). A yard appreciated by residents, according to Olsson, should serve as a socially unifying entity, but there must be space to be as well as *to do something*. This may point to open-endedness in design as supporting resident ability to create meaning in open spaces as a reason to be there. Places that are too complete, argues Sara Westin, do not invite the user to participate (Westin 2010). Practices of *appropriation* signify an enduring relation with a social territory:

> "Appropriation does not bear, first of all, on space but, rather, on such and such a relationship between a form of sociability and space" (Augoyard 2007).

Appropriation is here defined as encompassing those practices which reflect a sense of entitlement to occupy, use or alter the space in question and may be enacted by way of either material interventions and artefacts left in space or by recurrent use.

Since we are dealing with urban yards of multifamily apartment complexes, the appropriation is here understood not as laying claim to space in an exclusive sense, but rather appropriating space by inhabiting it, whether this

is tending to, transforming, using or furnishing said space. The question is, do these appropriation tendencies in any way depend upon the urban form? For instance, when the edge between interior and exterior are not so distinct, and where legal ownership of space, as public space or private space is not communicated in a legible interface. Will appropriation be different here than in a traditional perimeter block? We are ultimately interested in how social practices differ in response to different built environments and will be undertaking a morphological analysis to arrive there, but first it is necessary to pinpoint what social processes we are hoping to support. We have already established in Chapter 6 that social (and cultural) practices with respect to territorial behaviour relating to privacy and appropriation of space by users are not universal. Terms like private and public (not to mention semi-private and semi-public) are relational constructs. Hence, when we don't consider these as outcomes stemming from spatial situations, become too ambiguous to be helpful.

7.1.1 THE FRONT YARD

Up to now, in mentioning yards, the focus has been mainly on the recreational "back" yard in terms of open space. Another aspect to consider is of course the "front" yard, when this exists. A front yard is formed when private open space is located in the public realm. Public realm is here taken to comprise all space within the spatial domain of the street, whether or not this is legally speaking on private property, see figure n.

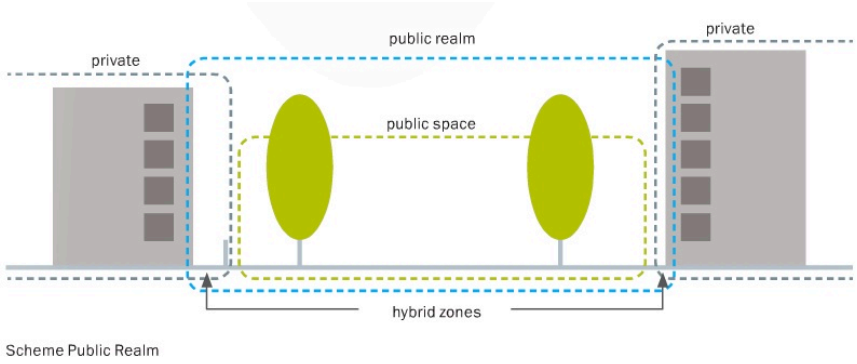

Figure n. Stipo illustration of public realm extending beyond public space proper to include accessible private space.

Front yards are a ubiquitous open space territory, particularly in suburban, especially Anglo-American configurations. Spatially, this is the antithesis of the street-wall, where the façade retreats from the property line, resulting in a street constituted not by interface, but by space. Unenclosed front yards are not yards in a traditional sense. With reference to landed estates and showing off land-holdings, the front yard is as much a show of affluence as intended

for use. The word origins of *yard* in contrast, emphasize enclosure and the common root with *garden*:

> "ground around a house," Old English geard "enclosure, garden, court, house, yard," from Proto-Germanic *garda (cf. Old Norse garðr "enclosure, garden, yard;" Old Frisian garda, Dutch gaard, Old High German garto, German Garten "garden;" ("yard." Collins English Dictionary - Complete & Unabridged 10th Edition. HarperCollins Publishers. 28 Jan. 2015. <Dictionary.com http://dictionary.reference.com/browse/yard>).

However, front yards may also serve as transitional spaces, as regulators of social interaction, as was discussed in Chapter 6 vis-à-vis the domains of privacy regulation, commonly referred to as semi-private and semi-public. On a street where every property has a front yard, the gap between public and private may create a diffuse interface, see Figure 4. Gehl and 'soft edges'. Conceptions of transitional zones where social interaction or participation are invited to occur notwithstanding, a prevalence of unused and poorly maintained front yards may in fact discourage people to stay longer in and use the street as a collective space (cite). It should be noted that small front yards before single-family homes may perform quite differently than front yards in the multifamily residential units studied.

7.2 WHAT ARE WE AFTER? (THE SOCIAL)

Chapter 6 discussed the aspects of privacy regulation relating to control (both formal and informal) as well as to how conventional practice sees territories (if at all) in a continuum from private to public. This represents the conventional view in practice that the designer essentially assigns spaces meaning by way of programming these with functions. The approach taken here is to "start from scratch" if you will, ignoring what we *think we know* about what urban territories mean socially. Following Maurice Merleau-Ponty, "to return to things themselves is to return to that world which precedes knowledge" (Merleau-Ponty 1974). Let us start by asserting what private territories are not – namely, public space. Public space is the land legally owned by the government (city or state). In this study of territoriality, we are interested in privately owned space (whether it is legibly private is another matter). These are spaces being sometimes located in the public realm, which may *appear* as public space, but legally speaking are not. Realms, following Lyn Lofland's definition, are *social* rather than physical territories (Lofland 1998). Figure n illustrates the distinction between public realm and public space.

One limitation is set immediately in terms of how the research question is framed; the territories in question are shared private space of multifamily

residential complexes, e.g. what Karl Kropf calls the private open space associated with a building or set of buildings and located within one or more plots (properties) (Kropf 2014). Therefore, we are speaking exclusively of spaces in which ownership is indirect, with tenure being either renter- or owner-occupied. Owner-occupants may have a more direct feeling of ownership and control of the space than renters, but the spaces are still communal in nature. ~~The empirical study will endeavor to match the physical with the social territory, but first it is necessary to flesh out what kinds of social effects we expect from a social territory (repeated?).~~

It will be argued here that separate facets of territories as social arenas are key – namely control & group identify on the one hand, and self-identity & meaning on the other. These are not so much independent components as overlapping clusters. In Chapter 6 we ascertained that control may relate to privacy control as well as physical control of access, but also to social control, also called informal control. In order to apprehend a feeling of control, dialectic relationships come into play. We recognize *this* space as distinct from *that* space when they are differentiated somehow. Physical framing is a part of this of course; inside and outside is such a dialectic pair, whose comprehension is supported by fences or walls or other visual (not necessarily physical) barriers. Boundaries will be discussed in a moment, but for now it is the social definition of us and them that is interesting to pursue. We can consider the boundary as the event, as the site of exchange between this and that as well as the site of communication (in analogy with *logos*, language)[1]. From the standpoint of social territories, this is important. In effect, how we define a territory spatially has bearing on how it is perceived and acquires meaning socially (Refer maybe to Canter), Figure n. [3].

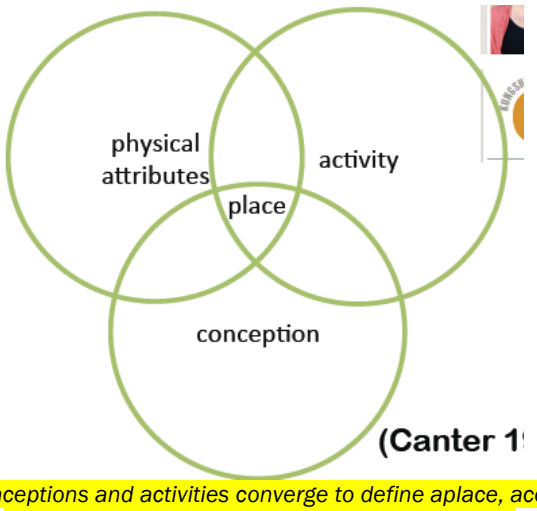

Figure n. Environment, conceptions and activities converge to define aplace, according to environmental psychologist David Canter. Image is a placeholder.

[1] systems theory Luhrmann definition

At a certain point, if you deconstruct it enough, a territory like a yard ceases to be a "yard" in the perception of those who experience it. Philosopher Jean Francois Augoyard describes the "act of naming that informs a site. . . [and] makes the site known, under one and the same qualification, to all those who employ it and who thus recognize themselves in this identical usage" (Augoyard 2007). ~~Augoyard will be discussed further on in relation to the social mechanisms of appropriation[2].~~ Suffice it to say that a yard, when seen as a cultural, social and not only spatial entity, is a mechanism that supports a group identity. From this standpoint, in effect, the perspective of the resident, it is not so much the exclusion of outsider (stranger) that is key, but rather the ~~"~~*inclusion of insiders*~~"~~, namely that of defining the sanctioned user by who has access to the yard. In Sweden, urban collectively shared yards are either (1) not fully enclosed by buildings and thereby accessible to everyone, (2) enclosed by buildings and thereby inaccessible (except by a key or code) or (3) not fully enclosed but having supplemental (e.g. secondary) enclosures to support control of access (by way of key or code).

7.3 HOW CAN WE STUDY IT? (THE SPATIAL)

Now that we have an idea what we are looking for as far as yards as social arenas go, we may turn again to the task at hand. It is an assumption underlying this research that we can endeavour to assess the quality of open spaces multifamily apartment complexes as to how they perform as urban yards. Naturally, the spatial variables are not the *whole* story as humans are not automatons, but there is some explanatory potential in seeking general consensus in social responses to spatial situations. It is important to remember that the purpose is not to predict social behaviour in order to understand *people* better, but in the end "as a necessary foundation for successful 'interventions'" in urban design (Kropf 2011). Karl Kropf draws on Richard Sennett's *The Craftsman* (Sennett 2008) in stressing that the architect, like a craftsman, must command the medium:

> Do we fully understand the intricacies and substance of urban form as a material to be shaped? Are we making the most of its characteristics? (Kropf 2011)

If we accept that an urban yard may function differently depending on how it is configured, the next question is how do we assess these differences? The built environment embodies performative characteristics in its very form that

[2] for a thorough review of the text, see http://www.academia.edu/450110/Review_Step_by_Step_by_Jean-françois_Augoyard

are to be understood as distinct from representative or symbolic function (Marcus and Koch 2005). As an example, if we lean too much on historic interpretation, foregrounding the value of the historic record, or political aims, such as producing a lot of housing[3] in a short period of time, we may background other values, such as our built environment in service as our daily habitat, subject to constant use and modification as needs and ideals change. "And it is the role of the urban designers (all the built environment professions) to ensure that the built environment serves those needs. It is the designers who face most directly the competing values" (Kropf 2011).

Figure n. Byggnadsordningen.

Thus, by introducing criteria of environmental performance (Kropf 2011, Ekelund and Koch 2012), "instead of making instant quick leaps to normative judgments that rely on intuitive conclusions and personal experience," aspects of performance become negotiable allowing trade-offs to be identified:

> And by so doing the design task can be formulated with greater precision. Difficulties or inconsistencies can be spotted at an early stage in the design process. Designers who engage with the built environment on this basis would have more space and time for a more detached analysis. (Berghauser Pont and Haupt 2010)

Kropf argues that a consistent definition of physical form "as a reference aspect for coordinating a wider range of information" turns what might otherwise be "a museum of forms" into a "living design resource" able to "reveal the order within the hidden complexity" (Kropf 2011). Chapter 8 will propose a methodology and undertake to operationalize the measures presumed relevant to social territories. For now let it suffice to stress that it is only by venturing to measure the urban form in relation to other (social) qualities that it comes to mean something *generic* rather than normative.

Hence, the following themes will be discussed in the coming pages: boundaries, density, and accessibility. Naturally these are interrelated, most notably boundaries relate to access so the themes will not be treated too categorically, but rather as overlapping.

[3] Million homes programme , but also refer to situation today!

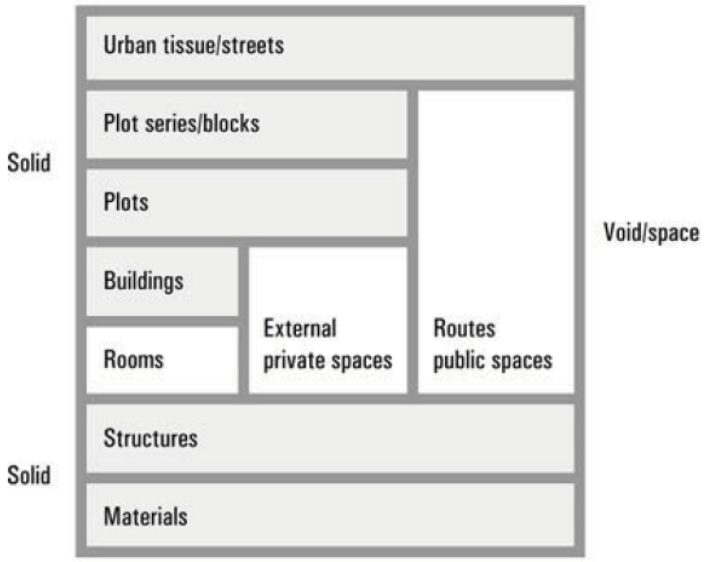

Figure n. Illustrate as adaptation of this image from Kropf.
Boundaries btwn private and public spaces (and between plots) fade out.

If we begin with the assertion that urban form *frames* space and in so doing also *organizes* space (Hillier and Hanson 1984), we may consider the concepts relating to territorial production according to the following logic: the spatial concepts are about how territories emerge, whereas the social concepts are about who subsequently engages with these territories and where. In addition, there are concepts relating to institutional organization like informal governance, collective space and conventions in planning which reflect societal ideals. These also have bearing on social territories as these are produced and upheld. The research question, being situated at the intersection of legal (institutional), morphological and social space, by necessity engages with other disciplines and the concepts are at times overlapping. This chapter will outline the *conceptual itinerary* for the research, to borrow a formulation used by Maturana and Varela in their influential *Tree of Knowledge* (Maturana and Varela 1987). Having supplied ourselves with concepts and theories to think with in the research, as per the quotation by Aristotle at the introduction to this chapter, a framework will take shape – ideas central to a study of social territories as products of urban form, but also as evidence of how society conceives of itself in producing them in this form. This discussion will be returned to in Part IV in considering the implications of the findings.

7.4 BOUNDARIES

Space, in an abstract sense has no "thingness"(Liebst), hence to consider spatial production in terms of concrete spaces, we must consider the relation

of space to urban form as a framing entity. Based on what form the framing takes, the entity framed can be different things. At least, this is the presumption of the research – namely that the *how* of the urban form matters to *where* certain social emergences take place. Since the research question pertains to social territories, e.g. what are territories in the perception of users (as well as *ergo*, what are not), the discussion of space here will have this as scope. We established in Chapter 2 that as a perimeter-block morphology gave way in the 20th century to the 'urban field' morphology, the result has in many cases been "a fabric that is open, fragmented, heterogeneous and disrupted" (Levy 1999:82). At the same time, it was proposed that an absence of boundaries has as by-product certain territorial effects – that relieving inhabitants of the possibility to control their territories perhaps results in an abdication of involvement. So in this sense, the territories produced may be disrupted, fragmented and even heterogeneous along Levy's reasoning, but not in a territorially meaningful and socially robust way[4].

7.4.1 AMBIGITY

Of course, there are those that argue that the very life-blood of cities is the ambiguous and undefined spaces. In romanticized terms, these are spaces where "anything" might happen. Ignasi de Solà-Morales, who coined the term "terrain vague" in a 1995 essay with the same name to capture "the form of absence" in the city, best articulates this point of view (Solà-Morales Rubió and Whiting 1997). These are the in-between spaces, unbounded and diffuse, which Solà-Morales see as obtaining their value (understood as a conceptual freedom) precisely due to being unincorporated into the productive goings-on of the city. While Solà-Morales has a point, this comes down to a question of context and scale. In a dense urban setting where every patch is something, the non-spaces of the *terrain vague* are suggestive in their otherness; however, in some peri-urban settings in the suburbs of Stockholm, as much as 25-35% of the open space is potentially ambiguous, what Alexander Ståhle calls "ambi-territories" (Ståhle 2008)136[5]. When you

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[4] A similar argument might be applied to many approaches in landscape urbanism which foreground the landscape and background other urban production. Citing Charles Waldheim Waldheim, C. (2006). The landscape urbanism reader. New York, Princeton Architectural Press., Sargin and Savaş put this well: "'Landscape urbanism' manifests itself in relation to nature, suggesting that it is the landscape rather than architecture that is more capable of organising the city and enhancing the urban qualities. Here, the role of the architect is minimal, leaving little room for architecture's competence in social domains" Sargın, G. A. and A. Savaş (2011). "Dialectical urbanism: Tactical instruments in urban design education." Cities **29**(6): 358-368.

[5] The notion of ambi-territory applies to both public and private open space, in other words ambiterritory simultaneously disturbs the public and the private realms. Ståhle proposes that the legal status of the space (public or private) needs to be considered alongside the access (public or private "good"), generating four possible variants of public and private: Private access/private property, public access/private property (e.g. private pseudo property), public access/public property and private access/public property (e.g. public pseudo property).

consider other possible uses for this land, uses that might benefit human activities better, the wastefulness cannot be looked upon so lightly. Ambiguity, argues Sara Westin drawing on Gunnar Fredriksson (1992) is a tactic consciously applied in politics in order to reach consensus: by intentionally describing ideas in terms with multiple connotations, resistance the specifics of the proposal may be defused (Westin 2010). Elaborate?

Figure n. Example of the terrain vague in Paris XIV arrondissement. (https://www.flickr.com/photos/batswirl/4281417673/)

Mention Horistei, from Marcus 2000, boundary-making and Kropf article on ambiguity

A consequence of the development of mass-produced large-scale housing estates and ideals of modernist urbanism is, as we have seen, an absence of boundaries. In reality, density in a fundamental way corresponds with boundaries: a high-density urban fabric (except in cases with very tall buildings set in a landscape of open space) generally translates to greater block enclosure. Low density, when applied on a large scale, translates to increased *peripherization* (or *peri-urbanization*)[6], otherwise known as *sprawl*. Density will be discussed more in a moment. First we will dwell for a moment on the boundaries which relate to subdivision of space, e.g within the plot rather than between plots. The relation of the space as field to the bounded subspaces it contains has parallels with what landscape architect Christophe Girot proposes is a useful concept for the practice of landscape architecture – namely *topology*. Girot argues that "topology enables a more general understanding of landscape as a symbolic cultural entity, woven into physical and spatial relationships at the dimension of a territory" (Girot et al. 2013, 89).

[6] This is also known as *rurbanization* (Roux and Bauer??, Levy 1999:82).

Topological space derives from the Greek notions of place (*topos*) and language (*logos*) in reference to the continuity and connectivity of surfaces. A term long used in mathematics, within landscape architecture the concept refers to the relation of the constructed landscape to the natural landscape, or the relation of the *part* to the *whole* (Girot et al. 2013, 81). Topology is a useful concept applied to urbanism generally, in that it elevates the interdependence of part and whole. We can think of this not only as the relation of subspaces to the larger territories, but also in the relation of architecture to urbanism (in Swedish *stadsbyggnad,* or literally 'city-building'). Modernism in architecture shifted focus from the local urban context to the individual building as object and potential icon; we might describe this as subverting the relationship of parts to the whole. This is something which current planning, often market-driven and piecemeal, still frequently subscribes to. [4]The modernist legacy is pervasive; more than ever, ad hoc development is the result. What topology reminds us, is that if we ignore the relation of the parts to the whole, we may not get the outcome we are after. The question for this research is how to pinpoint spatial elements relating to how yards perform as social territories. [5]For now, our focus is the spatial components that make up a social territory. Thus, it is worth dwelling on boundaries as material entities, separating this from that; how boundaries are designed has bearing on aspects of *enclosure* and *exposure;* the conceptual pair will therefore be discussed together.

7.4.2 BOUNDARY AS LEGAL INSTRUMENT

Possibly leave out, from here:

Naturally, the boundary is the focus of much legal concern. This is the location in space of the private-public divide and consequently clear boundaries are considered to simplify relationships by clearly signifying whose 'bundle of rights' are operational. These rights of *use, exclusion* and *alienation* hinge on a lack of ambiguity[7], on *legibility* – this being "one of the advantages of the boundary as communicator" (Sack 1986 cited in Blomley 2007). In *The Human Condition*, Hannah Arendt writes:

> "The law was originally identified with this boundary line, which in ancient times was actually a space, a kind of no man's land between the private and public, sheltering and protecting both, while at the same time, separating them from each other" (Arendt 1958, cited in Mitchell 1999:16; see also Madanipour 2003).

In fact, legal geographer Nicholas Blomley claims that legibility is closely intertwined with law as the term itself stems from the French 'legere' (to read).

[7] It should be recognized that private property systems are in practice often porous, especially with respect to gardening practices, where an untended garden has been found empirically to be sanctioned to take fruit from - the lack of vested interest signaling that the owner does not care (Blomley 2007).

Law, he states "is centrally concerned with two acts: inscription, the practice of naming and marking – and reading – that is, the determining of the meaning" (Blomley 2007:1826, see also Hibbits 1994). This is also of course, the central concern of territorial behaviour – namely to demarcate and communicate claim to a space. The morphological parallels are evident and Blomley's suggestion that property be seen "as a set of practices that serve to produce the 'effect' of property" can be read with 'spatiality' or 'urbanity' in place of property (Blomley 2007:1827). Property is "a powerful organizing device through which the social world is made meaningful"(Delaney, 2003; 2004)" (in Blomley 2007:1827) and "jurisdiction is meaningless without some space in which law can 'speak' (Ford 1999). The architecture of these legal spaces is consequential therefore. Clearly space affects society through the structuring instrument of law. . . .to here

Planning documents are the formal legal instrument in planning, conferring both rights and obligations over some span of time. In Sweden, a detail plan, for instance, protects and specifies the property owner's development interests over a set period of time. Mention planners make choices in detail plans about whose access is protected. On a more fundamental level, property has a temporal dimension as "property rights are viewed as subject to potential social obligations to others that 'often materialize not during the clearly defined starting point, but rather at a later stage, consequent on the actual dynamics of the relationship over time'" and can be seen as sustained patterns enacted over time (Lehavi cited in Blomley 2008:325 find original). In property rights, the boundary is conceived not as a diffuse edge, but as strict yet invisible interface; sorting out and clarifying rights and responsibilities vis-à-vis this interface is central to property law (Blomley 2007). Property lines (plots) may not be materialized in fences or the like, but the legal rights are there nonetheless. In fact, so strong is the import given to the legal rights of property, that it extends to the right of privacy within the property and to a concept known as *curtilage* in North American property law:

> "Boundaries may also be very practical and real, such as fences or walls. Often, of course, they are both, such as the domestic 'curtilage', the area surrounding a dwelling in which a person has a reasonable expectation of privacy. The curtilage relies upon the identification of a conceptual divide between a public and a private realm, but is also materialized and made legible through the arrangement of everyday objects, such as fences, lawns, and gazebos." (Blomley 2007:1825).

7.4.3 BOUNDARY AS INTERFACE

Mention in this section Sennett's distinction between borders and boundaries in The Public Realm!) In Chapter 6, privacy as related to the urban form and to conventions in practice in naming territories was outlined. The boundary will here be treated in its spatial sense, as enclosing and delimiting space, in

order to lay a theoretical foundation for morphological analysis. It is important to note the multiple ways in which boundaries operate, not only spatially as an *interface*, but also socially in terms of limits to what is considered acceptable behaviour. (Neither should the legal function of boundary be ignored, as has been discussed above. The function of boundary as interface is key, since in spatial terms there are two sides to any boundary. According to Merriam-Webster, interface has several meanings:

> 1: a surface forming a common boundary of two bodies, spaces, or phases <an oil-water interface>
> 2a : the place at which independent and often unrelated systems meet and act on or communicate with each other <the man-machine interface>
> 2b : the means by which interaction or communication is achieved at an interface ("Interface." Merriam-Webster.com. Merriam-Webster, n.d. Web. 28 Jan. 2015. http://www.merriam-webster.com/dictionary/interface).

Central to the interface is the notion that the boundary has two sides and is a site of communication or exchange. The focus here is the role of boundary as privacy regulator, as a mechanism of balancing exposure and enclosure. The boundary is thus embedded with messages of inclusion and exclusion, which depend on how the boundary is materialized: whether open, transparent, closed, etcetera. "We read space, and anticipate a lifestyle" as Hillier & Hanson put it (Hillier and Hanson 1989). A gate sprung wide signals access granted, this is a next to universal convention. But a boundary closed signals exclusion and reminds us (in case we'd forgotten) of ownership, sanctioned versus unsanctioned users.

It is proposed that the boundary is fundamental to sense of control and thereby to feeling ownership of a space. By way of measuring configurative properties relating to exposure and enclosure therefore, patterns in ownership and control may be apprehended. Visual control as well as control of access relates to privacy; if either is compromised, components of privacy like solitude is impacted. Therefore, how boundaries and interfaces are designed can be said to impact the functionality of the space thus enclosed, depending on what role the space plays socially. Matthew Carmona describes the designer's role as "to enable the requirements of each privacy domain" (Carmona 2010)[8]. Amos Rapoport argued in an essay advocating more open-ended architecture, that the ability to adapt one's environment reinforces the urge to participate collectively "possibly because the ability to manipulate,

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[8] Privacy control was discussed in Chapter 6, but it is also relevant to recall the old saying that "good fences make good neighbours," something which empirical evidence seems to support: A study in the suburban United States (Al-Homoud & Tassinary, 2004) found that spatial attributes like enclosure actually elicited contact between neighbors, concluding that the enclosure itself acts as moderator of social interactions, in single-family housing configurations at least. Nicholas Blomley article as well!

change and complete the environment physically also means being able to give it meaning. . .[and] complexity" (Rapoport personal element, riba 1968, 301). Boundaries are one such means of transformation, erecting, maintaining, painting, removing and adjusting these is part of their purpose. Seen in this way, material boundaries may be signs of resident intervention in some sense independent of control of access or visibility. It may be that the interventions are practices which give meaning, included among the activities which Canter contends is part of place forming. The meaning residents imbue spaces with notwithstanding, spaces may be more or less responsive to piecemeal changes, or what is the spatial supports for activities to take place. This is quite a different point of view than current urbanism practice, referred to by Olsson as the long arm of politics allows. Sara Westin alleges that urbanism today (planning practice in broad terms is her subject) focuses too much on *housing* and too little on the *dwelling* (Marcus, Ståhle et al. 2005, Westin 2010). If we are going to evaluate the performance of social territories, the focus must simultaneously consider the conceptions, activities and built environment itself as converging in place. It should be understood at this point that the social meaning we are looking to understand in order to assess the performance of urban form territorially, is "meaning as produced from the use and perception of the [space] *regardless* of whether this is intended or not" (Koch 2004). Uncovering the link, if there is one, will be the aim of the methodology outlined in the next chapter.

7.5 DENSITY

In terms of how the urban form is configured, it was alluded to earlier that density matters to enclosure. As pressure on land increases, placing buildings at or near the property line maximizes floor area: "environments with both a high FSI and GSI are areas with mid-rise buildings dominated by perimeter blocks"[9] (Berghauser Pont and Haupt 2010). [Elaborate more on this and maybe show the three types (page 13 Spacematrix); explain how urban form and density not so self-evident relates to building types. It is also worth to discuss OSR as this says something about the open spaces in between the buildings and the pressure on it (intensity of potential use)]. Related to the figure on page 21 this could be related to the discussion on rivalrous vs non-rivalrous. In morphologies where property lines are flanked immediately by buildings, the interface between the private property and public property tend to be clear and legible, there is simply no point to placing private property in the public realm (Castex, Castex et al. 2004). In some cases, this results in a street-wall, the aggregate effect of many facades in line with one

[9] FSI refers to the Floor Space Index or gross floor area; GSI refers to the Ground Space Index or ground coverage (building footprint on the ground).

another. Hence, a high degree of enclosure of open space is a by-product as building mass is concentrated to the perimeter. Figure n demonstrates Leslie Martin's version of density laborations, showing the same building mass FSI distributed in two versions (Martin 2000).

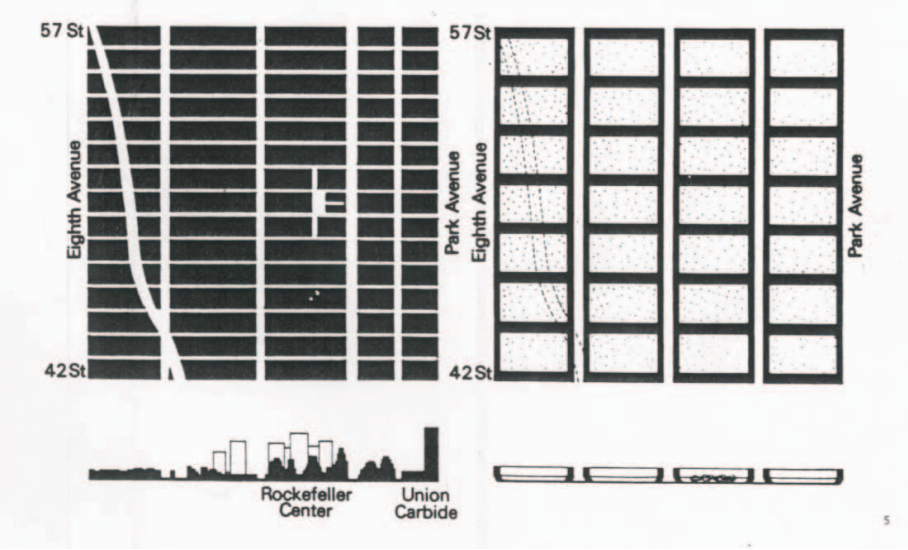

Figure n. Leslie Martin's variations on the same building mass in Midtown Manhattan (Martin 2000).
Better example in SpaceMatrix, may use this.

When pressure on land is high and there is not a restrictive cap on building height, most zoning ordinances require taller buildings to either be set-back from the property-line either at the street-level or some levels up to maintain daylight properties in the street (Martin 2000, Lehnerer 2009, Berghauser Pont and Haupt 2010). However, since tall buildings are more the exception than the rule in Sweden, the low to mid-rise building height of 8 levels or lower that is standard in urban development suggests that as density increases. These interfaces tend also to require more points of entry as the façade-length increases. Hence density is indirectly related not just to enclosure by building, but also to entrance density.

7.5.1 ENTRANCE DENSITY

The role of entrances for the performance of the interface of building to open space is important to recognize in terms of their inherent transactional potential (Hillier and Hanson 1984). These are points where the interior private space meet exterior public space; hence are points from which social control emanate. The interface is here conceived not as a plane, but as a permeable zone of interaction between the private building and public street. Entrances contribute to *constitution* in space syntax theory (Hillier and Hanson 1984). There is also a cultural component to entrance density. In many Anglo-American and Dutch urban tissues, for instance, entrance density can be quite high. This is prevalent especially in terrace- or row-housing where each

individual unit has it's own entrance to the street[10]. In Swedish multifamily apartment complexes, building code requires elevator-access for each apartment unit, thus developers strive to maximize the number of units served by each elevator. This naturally results in a relatively low entrance-density to façade length. If one entrance to the street per apartment unit (as is common in the Netherlands) represents maximum individual control at the interface, one entrance per building represents a minimum level of control. This has implications for residents' ability to feel ownership of the façade itself, but also the adjacent ground, e.g. the interface. An entrance shared by 30 or more apartment units is that much more anonymous. What is perhaps less clear is the effect that this more indirect relationship with the street frontage has on residents' ability to appropriate private space in front of buildings. A consequence of fewer points of entry is that there are less possibilities for residents to directly engage with the interface between inside and out. A dutch *stoep*, by contrast, is a territorial strip at the interface of public and private space, generally on public property, but is a zone where appropriation by residents is sanctioned.

7.6 ACCESSIBILITY (AND ACCESS)

In terms of a territorial conceptual apparatus, both configurative *accessibility* and material *access* to territories need to be clarified. According to Karl Kropf, (drawing on Canniggia & Maffei of the Italian school of urban morphology), the route is fundamental driver of urban development in its capacity to make land accessible on either side of it (Kropf 2011, Marshall 2012). The central concept of space syntax, the architectural theory introduced by Bill Hillier and Julienne Hanson in *The Social Logic of Space*, is precisely the so-called network integration quantifying for each axial line (representing route segments) its connectivity with each other line in the system (Hillier and Hanson 1984, Hillier 1996). This is an analytic theory, which essentially captures that routes (streets) are sites of opportunity – for movement of course, but also for copresence with other human beings and thereby exchange and interaction potential. Since network-integration at different radii captures centrality at different scales (e.g. at the global, district or local level), it can be said to represent the accessibility from any location in the system to the population-at-large, at whatever proximity is relevant for the analysis. In the preface to *Social Logic of Space*, Bill Hillier and Julienne

[10] *Frontage* is another term for the boundary between building and route, generally considered important from the standpoint of commercial exposure, but in some cases also costly, being the basis for property taxation. This is one reason why it is common to see historic buildings with narrow frontage in relation to the building height and depth.

Hanson describe why this is such a departure from the geographic approach to spatial analysis:

> It is crucial to our approach that neither of these concepts [the notion of distance; and the notion of location] – in spite of their manifest usefulness for the purposes for which they have been applied – appears in the foundations of 'space syntax.' this is initially distance-free, and for the concept of location is substituted the concept of morphology, by which we imply a concern with a whole set of simultaneously existing relations. (Hillier and Hanson 1984)

The breakthrough that space syntax analysis represents is to look at the localization of human activity in terms of copresence- and movement-intensity as *potentialities* deriving from the system created by the morphology. Hillier describes "architectural theory [as] a matter of understanding architecture as a system of possibilities, and how these are restricted by laws which link this system of possibilities to the spatial potentialities of human life" (Hillier 1996). When ordering systems over time give the city its "eventual form," urban life is "almost a byproduct" (Marcus 2000). In contrast, planning which is very focused on formal aspects and on creating "urbanity", may miss the target if the fundamental processes intensifying copresence in space are not understood (Marcus 2008, Westin 2010). Within the field, Marcus argues, we excel at theorizing when it comes to the *generation* of urban designs, but too often fail at predicting actual performance of designs (Marcus 2008). One reason is that "social sciences tend to be weak not because they lack theories, but because they lack regularities which theories can seek to explain and which therefore offer the prime test of theories" (Hillier 1996). Morphological analyses, such as configurative analyses (e.g. space syntax) and other methods of measuring urban form can only begin to venture something about social consequences when the so-called regularities are established so that we can account for the morphological differences and link these to human outcomes.

7.6.1 ACCESS

Whereas accessibility refers to the more relative contextual position within the network of streets, access refers to fixed locations, hinging on attributes at the micro-material scale, such as enclosure and therein also control. Daniel Koch clarifies the distinction as that of distribution *of space* versus *in space*, "the distribution of artefacts and people in space, and the spatial relation between them, signifies both their status and their supposed use or relation, both to those who come in contact with them and relative to each other" (Koch 2004, Koch 2007). Apart from the possibilities generated by the network accessibility, in relation to open space provided in multifamily residential schemes, possibilities at a very local scale are impacted more directly by other

"laws." There is a more or less explicitly defined use-group comprised of a resident population, for one thing. Thus, it is relevant to distinguish between accessibility contextually and actual physical access to the open space in question. It is perhaps obvious yet worth mentioning that configurative or network accessibility is likely to be more significant as access on the micro-material scale increases. Like a breach in a surrounding wall, accessibility to and by strangers (e.g. the public) will increase as enclosure decreases. It is important to recognize that spatial control is different from visual control. Daniel Koch clarifies visual control vis-à-vis spatial control as follows: "control is not only based on control of bodily encounters. To a large extent, control is performed through visibility – through the act of seeing or being seen" (Koch 2004). For instance, a fence or low hedge encloses space but affects exposure only if the height and transparency address this. Further, if the network accessibility is very low, we can assume that the intensity of movement will make exposure less of a concern than if accessibility is very high. The distinction of enclosure and exposure will be discussed further in the next chapter in dealing with how to operationalize concepts, but for the sake of clarity, enclosure will in this thesis be the term used throughout in relation to physical access, while exposure will refer to visual access.

7.7 COLLECTIVE AND COMMON, INSTITUTIONAL TERMS

It is important to mention the commons in the context of this research. [It may be that this section belongs in Chapter 6 instead.] What is referred to here as social territories should not be confused with commons, however. This needs more explanantion and it would be interesting to connect this also to the OSR somehow. What happens if a "Club good" used very intensely (a lot of people or too little space)? Does it become rivalrous? The key distinction is that this research looks at legally speaking private space, which is therefore by definition excludable (whether asserted or not), whereas common (and public) goods are non-excludable. Natural resources are an example of the former, while parks represent the latter. There is a perceived grey zone that occurs when open space on private property is designed in a non-excludable way. By appearances public in terms of accessibility, legally speaking such open space is excludable and therefore a club good, according to the goods and services matrix in Figure n. Were a boundary to pop up along the property line, the property owner would be fully within their rights. What is in effect happening is that a public good is being transformed into a club good. What might previously have been perceived as public space was simply misrepresented before. This is an issue of legibility, which has been discussed already.

	Nonrivalrous*	Rivalrous*
Nonexcludable	**Public good** (e.g. public park, nature)	**Common good (common-pool resources)** (e.g. congested park, street or sidewalk)
Excludable	**Club good** (e.g. private park)	**Private good** (e.g. private terrace/garden, balcony)

*In classical economics, the term rivalrous/non-rivalrous is used, but commons theory prefers the term subractible/non-subtractible. Table after Silke Helfrich ("Common Goods Don't Simply Exist – They Are Created" 2015), adapted with examples relating to the research.

Table n.

Another clarification pertaining to commons theory bears mentioning. In commons theory, appropriation entails "withdrawing resource units from a resource system" as Elinor Ostrom defines it (Ostrom 1990, 30). In other words, appropriation is seen as rivalrous (as per figure n): e.g. my use of the resource detracts from your potential use of it. Appropriation as it used in this research is not by definition rivalrous. It certainly can be, as when open space associated with multifamily residential buildings is appropriated by individuals as private terraces; this form of territory is excludable and rivalrous and therefore a private good, in some cases transformed from being a part of a club good before. Also, congestion may make an open space (park, street or sidewalk for example) indirectly excluding. However, in general collective appropriation of yards as recreational use of the open space is considered non-rivalrous (and excludable) and therefore a club good, whether it is designed excludable or non-excludable. This is because an unsanctioned user, a non-resident can be excluded by residents with sanctioned rights to the space even in the absence of a boundary communicating this fact (by calling the police for instance). [6]It is important to understand this point since confusion ensues when, in the production of urban open space, we do not realize that what is at hand is a club good (yard) and not a public good (park). If we consider these in terms of accessibility, it is immediately clear why. While the ambition may be for a park to be very accessible and open to view, presenting its activities as a smorgasbord of options, a yard may have entirely different design parameters. Perhaps it is not best served by having an access path running through it, for instance. Again, this comes down to knowing whom we are designing for. Understanding that these are different entities, different territories, paves the way to conceiving of a yard as what Ostrom might call an "internal world" vis-à-vis the "external world," having it's own culture and norms (Ostrom 1990, 37)[11].

[11] A slightly different view of commons is held by activist Silke Helfrich, editor of The Wealth of the Commons: A World Beyond Market and State, in which she writes "the way in which resources are made accessible to society also defines them as common resources. Either we inherited them, or we produced them collectively, often over the course of centuries. That is what makes things common to us, not their alleged characteristics. That is why they are considered common goods and not private goods" ("Common Goods Don't Simply Exist – They Are Created" 2015). Helfrich questions excludability as a parameter. In the context of the Swedish

While yards are not commons, there are some attributes of well-functioning commons in terms of addressing the administrative and organizational dimension that may be interesting to recall in the empirical analysis, especially with regard to institutional forms of self-governance and maintenance responsibilities. For instance, Ostrom mentions among "design principles" (there are 8) four which seem relevant to the scale of the yard and hence to this study[12]:

- Clearly defined boundaries (for effective exclusion of external un-entitled parties)
- Rules regarding the appropriation and provision of common resources that are adapted to local conditions
- Collective-choice arrangements that allow most resource appropriators to participate in the decision-making process
- Self-determination of the community recognized by higher-level authorities

(Ostrom 1990, 90)

Boundaries, locally appropriate appropriation, participation in decision-making and self-determination will be drawn upon in the thesis. Like commons, club goods like yards are traditionally marginalized in favor of the private good versus public good dichotomy; traditional market-driven capitalism has not accorded them much consideration:

> "Institutions are rarely either private or public – "the market" or "the state." Many. . .are rich mixtures of "private-like" or "public-like" institutions defying classification in a sterile dichotomy (Ostrom 1990, 14).

As legal geographer Nicholas Blomley writes: the tragedy of the commons is their external invisibility rather than Hardin's traditional view of tragedy of the commons (find proper quote and cite).

7.8 DISCUSSION

"Urban space is the material support for all that is at stake in the social realm" according to Francoise Choay (Choay 1997). Applied to urban territoriality, how can we study the material component in the social territory? To begin

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welfare-state, some might argue that the open spaces on private property (non-excludable) once developed by public (state) investment should be open to all. What is missing from this view and also expressed in Helfrich's opinion above is that the so-called "alleged characteristics" like urban form, probably do matter. The position of the research is that if access to everyone compromises spaces like yards as social territories, then this benefits no one.

[12] In general, commons theory tends to focus on more large-scale resources, such as wildlife herds, fish stocks and in some cases natural resources, hence the boundaries referred to here may not be physical but rather organizational boundaries, as when fishermen agree to fish certain territories of a lake on a rotation schedule.

with, there are spatial concepts, which have in this chapter been situated in the context of the research, such as boundaries, accessibility and density. There are institutional concepts relating to property rights as well as planning intent and notions of governance, formal and informal. These have been touched on to the extent deemed relevant in this thesis. In addition, there is a terminology of social and territorial concepts, including copresence, appropriation and interactional or social space more generally. Etcetra and so forth!

This section needs another go, as does the chapter in general. It is proposed to follow the three themes of boundaries, density and accessibility more stringently and to in each case 'end up' so to speak with how to consider the concept in terms of the interface. In part IV, this will be developed further as the interplay of surface + interface. The conventional focus on territories is perhaps more on the surfaces themselves in a somewhat Cartesian and two-dimensional way, but here it will be argued that the interfaces are central to how social territories at least form. The interface will be introduced more broadly in this chapter and likely draw more on Social Logic of Space. Another thread to develop further relates to the interface in urbanism and has to do with the Anglo-American and Dutch preference for row (terrace-) housing versus the French (Continental?) and also Scandinavian preference historically for apartment buildings as an urban model. This relates to the entrance-density which is a factor barely touched on yet. Whitehand & Carr argue that this reflects a country estate vs. palazzo ideal (Whitehand 2001). Seen this way, the "hus-i-park" or campus-ideal is a hybrid of the two, the palazzo in the estate. This helps to explain the ambiguity of the associated territories, in effect not quite urban, not quite countryside.

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8. MATERIALS, METHODS, MEASURES

Taking things apart, naming the parts and examining those parts in use gets us into the data (Sennett 2008).

This chapter will be devoted to transitioning from theoretical concepts used up to now to the task of designing the research in practical terms. A triangulation method outlined in Chapter 5 will be used to structure the empirical study, but some details still need to be worked through in order to operationalize the theories on which the research is based. The materials of the study will be reported, followed by an elaboration of the methods that will be used. Lastly the measures intended to capture the particularities of shared urban territories will be fleshed-out. A key to understanding how open space on private property performs in territorial terms is to be able to describe these in a morphologically consistent way. Having discussed the materials, methods and measures, the research procedure should become clear before "getting down to business", if you will. In Part III of the thesis, the results of the empirical study will be reported and implications of the findings ventured. Part IV is more explorative in nature, extrapolating from the findings some potential implications for densification. Can we better consider the territorial problem in new construction and even propose to resolve territorial mismatch, where it can be identified? The laborations in Part IV will build on the methods and measures outlined here, but develop these as needed, with the aim in the end of producing analytical tools useful to urbanism professionals. In so doing, the theories introduced earlier will be revisited and if needed, reconsidered.

8.1 MATERIALS

The research has quite a broad scope in terms of trying to pin down the effects of morphological variations on how residents use the open spaces produced in different configurations. Central to the question of territoriality are concepts like control, density and meaning, e.g. how we identify with spaces. It is an assumption in the research that doing away with possibilities for control and enclosure will produce an outcome in what the open space may be used for. Further, density and congestion will affect use. It has been argued that appropriation of space, whether by use or personalization are indicators that the open space has taken on meaning for residents, in some cases becoming a "yard." As a social as well as spatial arena of action, the yard is a function of copresent individuals, whose individual and at times social practices produce the meaning "yard." But there are also spaces which

are not yards in a traditional sense relating to the notion of the enclosed garden. Such open spaces may also have recreational values apart from how they perform as controllable territories. Taking all these nuances together, in order to make any attempts at generalizability, it is necessary to expose to analysis a broad range of morphological situations, from the fully enclosed court to the fully continuous open space of many post war residential schemes. This is the point of departure in the selection of cases.

8.1.1 THE STUDY AREAS

The material of study is fundamentally the morphology as expressed in the cases selected. The study areas were selected on the basis of covering a wide range of morphological types, what the Byggnadsordning would call (list types!). All were rental-tenure multifamily residential complexes with urban tissues, varying in terms of factors such as location in the city, street network[1], plot size and built density. Due to the interplay of these fundamental morphological conditions, the open space is framed very differently. In some cases very enclosed open space results from the configuration; in some cases very expansive open space with diffuse boundaries results. The aim of the research being to study these differences, the spread in morphological types was the key to the selection of cases. As it happens, there is a corresponding spread in the age of the areas as a consequence of the shift over the past century from more closed perimeter blocks to more open and large scale development of the post war era. More recent proposals, however tend to be somewhere in-between in terms of development size and degree of openness of the open space. An initial seven areas were selected in collaboration with the municipal housing authority in Malmö, called Malmö Kommunala Bostadsbolag (MKB). MKB proposed the neighborhoods based on the parameters of morphological variation defined in advance. MKB conducts resident-satisfaction questionnaires at regular intervals and it was believed that residents would therefore be likely not mind completing a questionnaire. However, areas were selected which had not had an MKB administered questionnaire within the past year, in order to avoid "questionnaire fatigue". Having selected the areas of study, MKB provided the addresses of roughly 1100 residents living in the areas in question. The aim was to send out approximately 200 questionnaires per area. (The questionnaire will be elaborated on shortly).

As the Malmö study was underway, a parallel study in Stockholm was beginning to take shape. An architecture student by the name of Martin Losos had approached the research group [2], interested in investigating use of

[1] define network density according to Berghauser Pont

[2] e.g. the Spatial Analysis and Design group (SAD) at the KTH School of Architecture in Stockholm.

yards in Stockholm as his thesis project. Having lived in many areas in Stockholm, Martin had seen first-hand and been puzzled by the apparent differences in use patterns in the open space associated with his residential buildings and wondered what role the architecture played in this. Being interested in similar aspects relating to appropriation of private open space, we collaborated on the design of his research, using similar formulations of the questionnaire questions in order to produce comparable results. Martin's questionnaire was delivered by hand, whereas the Malmö questionnaire was mailed out. The same basic criteria for case selection were used, with a spread of morphological types reflecting the shifting urbanism ideals over time and varied configurations of open space[3]. One distinction is that in the Stockholm cases, tenure is both renter-occupant and owner-occupant, whereas in Malmö all the cases are renter-occupied. Martin's study was mainly qualitative, comprised of a questionnaire and subsequent correlation analyses of the results. In order to streamline his thesis work with the triangulated approach used in this research, study areas were redrawn to suit the spatial analysis portion of the research, which will be described below.

Figure n. Study areas dispersed in Malmö.
Figure n. Study areas more concentrated geographically in Stockholm.

From the outset, the study encompassed 7 Malmö areas and 11 Stockholm areas, however the Malmö areas were soon subdivided to account for internal morphological variations. Hence, the Malmö areas increased from 7 to 17 following this redrawing of the area limits. The resulting sample includes closed-block formations in the areas from the first half of the twentieth century, open-block formations (mostly post-war), and point-house formations from more recent date (post 2000). Morphologically, the areas are representative archetypes recurring in urban contexts throughout Sweden, both in the city-centres and in the neighbourhood-unit planned areas in the urban fringe. Vignette one between Parts I and II introduces the 17 Malmö study areas and the 11 study areas in Stockholm. Figures n and n show the areas in their context within each city.

8.1.2 THE DATA AND SOFTWARE

In Sweden there is a centralized and consistent availability of data on address point level, including demographic information, building data (year of construction, levels, residential and business floor area, etc.). This data was supplied in GIS-form by RTK-confirm with Ann! in Stockholm and in Malmö by the municipality itself. Knowing that this data was on address point or

[3] mention adjustment of case areas according to street network center-line.

building level, it was important that the same level of resolution was maintained in the questionnaire. The subsequent site audit was strictly qualitative and could therefore relate more to the spaces as perceived on-site. The spatial analysis was prepared for and study areas finalized using MapInfo 11, a GIS program[4].

8.2 METHODS

For purposes of consistency, each study area was delimited by streets or walking paths, such that no gaps would occur between properties. The intent was that the procedure used would thereby cover an entire district and not leave swaths of public land unaccounted for in the study. Figure n illustrates how one such study area is bounded by property lines and the street center-line in a procedure outlined in Space Matrix (Berghauser Pont and Haupt 2010). The purpose was to reflect in the density measures not only the open space on private property, but also the open space on public property, which may vary a great deal between morphologies.

Figure n. Example of definition of study areas.

This method of defining the study areas resolved the issue of how to define a block as the base unit of study when the block is not surrounded on four sides by streets. In large housing estates, for instance, it is quite common for large swaths of land to be surrounded by streets but have little internal subdivision besides communication routes on private property. In these situations, the property line rather than the street centre line were therefore used. In general, however, the property line is less preferred for the definition of a unit of analysis, since in large estates especially, property divisions are subverted to the logic of large-scale development. The property as such may be an entirely abstract legal entity, which is not evident or legible on-site. That said, certain parameters relating to the legal property do have bearing on how open space is maintained and how local the decision-making may be. For instance, large municipal developers may have centralized maintenance and decision-making compared with condominiums where decisions are made by a board made up of residents. It is important to capture both legal and morphological space in the research, since it is the potential mismatch between the two that arguably results in potential ambiguity with territorial consequences. These are the spatial layers upon which social processes play out, it has been argued.

[4] For analysis of the questionnaires, Excel and the statistics program SPSS were subsequently used.

8.2.1 THE QUESTIONNAIRE DESIGN

The questionnaire design had an inherent difficulty: How to capture how residents perceive the open space associated with their residential buildings without unduly influencing those questioned by the formulations of questions. For instance, simply asking if strangers are a problem may prime the respondent to answer in the affirmative. Moreover, what to call the open spaces was an issue, since using "yard" might conjure up an image which residents might compare their actual open space to. For this reason, the term yard was intentionally not used, rather the more clinical "open space associated with the building where you live" was used throughout, except in one question designed to ascertain whether the resident considered the open space a yard or not. Questions were formulated in dialogue with the research group at KTH[5] and environmental psychologist Maria Nordström at Stockholm University as well as statistician Hampus Trellid at MKB, the municipal rental management agency in Malmö. For each question, respondents were asked to tick a box corresponding to one of five responses except where a fill-in response was asked for or the demographic questions regarding age, gender and number of children. Here follow the questionnaire questions, according to the following themes: Following this, the results will be summarized according to six themes: Frequency & Utility, Safety & Solitude, Borders & Control, Sense of Ownership, Institutional and finally Yardness. The overarching aim was to discern whether variations in responses indicated more or less consensus area wise or whether respondents felt differently about the questions asked. A high degree of consensus, would appear to indicate that the environment is a factor in why respondents answer as they do. Rather than repeat the phrase the *open space associated with the building where you live* for each question (as it was in the questionnaire), here this phrase will be shortened as "the OSAB".

> FREQUENCY & UTILITY: Questions (1), (2), (5), (3), (4) and (10)
> A total of six questions related to this theme, exploring whether "good space is used space", as Bill Hillier (cite) contends or if yards may have other affordances? First, residents were asked about patterns of use in questions formulated as follows: (1) How often do you spend time in the OSAB (in the spring, summer or fall)?; (2) How often do children play in the OSAB?; and (5) How often do you meet of socialize with neighbours in the OSAB? These three questions were designed to gauge whether use frequency differed by area as well as whether use by children was more or less frequent depending on the area and if greeting or socializing with neighbours differed by area.
> [Possible responses were: several times daily / daily / once a week / once a month / almost never]

[5] In particular, the research is indebted to Jesper Steen within the research group, for his experience with questionnaires and sage advice in formulating and structuring questionnaire to avoid asking too leading questions.

Second, residents were asked about their use of the open space in questions formulated as follows: (3) How do you most often use the OSAB? [Possible responses were: play with children / eat or barbecue / rest or relax / gardening / other]; (4) Do you find that OSAB functions as a place where spontaneous meetings occur? [Possible responses were: very well / fairly well / not so well / very poorly / not sure]; and (10) Do you feel that OSAB ought to be designed for more ages and interests than it is today? [Possible responses were: very much so / partly / not really / not at all / not sure]. These three questions were designed to identify what types of activities were most prevalent in each study area, whether the yards served as sites of social interaction and whether residents were satisfied with the utility of the yards.

SAFETY & SOLITUDE: Questions (6), (8), (9) and (21)
Four questions related to the theme of safety and solitude: (6) Do you find that OSAB functions as a place to find peace & quiet or solitude? [Possible responses were: very well / fairly well / not so well / very poorly / not sure]; (8) Do you find that there is competition over the OSAB – do conflicts arise because there is not enough space for everyone? [Possible responses were: yes, often / yes, sometimes / occasionally / not at all / not sure); (9) Do you find the OSAB to be safe, for instance at night? [Possible responses were: very much so / partly / not really / not at all / not sure]; and (21) Would you like to have your own private outside space near the building where you live? [Possible responses were: very much so / partly / not really / not at all / not sure]. These four questions were designed to capture first whether residents were happy with the degree of peace & quiet (or would have preferred more solitude) and availability of space and second, to gauge whether conflicts or perception of safety differed by area. The reasoning was that conflict over space might indicate that the yard was too small relative to the number of residents and that finding peace & quiet would indicate that the yard was adequate or large relative to the number of residents. A too large yard, might potentially feel unsafe, which was also being explored, or the sense of safety might relate to the location in the city or network integration (References for safety Jacobs and Hillier and for density Berghauser Pont and Lynch for fit).

BORDERS & CONTROL: Questions (13), (14), (16), (17) and (20)
Five questions on the topic of borders and control were included in the questionnaire to see if the presence and clarity of boundaries differed by area: (13) Do strangers spend time in the OSAB? [Possible responses were: very much so / partly / not really / not at all / not sure]; (14) Do you find it positive or a problem when strangers use the OSAB? [Possible responses were: positive / mostly positive / neither nor / slight problem / big problem]; (16) Are you aware of the boundaries between your building's property and adjacent land of neighbouring properties or public/municipal land? [Possible responses were: very much so / partly / not really / not at all / not sure]; (17) Would you use the OSAB more than you do today if the boundaries toward neighbouring properties was made clearer, through fences or hedges for instance? [Possible responses were: very much so / partly / not really / not at all / not sure]; and (20) Would you find it positive or a problem if strangers used the ground more, if more residential buildings were constructed for instance? [Possible responses were: positive / mostly positive / neither nor / slight problem / big problem]. An assumption which the research was designed to test was whether boundaries affect sense of control. Competition over space, it was thought, might also be greater where potential for control by residents is not supported by boundaries. However,

the questions were worded with caution so as not to prime the respondent to see strangers as a problem; for this reason the response options were offered from most positive to least. The questionnaire also wanted to explore whether residents themselves recognized or cared about boundaries, knowing that these would be tested using spatial analysis for comparison. For instance, if residents claim not to want more boundaries, but use and control is found greater in areas with more boundaries, this would be an interesting finding.
(References: for control and competition Newman, for notion of stranger Simmel, boundaries/clarity Blomley)

SENSE OF OWNERSHIP: Questions (11), (12) and (15)
Sense of ownership of the open space was explored in three questions: (11) Do you feel that the OSAB is mainly for residents? [Possible responses were: very much so / partly / not really / not at all / not sure]; (12) Do you regularly spend time in the open space near other buildings in the neighbourhood? [Possible responses were: very much so / partly / not really / not at all / not sure]; and (15) Do you feel that the OSAB belongs to your building? [Possible responses were: very much so / partly / not really / not at all / not sure]. Questions 11 and 15 were a pair designed to gauge whether sense of ownership of the open space is socially defined or defined by the building configuration. It was hoped that to the extent responses to these questions differed by area, that this would shed light on the role played by the urban form in supporting ownership. To account for the possibility that sense of ownership is broader than this, extending outside one's nearest open space to whatever spaces one prefers, (12) was formulated to capture this eventuality.
(References:)

INSTITUTIONAL: Questions (18), (19) and (22)
A rather dry category of questions pertained to the perceptions of upkeep and maintenance, explored in three questions: (18) Do you find that the maintenance of the grounds differs from maintenance of nearby municipal/public land (in terms of the quality of upkeep, plantings, equipment, etc.)? [Possible responses were: much better / somewhat better / no difference / somewhat different / much worse]; (19) Do you feel that the grounds would be maintained better if the boundary between your building's property and adjacent land of neighbouring properties or public/municipal land was clearer? [Possible responses were: much better / somewhat better / no difference / somewhat different / much worse]; and (22) Do you have good access to municipal parks or nature near where you live? [Possible responses were: very much so / partly / not really / not at all / not sure]. This trio of questions relate to the theme of borders, but here it is not the borders or clarity being gauged but the potential consequences for maintenance practices. It was assumed that variations in maintenance intervals for instance, would be noticeable only to the extent that boundaries are vague.
(References:)

YARDNESS: Question (7)
You might say that the entire questionnaire boiled down to one question in particular, which was designed to gauge to what extent residents perceive their yards to be yards: (7) Do you think the word "yard" is an accurate description of the OSAB? [Possible responses were: very much so / partly / not really / not at all / not sure]. The intent in exploring area wise differences to this question is to see how the urban form is involved in supporting the conception of a space as yard. The hypothesis is that the

idea of a yard is a socially meaningful construct, which to some extent is shared and that certain configurations of the urban form will align more with this notion of "yardness". If there is any consensus about what a yard should be, does it matter to how the yards end up being used?
(References: on space vs. place Canter)

1087 questionnaires were posted to residents of MKB in Malmö in May of 2010. Residents were provided with a postage-paid return envelope to encourage them to respond. Further, a postcard was sent out reminding residents to respond as well as providing a link to a web-based version of the questionnaire for respondents who so preferred. In Stockholm, 1902 questionnaires were distributed directly to all the resident mailboxes in each study area. Responses were collected in boxes provided in each stairwell. Not here: From the Malmö questionnaire, 308 completed questionnaires were subsequently returned, in effect 30%; in Stockholm, 659 completed questionnaires were subsequently returned, in effect 35%. The Malmö and Stockholm questionnaires in Swedish and translated to English are included as Appendix n and n, respectively.-Upon receipt of the questionnaire, the responses were entered into excel and tallied by response type. The questionnaire results were then entered as geo-referenced data into a database, allowing for comparisons between the areas as well as with spatial measures[6]. This method allowed for more explicit relationships to be studied between the "social data" and the physical areas chosen for study.

8.2.2 THE SPATIAL ANALYSIS PROCEDURE

The basis of the empirical study was matching resident perceptions with the morphology. This is an approach in which "physical form serves as a reference aspect for coordinating a wider range of information. . .and more accurate understanding of the characteristics of the form, and, more importantly, its characteristics in use" (Kropf 2011) 401. MapInfo was used to characterize the study areas at three levels of scale: (1) *Location analysis*, using Space Syntax integration captured accessibility expressed as network integration, (2) *Area analysis* analyzed the built form parameters, and (3) *Mapping* attempted to subdivide the open space based on its relationship to the built form. These procedures will be outlined in-depth below.

(1) Location analysis was conducted based on axial maps of each city available to the research team. The procedures used to capture the network integration value for each street segment are standard within Space Syntax

[6] Since the data was geo-referenced in this way, redrawing the area boundaries in Malmö described above automatically re-aggregated the questionnaire data in terms of the new subdivisions.

research (Hillier and Hanson 1984, Hillier 1996). How in-depth does this need to be?

(2) Area analysis used data provided on building, property and neighbourhood level, included floor area, building area, residential vs. commercial floor area, number of residents, and address points. Accepted descriptors of building density that are standard within urban morphology were derived from the data. These included Floor Space Index (FSI[7]), Ground Space Index (GSI), and the Open Space Ratio (OSR) (Berghauser Pont and Haupt 2010). The challenge throughout was to come up with procedures that sufficiently captured how open space and buildings are connected in order to pin down the interaction of spatial factors to how spaces are perceived. New procedures and measures were developed to define the spatial definition of the block, e.g. the degree of enclosure, as well as the entrance-density. Figure n demonstrates the procedure for capturing these two measures.

Figure n. Method for capturing enclosure and entrance-density, respectively.

(3) An exploratory method is proposed to subdivides the open space within the plots of each study area into categories. Although this approach is obviously reductive and oversimplifies conditions on-site, the aim is not to name territories for the sake of categorization. In fact, it was argued in Chapter 5 that the labels we as urbanism practitioners give to spaces do not necessarily have any bearing on how they area actually used. Categories like semi-private and semi-public and even "yard" have a role to play in the generative phase of design, but a different logic comes into play when it comes to the appropriation phase of a project, e.g. when residents take over That said, a system of analysis aimed rather to detect patterns in how space is distributed and how different configurations affect the utility of the open space left on the plot. For purposes of comparison and relative assessment, mapping would be a useful tool to evaluate different design proposals or to decide what interventions that densification might be suited to address.

8.2.3 THE SITE AUDIT PROCEDURE

Site visits were made to 18 of the 28 study areas. There, a representative open space arrangement was audited as example of a "yard." Attributes of the interface of building and open space were documented, including points of entry from building to the open space, surface treatment relating to program, such as paving and lawns, as well as structures on site. The predominant focus of the site audits was to identify evidence of practices indicating residents

[7] Also referred to as FAR.

actually used and personalized the yards. Edward T. Hall's notions of fixed-features and semi-fixed features in *The Hidden Dimension* (Hall 1969) were used as a starting-point in the site audit. Fixed-features were defined as elements provided as part of the program for the physical environment, like sandboxes, trellises, masonry grills but also waste-receptacles, lamp posts, bicycle stands and signage. These fixed features are intended to invite use or appropriation (evidence of *top-down programming*) and comprise the *extrinsic* features. Semi-fixed features on the other hand are *intrinsic* features (indicating *bottom-up* appropriation) and include picnic tables, benches and freestanding grills. Other intrinsic features include moveable furniture and items left behind, such as children's toys, lanterns and flowerpots. The relationship of extrinsic to intrinsic features was taken as proxy measure of how appropriated yards were by residents.

8.2.4 THE CORRELATION ANALYSIS

Preliminary analyses were done using Excel to check for correlations two variables at a time. The correlations indicated which spatial and social variables were interconnected. Follow-up analyses were performed using the statistics program SPSS to check the correlations for statistical significance. Statistical significance provides assurance that results are generalizable. Following this, stepwise regression was performed to find which variables were more important relative to the others. Add more on types of analyses, pearson's and generalizability when statistical significance is found.

8.3 MEASURES

This section will clarify the measures called on to test the interaction of social and spatial factors; some are established measures, standard within morphological research, while others were formulated for this study. A third category are measures derived from the questionnaire. The challenge in analyzing the urban form in its role of underpinning territorial performance was to come up with procedures that sufficiently capture the import of the theoretical concepts. In order to operationalizing the measures, some assumptions were made.

8.3.1 QUESTIONNAIRE MEASURES

Need a bit of introduction here!

OWNERSHIP

This measure indicates the sense of ownership of the courtyard, averaged by study area (question 11).

(how calculated)

FREQUENCY OF USE
This measure gives an indication of the total frequency of use (play with children, eat/barbecue, rest/relax, gardening, other), averaged by area (question 1, 2 and 5).
(how calculated)

SAFETY
This measure indicates the sense of safety of residents, averaged by study area (question 9).
(how calculated)

STRANGERS
This measure describes the rate that presence of strangers was noted by residents (question 13).
(how calculated)

8.3.2 SITE AUDIT MEASURES

The balance of intrinsic features to extrinsic features is an indicator of the proportion of *bottom-up* to *top-down* appropriation. The derived appropriation measure is an indication of whether space is appropriated *by* users (un-programmed use and personalization) or *for* users (programmed by rental management for instance).

APPROPRIATION
The share of intrinsic features to the sum of intrinsic and extrinsic features, as defined in the method section of this chapter.

include site audit's intrinsic and extrinsic measures (sub-categories)

8.3.3 SPATIAL MEASURES

The spatial measures used in the research will be presented according to the themes of accessibility, density and enclosure, based on concepts introduced in Chapter 7. For mapping purposes, additional measures were deemed necessary to be able to analyse the open space on a micro-material scale.

(1) Accessibility (locational analysis)
Axial maps for Stockholm and Malmö are available within the research group and were the basis for the Space Syntax analyses in MapInfo. These measures of spatial integration indicate the network integration of all axial lines calculated for various numbers of axial steps (see below) and averaged within a 500 meter radius (metric distance) centered on the study area.

r2_500M
average network integration at 3 axial steps

r8_500M
average network integration at 9 axial steps

r20 500M
average network integration at 21 axial steps

r30 500M
average network integration at 31 axial steps

(2) Density (area analysis)
Measures pertaining to density are easily derived using MapInfo: Each study area is represented as a discrete object and is used to aggregate the areas of building, open space and total area within it. Then it is simply a matter of designating a mathematical formula to derive the desired area or density measure, which is saved in a separate column in the MapInfo table. The derived measures were:

OPEN SPACE AREA (OS_plot_ha):
the total open space area on all plots within the study area, in hectares

FLOOR SPACE INDEX (FSI):
(the total floor area within the study area) / (the area of the study area, in meters^2)

GROUND SPACE INDEX (GSI):
(the total building footprint on the ground) / (the area of the study area, in meters^2)

OPEN SPACE RATIO (OSR):
(1 – GSI) / FSI

% OF THE OPEN SPACE ON PROPERTY (perc_OS_prop):
(the open space on all plots) / (the total open space in the study area)

AVERAGE PLOT AREA (plot_avg)
The average size, in hectares of the plots comprising the study area or block.
(total area of all plots) / (number of plots)

AVERAGE LEVELS (levels_avg)
The average number of levels in the buildings in the study area. The number of levels for each building and number of buildings is part of the base data, hence it is simply a matter of computing, in MapInfo, the average.

(3) Enclosure (interface analysis)
The category of enclosure measures relate to the spatial definition of the block and the block's entrances. Connectivity between buildings and the formal street space versus connectivity on the internal side of the block between buildings and the private property (e.g. informal) open space was derived using the address points for each study area, considering these as proxy measures of entrances. Both enclosure and entrance measures utilized a 10 meter buffer generated from each block perimeter and inward to capture

objects overlapping (hence within) versus not overlapping it's area. (These will all be illustrated)

BLOCK PERIMETER[8] (perimeter)
The total length of the line where public and private property meet for the block.

ENTRANCE DENSITY (entr_to_area)
(total number of address points) / (study area in hectares)

% INTERNAL ENTRANCES (percent_int_entr)
Internal entrances were defined to be those address points inside the 10 meter buffer, while external entrances were those outside the buffer. The share of address points not located within a 10M buffer inside the property line is the share of internal entrances, as a percentage.

PRIMARY ENCLOSURE (encl_pri)
Performed by creating a buffer of 10 meters inside the block perimeter. The overlap of buffer to building mass within this zone was divided by the area of the buffer zone itself to quantify enclosure as a percentage:
(area of building and buffer overlap) / (total area of buffer)

PERIMETER EXPOSURE (expo_per)
The area of the 10 meter buffer inside the block perimeter not overlapping a building, in effect this is the inverse of the enclosure measure, thus also a percentage: (1 - ENCLOSURE)

SECONDARY ENCLOSURE (encl_sec)
The percentage of the block perimeter that does not overlap with building but is enclosed by a secondary boundary, such as a fence or hedge. This is not performed using GIS, but is possible on an area-by-area basis either when the basis of the analysis is the detail plan or when satellite photos or knowledge of the site may be used to supplement the derived primary enclosure measure.

Figure n. illustrates enclosure and exposure using circle diagrams.

Figure n above demonstrates the difference between primary and secondary enclosure. Total enclosure is the sum of the primary and secondary enclosure as a percentage of the perimeter length; perimeter exposure is the sum of the unenclosed perimeter length and the secondary enclosure. By including the secondary boundaries, perimeter exposure captures the degree to which the perimeter is open, whereby the open space of the yard is subject to the potential gaze of those outside of the block in public space.

(4) Mapping (surface analysis)

[8] This produced an aggregate of plots (e.g. private property) in a "block" formation even in cases where the block was not easily picked out visually. All the study areas hence equal one block, according to this definition.

Within the open space on a plot there exist territorial variations due to what was proposed in Chapter 5 is a tacit control from public space into private space when inter-visibility is high. Further, another tacit control was argued to emanate from buildings and outward as a territorial "shadow," but known in some legal contexts as "curtilage." The perimeter exposure measure alluded to this as the potential visibility and consequent lack of privacy. In order to experiment with characterizing the open space on private property on the basis of implicit control, measures for mapping the surfaces from a territorial standpoint were designed9. According to Jan Gehl, even at a distance of around 22-25 meters, most are able to read facial expressions and emotions (Gehl 2010). Following this reasoning, 20 meters was buffered from the block perimeter into the properties analyzed. The resulting zone (minus buildings) was called simply exposed. It represents the tacit 'control' and compromised privacy that the knowledge one might be observable is likely to exert on an individual using the courtyard. Similarly, immediately adjacent to the building, a territorial shadow must be accounted for when multifamily buildings are the object of study10. The building shadow is the zone in which the building itself exerts an implicit supervision of the space immediately adjacent, affecting how easily it is appropriated. A metric is defined to quantify this buffer, which corresponds to the unlikelihood of the space in question being appropriated by anyone except an immediate resident. It has been argued, drawing on Alexander Ståhle's analyses in Stockholm (Ståhle 2008), that primarily the immediate resident feels sanctioned to use this space when there is direct access. Without direct access, this zone may be un-appropriated[11]. The remaining open space is that in which one has a "reasonable expectation of privacy" based on the definition of curtilage introduced in Chapter 5. The size of this category of open space, in effect that which is left after all other categories are accounted for, is taken as the most usable portion of the open space on the plot. (These will all be illustrated)

EXPOSED SPACE

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[9] These analyses were done on recent detail plans as a separate empirical study to be reviewed in Chapter 13 in this thesis.

[10] It is assumed that in single-family configurations, where the facade of the building is entirely controlled by one resident, that the territorial shadow ceases to matter, and all the open space except for exposed space is curtilage.

[11] Important to note is that the so-called "disturbed zone" exists both within the property and into the public realm. Extensive photo documentation by Ståhle shows that where shared private space is concerned, residents generally do not appropriate the space immediately next to the facade unless their own apartment is on the other side. The building in effect exerts a 'control' on the ground immediately adjacent. It is not uncommon for the buffer to be used for access to the different points of entry to the apartment buildings; however the patches in-between do not always invite use.

Ståhle experimented with a 10 meter buffer around buildings, using this to test the extent to which public space is "disturbed" by private buildings. In this study, this depth been reduced to 5 meters since the residents are presumed to be not as disturbed by buildings in their own residential configuration.

The area of open space on the plot that is within a 20 meter buffer from the block perimeter:
(buffer area minus the overlap with buildings) / (total open space area on the plot)

BUILDING SHADOW
The area immediately adjacent to buildings, created by buffering 5 meters out from each building on the plot.

AMBIGUOUS SPACE
The area of overlap of exposed space and building shadow[12].

CURTILAGE SPACE
The remaining open space after exposed space and building shadow are accounted for. Note to self: check that this definition corresponds with what is argued in ch5.

8.4 DISCUSSION

Intersubjectivity is the notion that consensus and shared experiences are essential to shaping conceptions and relations (sources). Language, for example, is viewed as communal rather than private and the individual is seen as part of a communal world, one that derives meaning from other subjects as well as the environment. MEME? To the extent that perceptions are shared, e.g. intersubjective, a layer of social resonance give meaning to what are otherwise mute and all-too abstract spatial measures. An underlying assumption of the research is one of intersubjectivity; that the questionnaire, while producing qualitative data, gives meaning to quantitative spatial data. The method outlined here, based on a triangulated research design, merges quantitative and qualitative data as well as established and experimental approaches in order to examine how territories perform with both breadth and precision. The aim is two-fold: First, to produce more robust theory on how territories may be seen as products of urban form, as the interplay of people and their environment. (cite Lars forthcoming?) Second, it is hoped that by using parallel methods – namely questionnaire, spatial analysis and site audits, that it will be possible in the end to propose what it is important for the urbanism professional to factor in when *designing territorially*. Certainly, there are strengths and weaknesses to each approach, which may become evident as the research tests these methods alongside each other. There is also an experimental portion of the method, which focuses on the mapping procedure. Is it possible to define zones of space and describe their

[12] The term *ambiguous,* draws as does the research project itself, on Ståhle's dissertation Ståhle, A. (2008). Compact sprawl : exploring public open space and contradictions in urban density, Diss. Stockholm: Kungliga Tekniska högskolan, 2008. In it, an analysis of post war modernist areas in Stockholm concluded that as much as 14 -15% of private property open space was comprised of what is there termed 'private pseudo-property' but derived in roughly the same manner. The ambiguity derives from the space being private (in terms of legal status), but simultaneously 'controlled' by its exposure to the public realm and 'disturbed' by the privacy of the buildings.

probable territorial character? Several new measures are proposed drawing on theories important in the research; most notable among these are enclosure as a proxy for boundaries. Introducing the triad of exposed space, building shadow and curtilage allows the mapping to take into account the probable result of configurations of buildings and open space as well as routes of access. As such, it accounts for not just the intended territorial subdivisions often asserted by boundaries, but also the perhaps unintended ones. The experimental portion will be described in reference to analysis of recent development proposals in Part IV of this thesis. Part III, however, will be based on the triangulated methodology outlined in this chapter, culminating in correlation analyses to test interrelationships between spatial and social variables. The social results will inform the spatial descriptions of the objects of study, producing a sociospatial reading of urban territories, as few disciplines are better suited than architecture to do.

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Sennett, R. (2008). The craftsman. New Haven, Yale University Press.
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11. MEASURES THAT MATTER

> *A major development in the last 20 years is a much greater consciousness of the morphology of cities – that buildings need to fit in, and even if they contrast, you have to be conscious of what they contrast with. (Sir Richard Rogers in Architecture Today 2009: 34)*

We have seen that as space is framed into small or large, open or closed configurations, spatial variables interplay to affect the utility of the territories thus produced. At this point it should be clear that how we architects label space, whether as semi-private, private, semi-public and so forth actually says very little about how the spaces perform territorially. Density matters to both use and sense of ownership, as does the way in which the density is distributed, but in different ways. If we want to support *use* of yards, we must be mindful of preserving the size and spaciousness of the open spaces, but for *ownership* smaller spaces may be more easily appropriated. However, by far the most compelling spatial variable relating to sense of ownership and to personalization of space (so-called ownership-appropriation) is enclosure. Moreover, accessibility within the street network matters to safety and thereby to how spaces are personalized with traces. Chapter 12 will illustrate with some examples how interventions to the urban form and built environment may alter the territory's functionality. Before that however, this chapter will set about to narrow down the relevant spatial components into a workable approach for practitioners.

11.1 MORPHOLOGICAL CONTROL

The emphasis here will be on how to condense the previous two chapters' empirical and theoretical findings into some key measurable characteristics pertaining to the utility of spaces as territories. These by no means give the complete picture on urban territoriality, but should rather be seen as a first step in proposing criteria for a desktop analysis. It is assumed here that conducting questionnaires is in general too costly and time-consuming for most architects or planners faced with making territorially significant decisions in their designs and plans. Besides, architectural interventions are often made where there are no existing residents to query or traces to be sought, for instance in new development. Sometimes it behooves us in our professional role to be able to say something beforehand about what the territorial outcome is *likely to be*. Fortunately many correlations between response patterns and spatial factors had statistical significance and are thereby generalizable. This means that we can study a proposal and make educated guesses about what kinds of territories are going to be produced, if we look

at the right indicators, e.g. the configuration of density, open space and enclosure for starters. To do this, we need first to operationalize the measures and in some cases make refinements as to how the analysis is performed.

Chapter 2 discussed why the lack of territorial awareness among practitioners of architecture and planning is problematic. One of the issues addressed there is that spaces are not understood to have territorial logic. Or, if they are, the terminology is inadequate to describe territorial behaviour. At issue are the concepts like semi-private and semi-public, denoting the transitional spaces between the private and public realms. Since there is little in the way of accepted convention as to how to use these terms, concepts stay abstract, e.g. difficult to pin down. What is proposed here therefore, as sociologist Mats Franzén (Franzén 2003) argues, is that "instead of seeing the world as abstract and static, to observe the world as concrete and dynamic . . . . observant of context and consequences"[1]. Franzén's point is here understood to be that only by being more concrete may we actually tackle and describe dynamic phenomenon. The premise of this research is that studying the morphology is precisely such an endeavour to be more concrete.

The question then is how to go about being more concrete about territories? Terms like *semi*-this and *semi*-that are confusing because they are relative only to each other; as transition zones, they depend for meaning on being somewhere between public and private (themselves vague concepts). The attempt to define territorial zones in terms that do not emanate from notions of private and public does not mean that private and public are irrelevant to territoriality. However, it is hoped that an approach based on control rather than on privacy might be more workable in urban design practice. If we define and map spaces in terms of control, then we are made more conscious as designers of *whose* territorial utility is being safeguarded (or compromised). Of course the result may be more or less privacy. Control is central to the concept of privacy. Adam Moore (Moore 2003) argues precisely this, stating that privacy is about "control of access" to the person or to information about the person and that while privacy is a relative concept (differing between cultures and species), it is in an objective sense also essential to human well being.

Recall that a point of departure for the research was that physical boundaries, or the lack of such boundaries, probably affects secrecy, exposure affects

[1] The quotation, translated from Swedish by the author, is made as part of a reading of Henri Lefebvre and

solitude and congestion affects anonymity, based on Ali Madanipour's (Madanipour 2003, 37) assertion that independent components of privacy each probably have their own spatial parameters, discussed in Chapter 2. What is therefore suggested here is that in order to get any closer to understanding the spaces between public and private (including collective social space) in a *performative* sense, we must consider these as relative to the morphological context first. Based on the findings, we can say that yes, control is a key to the type of territory produced, as seen by the role played by enclosure for sense of ownership. Is it possible then to be more precise about what control is morphologically?

We can consider sense of ownership and use as having different *control parameters*. Spaces that are controllable, such as smaller and more enclosed yards, elicit greater sense of ownership than do large open spaces, which in turn are used more. This finding is perhaps not novel, as Oscar Newman identified control as a key for resident involvement in his design guidelines entitled *Designing for Control* in 197n. Thinking of the relevant spatial variables in terms of control is helpful in considering the spatial context in design. After all, the job that enclosure does is to allow control of access, visibility or both. Use, on the other hand, does not hinge on enclosure, preferring rather size and spaciousness; accordingly control is not the basis for use. For use, control (enclosure) is less important; for ownership, control (enclosure) is more important. If we want to produce use- and ownership-utility in yards, predominantly enclosed *and* relatively large yards should be sought. Alternatively, we might consider the open space within a configuration as an assemblage of territories where some better serve ownership and some better serve use. That is, we combine use and ownership affordances in the same project or district but not necessarily in the same spaces. In this manner, context measures combine with density measures and control measures, such as enclosure to produce spaces with potential territorial potential. We might see the spatial variables at each level of scale producing outcomes understood in social terms as access, visibility, and legibility, which are different facets of territorial "fitness". Fitness captures the notion that the space produced may be more or less adequate for the job, whether this is to serve as an arena for ownership or of use or both. In some cases the territorial fitness is such that a space is produced with the requisite combination of context, density and control to be understood by most users of the space to be a *yard*. Seen this way, when a yard is produced, a socially and moreover collectively meaningful space (or place) has emerged. The implications of space becoming place will be discussed shortly.

11.2 MAKING SENSE OF USE VERSUS OWNERSHIP

Chapter 10 discussed traces, taking these as evidence of the emergence of social behaviour in some yards. One might expect that traces of ownership also signify use, since additions/alterations to the environment in the form of toys, furniture and plantings obviously suggest that some time has been spent in the space. However, these types of (intrinsic) traces correlate neither with frequent use nor with the urban form variables tied to frequent use (spaciousness and low enclosure, for instance). The intrinsic traces (as opposed to extrinsic traces) correlated strongly with the sense of ownership, as well as to enclosure, which was the strongest variable tied to sense of ownership. Thus, it was proposed that such traces should more accurately be considered as "ownership traces" than as "traces of use," which the site audits had set out to capture. So, while it may be difficult to sort out the dialectic between use and ownership, we can safely contend that they represent different facets of appropriation. We appropriate in using space, but more lasting appropriation is tied to feeling ownership.

Ownership, it was argued in Chapter 10, is a dimension that we must better consider, since the emphasis is often on use alone. Use, it turns out, is hard to pin down and most resident respondents in the questionnaire never used their yards at all. Further, the activities that constitute use are elusive, with most respondents selecting "other" rather than "eating/barbecuing," "play with children," "sunbathing," or "gardening." Should a similar questionnaire be undertaken again, a fill-in response option might shed light on what residents *actually* consider use, since the response-options given do not seem to cover everything. Does passing through the yard for a moment on the way to the entrance count as use, or the minutes it takes to lock one's bicycle in the yard? The results are simply inconclusive. Yet use generally and types of use like those mentioned in the questionnaire are often what is the focus in the design of yards. In fact, program elements associated with these presumed uses are so ubiquitous as to seem in some cases checked off a hypothetical list of requirements for yards, in the Swedish context anyway. As it seems that ownership has distinct spatial considerations, when we focus too much on use, it may be to the detriment of sense of ownership. Unaware that what is assumed to signify use (like traces left behind) rather signifies ownership, architects might unknowingly plan new development with low enclosure and large open spaces and be surprised on returning later to find few signs of appropriation, little personalization of space with plantings and furniture and a lower sense of ownership reported by residents. As it happens, this is exactly what was done in the large-scale wave of modernist planning in the 1960s and 1970s in Sweden. As we saw in Chapter 10, it is the structure

and morphology of the yard that is crucial for use and ownership. Extrinsic traces do not correlate with ownership and in fact correlate negatively with use! Humbling for the architect or developer then to learn that we cannot correct with programming what we have not provided through the morphology.

If areas are designed with smaller open spaces and more enclosure, sense of ownership may flourish, but not frequency of use, according to the findings thus far. This is a bit of a quandary for the architect/designer looking to provide open space with utility both for ownership and for frequent use, but perhaps there is a happy medium to be found. Figure n shows use and ownership on separate axes, as shown in the discussion in Chapter 9; here some yard configurations have been added to the graph as examples intended to clarify how different yard types might, in theory land on the graph.

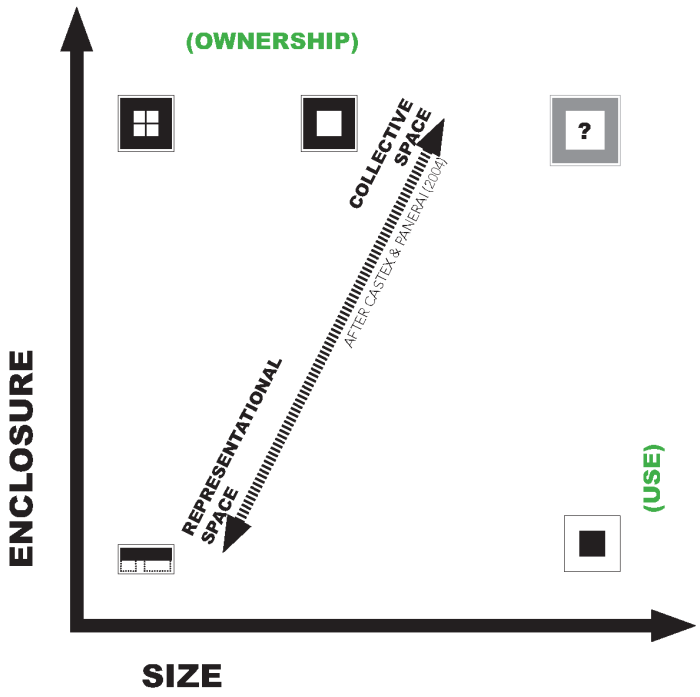

Figure n. Use and ownership graph with typological areas.

Representing the low-use and low-ownership position is the unenclosed front yard (A); with it's small size and low enclosure we would expect this yard to elicit little use or ownership. Next, frequent use is represented by the slab building (B) set in a field of open space; we may call this a yard, but as seen in Chapter 10, how the open space is programmed may have very little to do with the frequency of use. What the findings suggest is that excessive

programming of the open space to make it more yard-like may not have the desired effect on use. Use is rather tied to size and spaciousness as well as to low enclosure. Hence, even a park-like setting with lawns and landscaping might do to encourage use. We should not be surprised, either, if residents do not identify this as a "yard." Perhaps the conceptual entity of yard becomes difficult to grasp when the open space is part of a larger, continuous field. In such open yards, traces were observed to be in general terms lower than in more closed yards.

The high ownership, low-use yard in the graph is represented by the subdivided open space within a perimeter block (C), as in areas M11 and M12 in Malmö. Here, sense of ownership was high and appropriation traces plentiful. Use was very infrequent in these yards, although many residents cited barbecuing as the activity they most often engaged in on these yards. The combination of intensity of traces and eating/barbecuing practices suggest that these small yards may be highly domesticated and function as extensions of the residents' living space. However, it may be that the strong ownership enjoyed by some may negatively affect use by others. This is implied by the low frequency of use in the highest ownership yards, but again more research is needed on this aspect. Certainly it stands to reason that a highly personalized space may be less inviting to use for someone else, even to another resident sanctioned to use the space. Fill-in responses to the questionnaire indicated that the sense of being watched was a factor in the smallest yards (M11 and M12) and site visits confirm that when the yard is very small, there is nowhere to hide, as it were. A worthwhile follow-up study might be to look at whether it was the ground floor residents in these areas who felt strongest ownership of the yards having stronger visual contact with the yards. In this context, it is a bit puzzling that the drive to personalize the space is so evident. Traces of ownership were everywhere in these yards, in the form of toys and plantings and several barbecues. The redundancy of grill suggests that some residents prefer their own grill rather than sharing, but we can only guess as to whether this reflects a low social coordination in these particular high-ownership yards. Notably, % residents here wished for a private terrace, implying they saw little value in the collective social function of the yard. We might infer then that the appropriation reflecting high-ownership in small yards may be an individualistic appropriation, as opposed to a more collective appropriation, although more study is needed.

To the extent that it is possible to combine use and ownership, this seems to occur in the large and enclosed or almost enclosed yards (D), like S09 and S08[2]. Here it appears that enclosure is not a strong deterrent to use, rather the size of the open space and spaciousness OSR (the density measure which captures the pressure on the open space Berghauser cite) have stronger bearing on use. The large non-subdivided perimeter blocks were the most yard-like according to respondents in the Malmö questionnaire. We should be careful not to see these yards as a perfect synthesis of use and ownership however, since what respondents identify as yard appears to align with ownership more than with use. Important from the standpoint of the yard are (list variables). Traces were plentiful in this type of yard, generally speaking, but the size of the open space prevented them from feeling over-appropriated or too personalized. Rather, the impression was of multiple uses co-existing. We might speculate that the appropriation seen here is more communal than in (C), that objects left behind are not for the exclusive use of whoever placed them there. This is because use is relatively frequent in these larger yards; claims made on the space are thereby premised on the space being shared, perhaps even more contested as a result. A greater intensity of use means that a territorial claim might at any point be challenged.

It is not clear whether appropriation by traces should be seen as *communicating* ownership or if this is a practice that serves to *enhance* ownership. Perhaps a bit of both; it is conceivable that the act of altering the environment with markers and traces strengthens the sense of ownership. The high intensity of traces in some yards might be seen as a sort of feedback-loop in which ownership is strengthened by way of traces placed out in the space, eliciting more ownership and more traces. This is purely speculative though. That there appears to be a drive to personalize and communicate ownership in spaces where sense of ownership is high is a safer claim. This form of appropriation is recurrent enough in the examples studied to suggest a pattern that the correlations with sense of ownership also confirm. Anecdotal evidence suggests that leaving traces becomes a local culture in some places. Someone starts with plantings and grills, and others follow suit. If this type of "snowball effect" occurs, it would help explain the very high intensity of traces in some yards. This is unconfirmed so far in the areas studied.

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[2] Both S08 and S09 have no balconies, meaning that residents have no place to enjoy the outdoors beyond the yard. It is not clear but likely that this fact in combination with the spaciousness and OSR has an impact on the high rate of use in these yards.

11.3 PLACE AS AN ARENA OF ACTION

add anything here from new literature?

In an article entitled, "Between Geography and Philosophy: What Does it Mean to Be in the Place-World?" Edward S. Casey makes the following distinction between space and place:

> "I shall presume the importance of the distinction between place and space, taking "space" to be the encompassing volumetric void in which things (including human beings) are positioned and "place" to be the immediate environment of my lived body – *an arena of action* that is at once physical and historical, social and cultural" (emphasis mine; Casey 2001)[3].

It is the notion of *arena of action* that is important to dwell on for a moment. Specifically, it is proposed here that appropriation is a question of degrees, that we appropriate space here and now in use, but that we appropriate it more intensely when we begin to alter it with traces and markers that represent an appropriation enacted over time. When residents take certain liberties with the space in question, or more precisely with the *place* in question, this is an indication that an arena of action is at hand. Use may also depend on an arena of action, but even habitual use is less territorial than ownership. Drawing on Bourdieu's notion of *habitus*, Casey posits that:

> "This world presents itself to us as a layout of places, the activation of habitus expresses an intentional and invested commitment to the place-world. Even if it is the internalization of social practices in its origin, in its actual performance a given habitus is a reaching out to place, a being or becoming in place" (Casey 687).

Essential to the notion of place, argues Casey, is that the importance of self to place is a reciprocal relationship, whereby place emerges by our engagement with it and the self in turn is enhanced by holding places dear in consciousness or memory. Places, therefore become significant as where "we orient ourselves and feel at home" (Casey 685). In satisfying certain qualities of "yardness," open space associated with residential buildings are inhabited and emerge as *places* by the "activation of habitus". The arena of action in fact emerges from appropriation of space; appropriation might then be seen as encompassing the various practices by which place emerges.

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[3] Casey argues that it is in order to maintain the dialectic between place and space that he prefers space to Edward Soja's term spatiality, but acknowledges the importance of Soja's concept of "thirdspace" as "a world that is not only perceived or conceived but also actively lived and receptively experienced" as a social, historical and spatial notion (Casey 687 and Soja cite properly).

If yards, by virtue of being appropriated are arenas of action, it follows that low-use and low-ownership spaces, being un-appropriated *are not*. These are spaces (for they remain spaces, not places) that have not been transformed by appropriation into socially meaningful arenas (like social territories). Un-appropriated territories are thereby more akin to what Panerai, Castex, et al refer to as representational (versus appropriated) space[4] (Panerai, Castex et al 25; 84). The meaning of such spaces is more symbolic than functional (refer to Lars Marcus). However, high-use places, whether these are open yards or even local parks, may also satisfy the requirements of place, in that they exist in our consciousness and have meaning to us. Space becoming place then depends on appropriation, but this appropriation can occur by way of use or ownership practices. The "problem spaces," which have been conceptually invisible in practice, are the territories associated with residential buildings that elicit neither use nor ownership by residents. Problematic socially because they miss being meaningful to its residents; problematic economically, since the cost of upkeep is difficult to justify; and problematic from a land-use perspective as well since this is space that might have been used better.

Figure n. Space configured in low-use front yards rather than in the back, where greater social utility might have been achieved.

According to what we have seen so far, we can see that the morphology provides different potentials for ownership and use. Hence it is important to recognize that producing low ownership was actually an aim of Modernist planning. In the morphological landscape of a freeing-of-the-ground paradigm discussed in Part I, un-appropriated "non-places" are simply a by-

[4] The classic example of representational space in a residential context is the suburban front lawn, with its historic antecedents in the landed estate making visible the extent of the land-holdings by way of a winding, tree-lined approach. (cite properly)

product of the "absolute freedom dreamed of in high modernism" (Casey 685). Sven-Olov Wallenstein, in a philosophical discussion on Mies van der Rohe's early work and influence for the Modernist tradition, cites the "radical domination of nature and dissolution of the individual" (Wallenstein 9) as part of the "loss of connection to the earth and ground" (30) and consequent "interiorization of social life" (24). Further, drawing on Cacciari, Wallenstein claims that modern architecture is an uprooting of place as connected to dwelling (Wallenstein, see also Cacciari's discussion in Dal Co's essay "Dwelling and the places of modernity" 1990). Thus, we might say that the morphological *intent* in much of modernist architecture simply embodies that "the quintessential modernist view of the relation between place and self is that *there is no such relation*" (Casey 684). Seen thus, we should not see low-use and low-ownership spaces as a *failure* of modernism, but rather as the realization of a model for a different time. If the aim was to "erase the traces" we might call modernism rather a success in carrying this out (Wallenstein 57):

> The "traces" that bourgeois life secretes severs us from the collective, they become reified markers of a sealed-off individuality, whereas for [Walter] Benjamin the true task is to forge a mode of life that opens us up to the communal, all of which in its first steps must imply a certain "destruction." (Wallenstein drawing on Walter Benjamin 57)

The "mistake," if you will, was to expect that out of a rationalist *tabula rasa* approach, with a barely-veiled contempt for places (and traces) as attributed to Walter Benjamin above, a stronger collective would emerge. If we undermine ownership morphologically, we have seen that while the traces do go away, so also does the sense of ownership that appears to be the basis for appropriation, both individual and collective. Appropriation is, as stated previously, in this research seen as taking action to shape one's environment, but leaning on Casey in the aforementioned section, the shaping is as much of the self (or in the case of collective appropriation, the group) as it is a shaping of the territory (place). It is argued here that appropriation practices thus reflect the degree to which individuals perceive that a space is an arena of action. What is important to note is that this is a dynamic relationship; territories are arenas of action that must be upheld to persist and are altered by interventions. Claimed space may at any time become contested; unclaimed space may at any time be claimed. If we accept that the role of the individual is greater when an arena of action is present, appropriation can take the form either of individual appropriation for personal use, e.g. "this is mine" or we may see more collective appropriation, e.g. "this is ours". A private terrace is an example of the former; open space that performs as a yard (socially as well as spatially) is an example of the latter.

Where collective appropriation has not emerged and is not morphologically supported, individual appropriation may be seen as preferable to the alternative – unused space. As one developer related in the course of the research, a justification for placing more of the available open space in private terraces is that no one uses their yards anyway. (This was also an argument for having very small yards, a consequence of maximizing the density, FSI). If yards are seen as satisfying program requirements of planners but having little value for residents, then pushing for yards in new development seems naive. But if we recognize that the morphology has something to do with appropriation then we open up to objectives that the design can address, thereby shifting the discussion from *whether* we should produce yards at all to *how* we should produce them, depending on what parameters are already set and which outcome we consider best in each case. The next chapter will look at interventions that already occur to territories to see how these fit with the findings so far.

11.4 PERFORMATIVE MEASURES

Control is argued to be a better criterion for categorizing space than an arbitrarily defined label on the public-private spectrum in that it has a performative basis. Insert Space Matrix performance quote. Table n organizes the measures that relate to the findings regarding territorial outcomes. For purposes of operationalizing the analysis, the outcomes have been narrowed down to Frequency of use, Sense of ownership, Safety, Presence of strangers, Peace & quiet and Sense of having a yard. In the horizontal columns are the variables found to correlate with the aforementioned outcomes; only statistically significant variables are included here. (Appendix n contains the full table of correlations including the Pearson's coefficient indicating the strength of the correlation). These are organized from the scale of the context via density and size variables to the scale of control variables and will be described below, each in turn.

First, the findings indicate that context measures are not so relevant beyond the very local network integration, which correlates to sense of safety. Hence, r2 at 500 meters radius is the only context variable included in the table. Next, the density variables FSI, OSR and GSI are listed. These capture the relationship of open space and built area and relate closely to one another. As FSI increases, unless the density is added by stacking the additional area on the existing building footprints, then coverage GSI will increase. Hence the GSI may in some cases be similar to the enclosure measure in terms of

capturing how enclosed the perimeter of the block is at its property line, but only in cases where the building mass is concentrated to the perimeter (property boundary). This is quite often the case in high-density urban tissues. As should be clear, while the density measures do not have to do with control explicitly, they certainly do implicitly, especially the GSI[5]. Further, spaciousness OSR captures the pressure on the open space, as the FSI is an indicator of how many potential users of the open space are in a given scheme. Assumptions can be made about aspects like anonymity on this basis alone, however in order to assess the control more explicitly, it is necessary to look at the interface of urban form and open space in greater detail.

TERRITORIAL OUTCOME:	r2 integration 500 Meters	FSI	OSR	GSI	Open space on prop (ha)	Enclosure	Exposrue (inverse of encl)	Entrance density	% internal entrances	*frequency of use*	*sense of ownership*	*peace & quiet*	*safety*	*strangers*	*sense of having a yard*
Frequency of use		-	+	-	+	-	+	-							
Sense of ownership		+	-	-	-	+	-	+						-	
Peace and quiet															
Sense of safety	+														
Strangers present					+	-	+	-			-				
Sense of having a yard	+	+	-	+		+	-	+	-	+	+	+			

Table n. The operative measures at each level of scale: the spatial variables relating to context, density and control measures represented by the green categories and some of the correlating social variables in grey. Note that the exposure measure is simply the inverse of enclosure. the strength of the correlations is indicated by the shade of the box, where darker indicates a stronger correlation. Keep or remove the social variables at far right??

Features like the open space size, enclosure, entrance density and the percent of internal entrances all say something about the possibilities for territorial control. The size of the open space affects the potential for surveillance, for starters. Beyond this, a high entrance density overall[6] facilitates spontaneous meetings with neighbours and is therefore a factor in promoting social interaction, as seen with the correlation to spontaneous meetings with neighbours in the questionnaire. Surveillance may also be seen as a form of social control, which hinges on being able to tell resident from non-resident, for instance. Sense of ownership correlates with higher entrance

[5] One might consider even density to be a matter of control, recalling that among animals, the mechanisms of territoriality are about regulating density of populations (cite Hediger). In fact, even network integration, being a factor in accessibility might be said to relate to control.

[6] It is unclear at present whether entrance density on it's own should be considered or if entrance density corresponds simply increases with greater enclosure. It is worth noting that the correlations with entrance density mimic those of enclosure, supporting this suspicion.

density. But, if the percentage of internal entrances (versus external entrances) is high, more non-residents (including postal workers and visitors but also strangers in general) tend to pass through the open spaces. This compromises the sense of having a yard, according to the findings. It follows that perhaps the most obvious measure relating to control is enclosure, since this affects controllability in a literal sense, being a boundary and thereby a means of excluding strangers. So far the variables stem directly from the empirical study.

The remaining variables in the table are control measures for which some refinements are necessary. These will be discussed in turn, beginning with enclosure before introducing some new measures. Since it has been argued that foregoing the focus on degrees of private vs. public is necessary, a system for mapping the open space in terms of how the urban form *itself* sets up situations of control will be outlined. First the difference between enclosure and exposure must be clarified. The enclosure measure as it was used in the empirical study captures the percentage of a 10-meter buffer from the property line that is built. It follows therefore that any correlations found between enclosure and responses to the questionnaire (as well as traces in the site audit) apply also to the exposure, here defined as the un-built percentage of the buffer. The exposure is simply the inverse of enclosure (thus the correlations are inverse as well). However, it is important to also consider the boundaries made up not of built form but of so-called secondary boundaries, like hedges and fences and this complicates matters a bit, since secondary boundaries may still allow visibility into the enclosed space. (Secondary boundaries were found to matter, for instance in areas M20 and M70). So what is meant by exposure vis-à-vis visibility must be refined. As we know, accessibility and visibility do not always align; from this point on, enclosure will consider both primary and secondary boundaries, and exposure will consider both the opening in enclosure as well as the secondary boundaries (these include anything below eye-level).

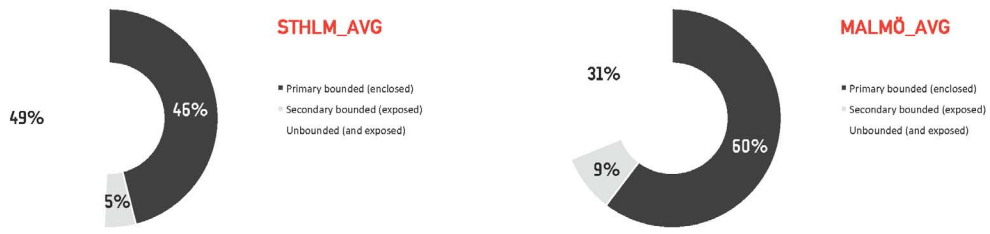

Figure n. Illustrate exposure measure versus enclosure in circle diagrams.

While enclosure is derived from and limited to the 10-meter depth described above, exposure, being a measure of visibility rather than accessibility may extend far into the property. For our purposes, 20 meters will be taken to approximate (albeit bluntly) the degree of exposure felt by a person in their yard to a person in the public realm or on an adjacent property. At this distance, it is difficult to make out faces or details, although people are still visible to one another. With this distinction, the enclosure measure is intended to capture *accessibility*, while exposure (an added measure) captures *visibility*. At this point, we can begin to speak of mapping the open space of yards in terms of additional control parameters, which will be developed in the next chapter. Mapping here?

11.5 DISCUSSION

this section should connect more to theory!!
In *Good City Form* (Lynch 1984, 118), Kevin Lynch outlined five basic performance dimensions important to consider in urban design – namely *vitality* (for support of human needs), *sense* (or legibility), *fit* (of capacity and form), *access* (as in accessibility of resources), and lastly *control*. In a territorial assessment, control might be said to result from the interplay of the other variables, especially access and legibility. Fit and vitality, in turn relate to the design being adequate to the task to serve the human demands placed on the space. While these dimensions are helpful to recognize the bigger picture, it should be stressed that being concrete and self-critical as designers about what types of spaces are being produced means using an evidential rather than strictly intuitive approach for making territorial assessments.

It has been proposed here that a performative assessment of territories adjacent to multifamily building configurations can be done by looking at the density variables (FSI/OSR/GSI) supplemented with an analysis of enclosure and the size of the open space. In combination, these measures can give a fairly good picture of the potential for congestion, anonymity and solitude and is a basis for how the open space may perform territorially. Implicit control is affected at one level of scale by network integration, density and size of the open space. Control may also be explicit, as in the control of access or visibility by primary or secondary boundaries, e.g. aspects of privacy control and social control stemming out of contact with neighbours.

What is beginning to emerge is the sense that territorial outcomes emerge out of variations in the relationship between form and space. In this respect, it is crucial to consider the architecture as part of its tissue, as alluded to in the

quotation by Richard Rogers at the introduction of this chapter. Narrowing down the measures which matter to territorial response is a step on the way to making an approach that can be used for desktop analysis. Further research is needed to determine which of the variables enclosure and size/spaciousness are more important and whether there are thresholds for the open space to be perceived as "yard-like." The aim at his point is not to come up with threshold measures, as this would be far too reductive. It is hoped that the role of the designer is strengthened by territorial outcome rather than being cloaked in mystery is made something possible to assess and discuss, once we know which factors to look at. For instance, an architecture firm in Stockholm has begun a follow-up study of resident perception to see what worked and what didn't work in terms of the configurations of open space in the last 20 years' residential projects. With better knowledge of which measures that relate to sense of ownership, frequency of use and sense of having a yard, it should be easier to make sense of the residents' opinions.

What has not been discussed yet, but will be tested in Part IV, is how to go about better approximating what is *usable* open space or space that has ownership potential in a given scheme. To this end, it may in some cases be necessary to undertake a territorial "mapping". This entails looking at the relationship between the urban form and its adjacent open space in terms of how the morphology sets up what is termed *morphological control*. Chapter 12 will outline a procedure for considering in more detail how the implicit control of buildings and exposure from the public realm affect the utility of the open space. An attempt will be made to subdivide open space based on these spatial aspects of control. It has been argued here that the territorial logic of space is often overlooked, which is why terms used in practice relating to private and public are ineffective.

Based on the initial findings, Chapter 13 presents an analysis using the mapping schema outlined above in order to compare how open space is configured in recent detail plans. Chapter 14 looks at the prevalence of exposed space in existing development and speculates about the consequences for street performance when exposed space in the public realm makes interfaces illegible. Chapter 15 proposes strategies for territorial intervention that includes adding density in order to create more "fit" social territories.

12. AN ARENA OF ACTION

> Urbanity, we suggest, is not so mysterious. Good space is used space. (Hillier 1996)

At this point in the text it is necessary to reflect for a moment on the appropriation of yards, with the new knowledge that considering use of yards means considering ownership in a different light. Having seen in chapters 9 and 10 that use and ownership have different supports in the urban form; use being tied to spaciousness and low enclosure but ownership (quite inversely) being tied to enclosure and smaller spaces, here some possible implications will be explored. Apparently, the assertion above by Bill Hillier, that "good space is used space" needs qualification, since good space can also evidently be "owned space." Whether space is owned or used, we may say that it is appropriated as a social territory. In both cases, an arena of action has presented itself, one that may be said to invite the participation and practices of residents.

The tone here will be one of an open-ended discussion, seeking to explain and understand some observed territorial situations based on the findings outlined in the previous chapters, proposing possible interpretations. The empirical material (questionnaire, spatial analysis and site audits) can all be seen as snapshots in time, capturing specific situations at the particular moment of data collection/observation. To an extent, these have been woven together in the three preceding chapters. The point here is to add the dimension of time to the equation, to demonstrate that territories are also dynamic constructs and that morphological and material interventions alter the social meaning of open space like yards. Some transformations pass under the radar of architects, but were we to see patterns where residents "fix" territorial mismatch, we might avoid repeating similar practices.

Appropriation patterns may be seen as representing different degrees of *agency* to shape one's environment, reflecting different potential in the spatial (material and morphological) underpinnings. Were we to better understand where territorial adjustments are made, we can produce better designs from the outset, it is argued. Following a comment on observed trends in territorial interventions, appropriation will be discussed in the context of agency (e.g. an arena of action) and densification. Finally, a recommendation for how to consider territorial mapping will be ventured, which extrapolates from the empirical findings.

12.1 TERRITORIAL INTERVENTIONS

Urban morphologist M.R.G. Conzen, sees the formation of *townscape* as emerging out of human agency applied to three overlapping form complexes – namely town plan, building fabric and urban land use (Conzen 118). As one moves down in scale, the so-called *form persistence*[7] is weaker, allowing the local urban society to adapt their environment in what he terms *human agency in morphogenesis*, namely:

> The intertwined and shifting roles played by individuals, local society, and wider social forces in shaping the physical form of towns and cities (Conzen 248).

Seen this way, the urban form can be viewed as setting up a spatial framework that underpins the *agency* of its inhabitants[8]. Interventions might thus be seen as an example of an articulation of agency that come about as artefacts of the use of land, here studied as practices relating to appropriation. cite Corner?

Figure n shows some examples of alterations to the existing spaces shifting previously low-use spaces into ownership spaces, by way of adding more boundaries. Here, agency is enacted in response to seeing space "wasted." The appropriation takes the form of adding enclosure, thereby reinforcing boundaries; we might see this as a logical response to the presumably low utility of the space. (The utility here being gauged by its low use-value and low ownership-value based on the findings in the research, disregarding for the moment any other potential values, such as ecological value).

[7] Form persistence denotes the phenomenon whereby roads and routes may last for a thousand years, block divisions for five hundred, and plot divisions for less than one hundred. Interventions at the scale of the plot have the lowest form persistence and are in this sense most malleable and subject to change by human intervention.

[8] Naturally, human agency may operate in even inhospitable conditions, appropriating space even in situations that morphologically are not ideal from the standpoint of the findings in this research. The built environment only sets a stage with more or less potential for social territories to emerge.

Figure n. Interventions and alterations making low-use collective spaces into high-ownership individual spaces. Hammarbyhöjden in Stockholm. In the image on the right, the building in the background represents the situation "before" while these realtor images represent the "after".

Describe examples in figure n. In many cases, it appears that the simple addition of enclosure is enough to transform the space. Suddenly, out of an assertion of control, a new territorial entity emerges:

> "A boundary is not that at which something stops but, as the Greeks recognized, the boundary is that from which something *begins its presencing*" (emphasis in original, Heidegger 1971, 154 cited in Casey 690).

Here then, the appropriation of a patch of unused space becomes an arena of action, as discussed in Chapter 10. Place, emerging out of what was previously a low-utility territory. Once the territory has been inscribed, that is *delimited in space by a boundary*; other traces may emerge in time, such as pots, furniture, or plantings. A phenomenon often observed in the course of the research was that traces pop up along the borders, reinforcing the edge and framing the territory further. You might say that the boundary sets in motion an incremental appropriation that may increase over time. Recalling that in systems theory, boundaries are seen as necessary to negotiate difference (Luhrmann), we might simply have to reconsider boundaries if we want to see open space appropriated. What are the design implications of seeing boundaries in urban design the same way, as sites of exchange rather than of exclusion?

Interesting to reflect on is that a modernist urban tissue, as in figure N above, allegedly designed for low-ownership, as outlined above, in the hands of a market-driven development becomes extremely high-ownership once private terraces are retrofitted. What might have been collective space has become privatized, e.g. territorialized for the use of very few rather than many.

> The concept of universal individual privacy is a modern construct associated with Western culture, British and North American in particular, and remained virtually unknown in some cultures until recent times. According to some researchers, this concept sets Anglo-American culture apart even from Western European cultures such as French or Italian.[1] Wikipedia search "privacy"

Add bit here about the changes in society in general toward a more individual-based one. (source)

In another instance, one might consider the removal of enclosure, e.g. the internal subdivisions in the closed perimeter block (figure n) as a means to transform high-ownership but low-use spaces. As examples in Stockholm have

shown, this combination may in fact merge usability with ownership, when both enclosure and size are balanced (not too large or spacious) although further study with more cases could confirm this more convincingly. In the late seventies and early eighties in Stockholm, a wave of such "yard clean-ups" took place by government initiative. The aim was to increase the utility of the open spaces on the assumption that less redundancy in programming would free up more space for recreational purposes (Olsson & Törnkvist 2009). The findings here suggest that this approach was right from the standpoint of increasing appropriation of the yards. In Den Haag, in the Netherlands, a community garden called Emmashof was created in the interior of a perimeter block when this was cleared of light-industrial structures. The resulting garden is park-like in being publicly accessible during the daytime, but with one point of entry and a gate that is locked at night, the garden is a controllable territory. While not a yard in the sense that residents are more sanctioned than others to use it, Emmashof is an interesting model of how to combine open access with territorial control and thereby produce a collective appropriation[9].

Figure n. Emmashof Community Garden in The Hague, Netherlands.

Third, institutional change should be considered as a way to increase sense of ownership in high-use areas. Study area M62 in Malmö was an example where local residents were involved in the maintenance of the yards and an effect was seen in the questionnaire results. Residents here had a higher than average sense of ownership. Prior research has found that interest in the yard can create a forum for collective governance in which residents take care of and develop their yards, but which also may become a forum for tackling other concerns and participating in the planning process (Lind 2005).

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[9] There are other examples of private parks, for instance in London, where so-called *garden squares* initially built for the exclusive use of residents are in some cases open to the public. These are always enclosed and are therefore more akin to private parks than yards.

Figure n. Photo from area M63 in Malmö in the neighbourhood of Holma, in which residents themselves oversee the maintenance and upkeep with support from the municipal rental management, MKB.

Finally, spaces can lose their utility due to interventions that have the side effect of lessening their value as spaces of use or ownership. This might occur when enclosures are removed from low-use but high-ownership spaces, or if spaciousness is altered due to increasing densification. Figure n shows a large block in Stockholm, which was slated for densification with 120 additional units in the center of the courtyard. At the time of this writing, the proposal has been contested by residents and upheld by Hyresnämnden, the renter-occupant interest group in Sweden, however the case may go to court if developer Svenska Bostäder wishes to pursue it's right to go ahead with the municipally approved plan. The insertion of new buildings in the interior of the block would affect the density measures: built density FSI would go up as well as ground coverage GSI, while spaciousness OSR would go down. The findings in chapter 9 suggest that use would be impacted negatively by the decline in spaciousness and increase in density. Ownership might actually benefit from the added enclosure since a publicly accessible pathway currently crosses through the yard. In effect, the addition of two buildings in the centre might create two separate yards whose utility might improve from the standpoint of ownership if the enclosure was supplemented with secondary boundaries along the path, allowing for territorial control. This then represents a case where the architects and planners might have to choose whether to design for use or ownership. Supporting both use and ownership would likely best be served by eliminating the through-access in a design which completes the enclosure. A loss of utility might be compensated somewhat by an increase in control. The space might still be used less, however[10]. It is worth recalling of course that the Detail Plan is a legally

[10] A common practice today is to counter the increasing pressure on open space from added development by investing in greater programming of the open space. This pertains mainly to parks, but in light of the finding that a high degree of programming doesn't necessarily lead to more use, a

binding planning instrument: if the open space is intended to be accessible to the public, e.g. defined as "allmänn platsmark," the residents may not decide to restrict access without applying for a change in the plan, which is a costly process. Hence, it is of consequence to residents how the plan defines the open spaces. It is not simply a matter of ignoring the design intent if real life practices follow another logic.

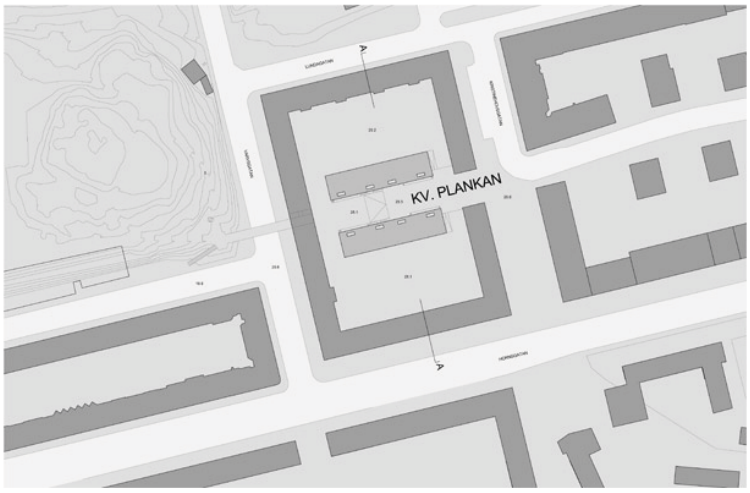

Figure n. Kv. Plankan.

For a designer tasked with shaping built environments, a range of options is available if territorial outcome is considered. Moreover, ignoring territorial responses can be costly, since even the best-intentioned designs may fall-short if they are working against the interplay of morphological and social factors. Figure n shows the urban tissue near Norr Mälarstrand in Stockholm. Here, the open space is framed by U-shaped blocks, legally speaking on public property, but where enclosure is approximately nn%. An ambiguous situation occurs since legally speaking, these 5 "block-parks" are publicly maintained and intended to be publicly accessible. However open space framed in this way is easily read as belonging to the buildings framing the space and in this particular instance many passers-by do not know that these are parks and not yards. The empirical study in this research only looked at the perceptions of residents[11], so we not presume to know how non-residents view spaces such as these, but analyses made by the city district (Kungsholmens Stadsdelsförvaltning) suggest that it is unclear that these

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relevant follow-up study would be to look at whether such compensatory strategies in yards have any effect on use.

[11] There is room for further study in this respect, to better understand whether perceptions of non-residents align with or differ from those of residents.

parks are public and hence problematic that the public investment is not matched by public use (source: *Bevarande- och Upprustningsplan: Norr Mälarstrands Gårdar,* 2012). Meanwhile, residents interviewed in the local newspapers appear to resent that what should be their yards, are for everyone.

Figure n. Norr Mälarstrand, yard or park?

The existing traces of appropriation in these parks documented in the aforementioned inventory on-site confirm that residents attempt to make adjustments to the environment. In an attempt to clarify that these are public parks and not yards, a restoration of the design is underway, the premise of which is to maintain the original intent of the design, e.g. to reinforce the public character of these yards. This will entail removing some of the interventions by residents of personalizing the spaces, like furniture and plantings as well as removing some fences and cutting down hedges. Given the morphological enclosure, and what we can generalize about residents' perceptions from the empirical study, there is reason to doubt whether this strategy of un-doing the ownership interventions to restore use-potential serves the needs of either residents or non-residents. For residents, ownership-potential would be greater if they were allowed to feel control of the space. In fact, here one wonders if perhaps gates on the open side could be used to communicate openness during the day by being left open; these could then be closed at night, allowing residents to feel greater control. This would be an example of not dismissing enclosure outright as moving in the direction of a gated society, but seeing that enclosure may have a communicative role, e.g. a site of exchange, as per systems theory.

Considering these as territories, another strategy might have been to allow the parks to be redesigned as yards, perhaps selling the land to the residents and thereby handing over the expense for maintenance as well as control to residents as well. This is in no way an endorsement of this approach as a general strategy anywhere, simply an illustration of what a contextual, morphological and *territorial* awareness might need to consider among available options. For non-residents, neither use nor ownership can be served if the spaces are so enclosed as to discourage non-residents to enter much less stay in these parks. Of course, it may be that these parks are sufficiently spacious at n ha to have use-value for residents and non-residents, in which case the strategy of leaving the yards open but improving legibility to more clearly communicate the public nature by way of signage might be sufficient. In the original design, a series of terraces transition from the higher internal portion of the yard to the lower portion near the open side, at the street. Whether a subdivision of the space in this manner detracts from use value or it is the overall size and spaciousness that is paramount is unclear at present. Further research would be needed to clarify the difference. It is also conceivable that subspaces within the open space allow more diverse uses and improve utility.

From the standpoint of shifting use-spaces to ownership-spaces and vice-versa, the scale of the intervention needs to be considered. Size and spaciousness, which primarily impact use, need to be considered early in planning proposals when the morphology is taking form. Once built, these variables are not easily altered. Sense of ownership is a bit different. Since enclosure can be altered both on a morphological scale (so-called primary boundaries), and on a material scale, by way of fences and hedges (secondary boundaries), interventions that alter the sense of ownership are possible to perform as retrofit solutions. When enclosure pops up where use is low, we can consider this a logical and perhaps even expected development. Someone recognizes that some potential for the space may be realized by enclosing it and feels enough agency to do something about it. Enacting this territorial impulse signifies that an arena of action is emerging. Once inscribed, if the territory becomes a site of increasing appropriation through traces and alterations, then we might also consider it a social territory. To be clear, it has existed as part of a legal territory all along. A social territory moreover, may be appropriated individually or collectively; the use of the term “social” denotes that it is a human response to a spatial situation, not by definition that more than one human is involved. Once placed in space, appropriation traces, much like the enclosure that first set the stage for ownership to develop, become territorial markers. Applying Bruno Latour’s

Actor Network Theory (ANT), these would constitute actants, objects which assert the territory even in the absence of human agents, discussed in Chapter 5 in reference to the work of Matthias Kärrholm (Kärrholm 2004).

12.2 MAPPING YARDS

When it comes to size, it is clear that a simple measure of the area of the open space hardly captures the experience on-site. In reality, even open space (e.g. not subdivided) contains subspaces defined by what the spaces are adjacent to. In order to capture these territorially meaningful subspaces, the role played by buildings must be analysed further to better reflect the size of the usable open space. Based on the findings, larger and more continuous open space not immediately adjacent to buildings or enclosure is less prone to ownership and more able to facilitate use. Conversely, the space adjacent to buildings and enclosure has more ownership-potential. This is an extrapolation based on the findings. Previously, the term territorial shadow has been used but to operationalize this, a more precise definition is needed. It is common for freestanding buildings to be allowed not closer than 4-5 meters of a shared property line, although buildings may abut the property line shared with public space. This was originally due to fire code but the praxis remains and is in some respects an international convention (Lehnerer 2009). In view of the consciousness that most architects and planners have of this "buffer zone", this depth will be the basis of capturing the territorial shadow or buffer for purposes of territorial mapping in the Swedish context. As this research pertains to private property, the situation of buffer overlapping public property will not be considered here.

An additional subspace occurs where the buffer overlaps with the exposed space. The result is ambiguity, with conflicting control from the public realm (and inward) overlapping with control from the building (and outward). This zone is perhaps better known, if not better-understood as semi-private space. (As a GIS-operation, it is captured precisely as the overlap of buffer zone and exposed space). Figure n shows an ambiguous zone between building and pathway in the first image. Here the building buffer and public realm exposure overlap, creating poor legibility in a territory that is difficult to appropriate by residents or non-residents alike. In the second image in Figure n, the pathway effectively cancels-out the ambiguous zone as described previously. It seems that zones of movement, like public space generally may stabilize ambiguous territories, which is a dimension for potential follow-up research. Recalling Ildefonso Cerda's dialectic between habitation and circulation from Chapter 1 (Choay 1997:237), to be mindful that the zones of

movement and rest are not just figurative but performative distinctions is worth considering. As such, zones of movement may operate under a different logic overlapping and to some extent independent of the territorial mapping outlined here.

Figure n. Example of ambiguous territory (overlap of exposed + buffer zone) in the patches of lawn in the left image. In the image on the right, the zone of movement is nearly adjacent to the building façade, resolving the potentially ambiguous zone, reduced here to a flowerbed (While this image is taken from within a yard, the principle is the same). (Left image: Hammarbyhöjden, photograph by Alexander Ståhle; right image: Stockholm inner city, photograph by author). Differences not so clear, add more examples. why ambiguous, why not.

The buffer may overlap the public realm slightly, as in the Netherlands, where the *stoep* is generally part of the public street[12]. Important to note, however is that the appropriation in this zone, while sanctioned by the municipality, is on the public realm's terms, if you will. It may be in fact that the potential ambiguity is resolved by virtue of being a thin strip by appearances (and formally) in the public realm. There is no assumption of privacy in this zone, rather a bench for people-watching or placing shopping bags while unlocking the door; parked bicycles and plantings are most common objects (traces) left in this zone.

[12] In spite of this the municipalities generally sanction appropriation within the stoep. (source + reason?)

Figure n. Interventions in the "stoep" zone in the Netherlands.

The thin stoep is something quite different from the private terrace/garden placed in the gap between building and public realm, where assertions of privacy are forced to defy the placement in the public realm, as illustrated in an architectural visualization and photos in figure n.

On this basis, and with support in the legal definition of property, we could contend that a building whose façade lies on its property line has its buffer in essence "cancelled out" by the public street/sidewalk. The territory of the public realm is stronger by virtue of being more or less universally recognized.

Lastly, the remaining open space will be considered the usable open space (for lack of a better term). This represents the area least "disturbed" by implicit control from buildings or by exposure to the public realm; in other words, least accessible and least visible from outside the property and it is likely most fit for use, depending on it's size. In legal terminology, the term *curtilage*, (derived from the word *court* in Middle English and *courtillage* in Old French) is used and defined as follows:

> The area considered legally part of a house or dwelling by virtue of its enclosure by a fence or habitual use in domestic activities. (American Heritage Dictionary of the English Language, Fifth Edition. 2011 by Houghton Mifflin Harcourt Publishing Company).

In legal praxis, the curtilage is open space, which may be unenclosed as well as enclosed and is the zone where a resident can have a reasonable expectation of privacy (cite Blomley?). Within the curtilage, law enforcement for instance has restricted rights of access[13].

Figure n illustrates the four territorial types based on morphological control, each in turn. These will be demonstrated in a territorial mapping analysis in chapter 13, considering specific development proposals in recent detail plans using the measures above.

[13] The legal basis for the right to physical privacy is the U.S. Fourth Amendment, which guarantees "the right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures" (source: Wikipedia).

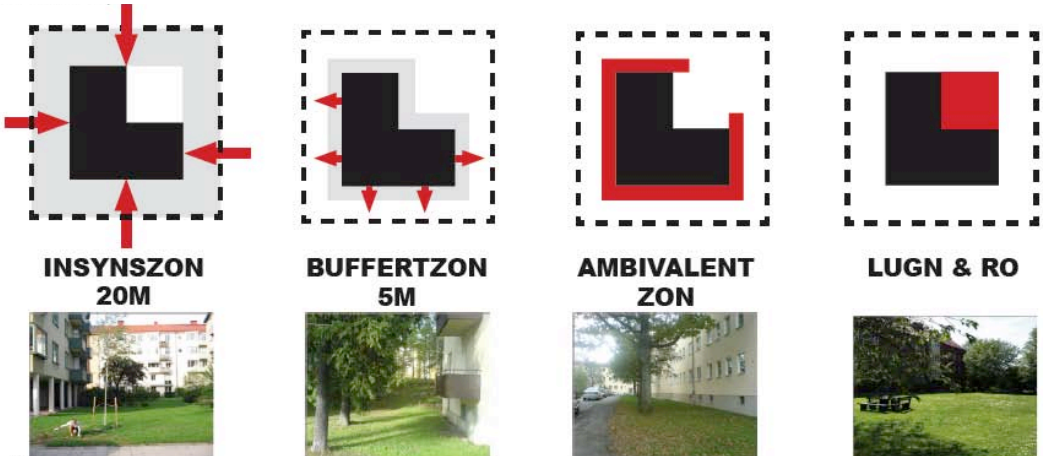

Figure n. Territorial mapping categories: exposed zone, territorial shadow (buffer), ambiguous zone, and the remaining curtilage space.

12.3 A THOUGHT EXPERIMENT

Here, a hypothetical situation will be described to illustrate how territories are transformed incrementally. The purpose is to introduce a sense of what may happen in territorial terms over time. Consider the space around a building, defined in the previous section as curtilage, e.g. in the public realm but too near the building to be used by any non-resident, due to the "implicit control" of the building (Ståhle 2008). Imagine that this space has a depth of circa 5 meters, is bounded on one side by the (residential) building, containing ground-floor apartments without direct access to the space, and on the other side by a public sidewalk that flanks the length of the territorial "strip". Due to the exposure to the public realm, this zone is actually an ambiguous strip. Let us say that the strip is simply a lawn, unenclosed and framed only by the sidewalk and building, as in figure n. By virtue of its size and lack of enclosure, we can assume that residents will not use the strip, nor will they feel a strong sense of ownership toward it. This is based on the findings in Chapter 9. Given this type of setting, a relatively simple intervention undertaken by residents is to place a fence at the sidewalk (e.g. property line), simply to communicate that this is not public space. The space is still not endowed with properties that make it more usable, but suddenly the sense of ownership finds a material support in the boundary.

Figure n. A "territorial shadow" surrounds the building. Solberga, Vera arkitekter.

Alternatively, a hedge might be planted as boundary, which as it grows taller, defines the space more and more as a discrete entity. At a certain point in time, residents may decide to open up direct access to the space from the ground floor apartments, recognizing that the immediate resident has the most to gain by this and that few would likely object since the space is not used by anyone else. Since this arrangement with ground floor access is common in new development projects, residents may recognize that direct-access would improve the functionality of the space and the value of their apartment[14]. Obviously some coordination would be necessary for ground floor access to be implemented in a consistent way; any sense of agency is at this stage shared by the residents initiating the intervention. For this to occur on the initiative of individual residents is unlikely but not out of the question. As the façade is subsequently punctured by entry points allowing direct access and private terraces begin to form as extensions of the living spaces adjoining the territory, visual barriers are likely to emerge between the terrace of one resident and the immediate neighbour, allowing control of privacy. Agency has shifted now to the individual from the collective scale. Each

[14] In fact, this type of intervention would probably be more likely to occur if the tenure was owner-occupant, as when residents were to buy out the building from a public housing authority, but in a market of housing-deficit, even the exchange-value of an apartment traded on a rental market would improve.

discrete terrace now becomes it's own territory, controlled by it's immediate resident. With each subdivision of the initial territorial strip, we would expect agency and thus ownership and appropriation to increase and traces such as furniture, plantings, perhaps awnings, and trellises etcetera popping up little by little. This is speculative to be sure, but the territorial transformation illustrated in this thought exercise represents an amalgam of various territorial situations observed in the process of conducting the research.

The point of the thought exercise here is to bring to light the temporal element, which is part of territorial dynamics. One might venture that what started as ambiguous space, in effect what Alexander Ståhle calls an *ambiterritory* (Ståhle nnnn), an un-appropriated *space* has ended up as highly appropriated *place*. The utility may not derive from any collective value to the residents at-large, this is unchanged; however to the immediate residents, sense of ownership has increased greatly. Whether use has also increased is difficult to say, since the morphological findings suggest that use of yards is rather connected to size and spaciousness. We cannot say whether use of a private space such as a terrace has the same built-form parameters since the questionnaire did not have this as focus, nor were the study areas selected with any consideration of the presence of private terraces, although for instance areas M41, M42 and M43 had some. What we can say is that space has shifted from the legally speaking collective space of residents-in-the-building to the direct individual control of certain residents. One wonders whether the ambiguity is thus resolved. Or, does the curtilage simply move out beyond the terraces? In any case, it can legally extend no further than the sidewalk or walkway that borders the territories, at least as long as the sidewalk communicates its function as public walkway. (Here, the sidewalk becomes an actant signifying the public domain). But while a territorial ambiguity that existed initially may have been clarified, there is now the situation of an informal territory of the private terrace being in the (formal) public realm. This will not be dealt with further here, but suffice it to say that a new territorial situation has emerged.

Figure n. Rusthållaren condominium in south Stockholm. On the left, the ambiguous zone is taken up by plantings within a legible granite edge. On the right, the open yard with a pathway directly adjacent. The pathway leading to Bagarmossen centre is quite well trafficked by pedestrians living to the west of the centre. The fence is a later addition to control access to the residents yard (curtilage).

Another example that relates more directly to the yards that are the subject of this research is shown in Figure n. The configuration of three separate buildings, each partially framing a small yard is an infill was completed in 2002 and comprises one cooperative. It is clear that the morphology attempts to be contextual and embrace the open structure of the predominantly 1950's urban tissue with slab and L-shaped buildings. In fact, it does this with a commendable attention paid to the curtilage zone. Rather than leave this gap as a lawn, as in much of the surrounding tissue, in this case the curtilage is recognized as a low-use zone and addressed in the design by way of a legible treatment comprised of a granite-edged flowerbed (Figure n). But the point here is rather that the proximity to the local centre in combination with the open yards produced some unwanted visitors to the yard nearest the square in the east. As a result, shortly after construction was completed, the cooperative board decided to remove some outdoor seating, likely part of the original program, and erect fences around the three yards. The decision was justified in the protocol as follows:

> "Proposal to remove the seating on yard 1"
> Residents living on the yard nearest Bagarmossen Centre are disturbed by the use of the seating by intoxicated non-residents. When asked to leave, these strangers have behaved threateningly. In order to remove this disturbing element, residents propose removing the seating option and enclosing the yard with a plank or fence.
> (Paraphrased by author from motion dated 2002-09-30)

As a consequence, of two small foreyards along the street which were initially a morphological gesture signalling pathways between the buildings, only the one nearer the square now actually leads anywhere. The other foreyard ends a bit abruptly in a fence. In any event, a bit further on, it would have ended in the building opposite.

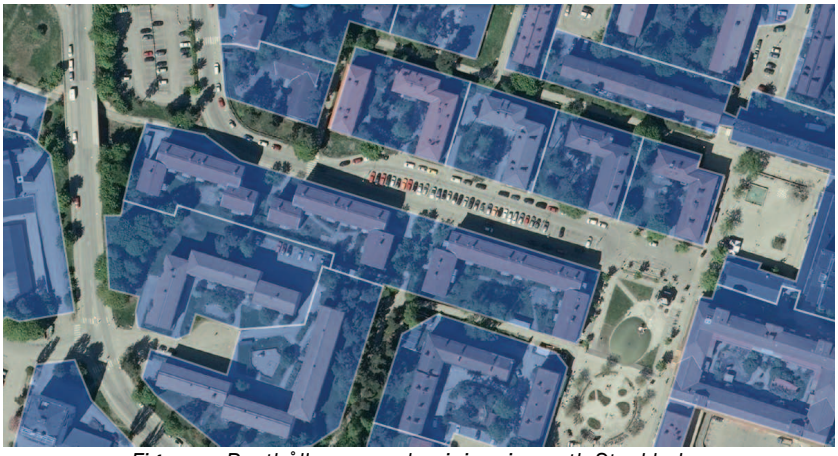

Figure n. Rusthållaren condominium in south Stockholm.

What is important to recognize, is that a territorial logic operates beyond the intentions expressed in the architecture. A mismatch between the spatial framework and social practices may at some point be addressed and "corrected" as in the hypothetical case outlined previously as well as the actual case described above. Being cognizant of some likely outcomes is part of the architect's job. Until now, territorial outcomes have been seemingly beyond the scope of the architect's considerations. Perhaps this is simply due to not seeing the design problem at hand. What the examples above demonstrate is that in looking at territories on the ground, it is crucial to also consider the interfaces of buildings, boundaries and openings. This is reinforced by the findings that enclosures, clarity of boundaries and entrances have territorial effects. Thus, it is in the material interplay of surfaces and interfaces as well as in the configuration of the urban form itself (including density effects) that territories are produced.

12.4 THE DENSIFICATION PERSPECTIVE

We may not have the open space at our disposal to create yards, given the densification pressure on land in urban areas today. But apart from whether yards are economically viable, we should still understand these as a territorial entity. In some contexts, the importance of collectively appropriable space might make yards desirable. In some cases, we might be close to producing a yard with ownership-utility but are too focused on use so we miss opportunities. Or vice-versa, perhaps we place too much of the open space in private terraces, compromising the utility of the collective portion of the open space. In infill densification, new buildings can be added in ways that preserve utility of the yards or chop it up to the point of drastically lowering the utility. Unless we recognize that territories like yards have a performative dimension, we risk making matters worse when we add density. But crucially, we could instead make use of the densification to make things better.

Figure n. Annedal example (Tovatt Architects for developer Svenska Bostäder).

In figure n, a block developed in 2012 illustrates what might happen when control and territorial logic of yards are not adequately conceptualized. The block is mainly, but not fully enclosed, allowing passage through it. Thus, the design already in planning stages in a sense dictates that residents will not easily be able to control this yard. As sociologist Sören Olsson, points out, the interests of resident and city might clash in the case of boundaries of yards and designers then must *choose whose control to prioritize,* that of residents or that of the general public (Olsson S2020). Knowing that enclosure matters to the sense of ownership as well as to the sense of having a yard, we may safely wonder whether residents in this particular development will perceive their yard as a yard in the end. Turning from ownership to use, we might assess the utility for frequent use. While not a very small yard, (compare with a case we know), much of the open space is in the private terraces flanking a collective space in the centre of the block. Here then, private ownership for the ground floor residents has been prioritized over the collective utility of the open space. Of course, the designers probably did not know that frequent use is tied to size and spaciousness (OSR). Nonetheless, the yard risks being used infrequently as a result. Appropriation will likely be low, due to the low enclosure. In other words, neither use, ownership nor "yardness" is optimized. What is best optimized in this proposal is perhaps the circulation through the block, e.g. the space given over to walkways that crisscross the yard and thereby subdivide the collective space even more. Here then is an example, not at all unique in current architecture and urbanism praxis, which illustrates how presumably good intentions get in the way of utility, compromising both use and ownership, simply because yards are not recognized as a form of territory. Instead, we end up with a space that is neither *this*, nor *that*. In the

failure to make choices for resident control, the convenience of city-residents at-large has perhaps cost the yard it's potential as arena of action.

While we may debate the importance of yards as an arena of action, when we go to lengths to produce a yard, we may as well do what we can so they perform as such. Drawing on Granovetter's notion of "weak ties," Sören Olsson (S2020) has depicted the role of yards as one of providing the places for active as well as passive use, meaning that there are no demands that one be social or do anything in particular, but that there are possibilities to do so, calling these Common Neutral Arenas (CNA)[15]. Olsson sees some parallels to the "thirdspace" described by Ray Oldenburg (Oldenburg 1988), e.g. a social space apart from the home and work settings where one is recognized but where the demands placed on the individual are minimal. He notes that the concept of a yard has a cultural component, we define it's meaning in unison with others and that there are shared expectations that "a yard belongs to those who live around it, that they are entitled to use it, and that visitors may pass through it but that they know it is not their yard" (translation mine Olsson S2020). This is also what Panerai and Castex imply when they note that configuration of space matters for appropriation, leaning on Bourdieu:

> These spatial-symbolic systems and are underpinned by habits or groupings of customs (Panerai, Castex et al 124, citing Bourdieu 1972).

Based on the findings in this research, we can confirm that there does appear to be some consensus about what residents feel is a yard but that the right of strangers to pass through in fact undermine the yard as a social entity for the residents. Alternatively, strangers may be invited to use the space during some hours, in a very clearly communicated gesture, such as by way of a portal/gate opened wide, when not locked. A remaining question that deserves further research is how the ease of access to the yards from residents' buildings affects sense of ownership and perhaps also use. Some residents who saw one yard from their apartment but had their point of entry from another yard, reported wishing they had direct-access to "their" yard. This possessiveness felt toward a yard matters if the yard also functions as a socially organizing entity. It is a common practice in Sweden for residents to identify themselves based on which yard they live on, in configurations with several yards. Ambiguity in terms of which yard one "belongs to" probably has impact on social coordination, but more study is needed.

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[15] Translated from the Swedish *Gemensam Neutral Arena* (GNA).

12.5 DISCUSSION

This chapter has discussed some of the implications of the findings presented in Chapters 9 and 10. In general, as we saw in chapter 10, we are likely to see greater appropriation of ownership spaces than use spaces. It is still not clear why enclosure matters and why smaller spaces elicit more feelings of ownership, but it appears that agency must be present for appropriation to occur, thus it seems likely feeling control of one's environment is a key aspect. Territoriality is often not given the attention it deserves, but to be fair, knowledge on how territorial appropriation mechanisms work has been spotty at best. Most relevant to the architect perhaps, is to consider territoriality as both set up by the urban form (by way of size and density) and framed in the subspaces produced in the complex interaction of surfaces and interfaces. If we are interested in supporting sense of ownership, frequency of use and subsequent appropriation, we must consider morphology. A few such recommendations can already be formulated, for instance the degree of ownership is improved by enclosing the yards. Higher FSI combined with enclosed yards result in an increased feeling of ownership, but does not result in a high frequency of use. Large and enclosed yards appear to display robustness in accommodating many different uses at once, perhaps allowing ownership and use space to exist side by side. The data suggest this but more research with more cases of this specific type is needed. Whether any thresholds in terms of size, enclosure and density can be proposed is an area for follow-up study, requiring a greater range of study areas to be conclusive.

What *can* be said, is that based on the results up to this point, a high density without the enclosure of the yard results in a low sense of ownership *and* a low frequency of use. Most post-war areas combine these attributes. Of course these areas may have other qualities such as abundant open space and good daylight access in the dwellings, but from a territorial perspective we can conclude that these solutions also have some serious shortcomings. On this basis, a recommendation might be that at high densities (both FSI and GSI) yards perform better enclosed. For lower densities and larger yards, this is perhaps less important. Despite a low sense of ownership, these are used frequently. When post-war areas in many big cities are facing densification, the challenge for urban planners and designers is to explore the possibilities for enclosing, while keeping the maximum size of open space, i.e. yards, to enhance the feeling of ownership without undermining the usability of the yards. Or, balancing a deficit of use-potential in the yards with an increase in available public parks.

Uncovering the relationships between spatial and social measures can be seen as supporting a deeper discussion on how social space is framed morphologically. While spatial measures have some predictive force, as is evident so far, the findings are perhaps more useful as pointing to a scope of action for urban design practitioners. From the standpoint of the architect, understanding territorial production as both a morphological and material outcome means considering where in the design and development process decisions impact territorial effects. Some morphological variables are determined in early planning stages. Planners, often in negotiation with developers incorporating economic considerations, set FSI and related density measures. Other variables relate to the building façade and the interface to the public realm and are perhaps finalized more by architects in dialogue with planners. Lastly, residents and architects may oversee interventions to the existing built environment. To the extent that appropriation behaviours hinge on "getting it right", territorial mechanisms must be understood as operating at many levels of scale. This means balancing enclosure and size as well as density and openness. But first and foremost, architects must recognize that these considerations fall within the domain of the architect and planner both. If the architecture does not consider what is produced by way of the open space between solitary buildings, difficult-to-appropriate territories may prevail. Who, in fact, is better equipped than the architect (or landscape architect or urban designer) to tackle questions at the juncture of local and contextual scales, spatial and social situations, as well as the coordination of various stakeholders?

Ownership appears to be more dependent on control than is use. If enclosure or boundaries are necessary for privacy control and for ownership, but not necessarily for use, then appropriation needs to be broadened to consider not just use, but also ownership. If control brought by boundaries matter to appropriation, it may be that territorial differentiation is unlikely to emerge where there are no edges to be negotiated. Being necessary for ownership to emerge, boundaries as a mechanism of appropriation is an area for further design development and innovation. This theme will be picked up in Chapters 15 and 16 in a discussion on "performative boundaries". Promoting ownership by design is not unproblematic, in a political climate where many apply the ideals of an open and democratic society and open-access to information to how space is configured. If sense of ownership is dwelled on more than use in this text, it is on this basis – namely that ownership simply doesn't sit well within the planning community. Use is generally considered a good thing in contrast. This is why it is important to recognize that just as we

can produce open spaces that will likely become individually appropriated, we can also produce yards that will likely be collectively appropriated. Broadening our understanding of ownership is necessary. Use should not be forgotten, however. Where we have space at our disposal to support use, this should not be wasted in schemes which place the open space where it has least value, such as in small patches of front yards or so crisscrossed by circulation paths as to lose functionality.

If the designer already in the design process can conceptualize and be precise about the role that the open spaces in question are intended to serve, territorially ambiguous and potentially unused spaces might be avoided. Is it use-spaces or ownership-spaces that best ensure utility in a given context? Once a strategy is settled upon, consequences for how to distribute the built mass follow in terms of how much enclosure as well as whether large or small yards will do. On top of considering use and ownership separately, how to make yards more yard-like has been discussed. The most yard-like open spaces in the estimation of residents in the questionnaire were those supporting both enclosure (for ownership) and spaciousness (for use). In the rare cases when this is achieved, collective appropriation may emerge. When it does not, the yard is, it has been argued here, more representational in nature. A key to stimulating the type of vested interest that allows appropriation to occur, is that residents as a group may control access to the space. Control by way of greater enclosure as well as higher entrance density support sense of ownership by defining the territory and supporting social control by fostering neighbour interaction. Of course, multifamily residential buildings without collective yards are also possible. The point is rather to be clear about design-intent, to avoid designing yards that are not perceived by residents to be yards or to assume that use is best served by adding program elements if the space is too small. Although it might seem confusing to find that there is not a simple answer to the question of territoriality, it also opens new possibilities. It challenges designers to find new solutions and presents a palette of options. The issue is what to do where, rather than a one-size-fits-all approach. Chapter 13 will look at current planning praxis and how space is configured in recent development.

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Kärrholm, M. (2004). Arkitekturens territorialitet : till en diskussion om territoriell makt och gestaltning i stadens offentliga rum, Diss.
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9. WHAT DO RESIDENTS SAY?

> *We are interested in the question of which spaces are positively valued as places of shared experience by people from different backgrounds or with dissimilar interests. In principle, such places can also be found beyond the traditional urban space of streets, parks and squares. They can even be spaces that are not public in the strict sense, for example privately managed collective spaces that still function as public domain. What in fact gives such places their public quality?*
> *(Hajer & Reijndorp: 11)*

What Hajer & Reijndorp allude to in the excerpt above is that spaces outside of the public realm may still have collective value to users and may function like spaces in the public domain. But what about the spaces which do not function as public domain, but whose utility in part comes precisely from *not* being accessible to everyone, but to a defined group of users? How should these spaces be understood as different from those in the public domain? Only by asking users of the spaces in question can we presume to understand their nature, whether as private, public or something in-between. In the empirical study described in this chapter, the user questionnaire makes up the foundation and does exactly that – in order to pin down how spaces are used and valued, residents' perceptions were gathered and analysed. As described in chapter 5, a triangulated approach was sought in order to be able to attribute the reported behaviours (e.g. the social responses by users of the built form) to characteristics of the built form itself. This chapter covers the results of the questionnaire and built form characteristics, first independently and then in combination. Chapter 10 presents the results of the site audit also in combination with built form characteristics, capturing on-site evidence of practices by residents as a supplement to the qualitative dimension of the empirical study. Chapters 11 and 12 in turn, will discuss the implications of the results in terms of reconceptualising territoriality and how to use the findings to produce knowledge useful for practice. Deciding where to do what, for instance in densification of existing areas, requires knowledge which fine-tunes the approach used and help to make choices about what is the preferred course of action.

9.1 STUDY AREAS

9.1.1 MALMÖ

Preceding this section, Part 3, is a vignette (for now see appendix 2!) with descriptions of each study area one-by-one indicating the variety of morphological types studied. Seven study areas in Sweden's third largest and most southern city, Malmö, were selected for the initial empirical study. The selection represents areas with substantial variations in morphology and

population in order to capture differences in territorial outcome. Closed-block formations in the areas from the first half of the twentieth century give way to open-block formations and point-buildings in the more recent examples.

For figures, see separate pdf! Tables are in the text.

Figure 1. Morphological archetypes from perimeter block to point buildings by way of L-shaped and slab buildings.

Figure 1 illustrates these types schematically. Morphologically, the areas are representative archetypes recurring in (sub)urban contexts throughout Sweden. The tissues differ in size, density and context, but are all rental tenure apartment buildings.

See separate pdf.

Figure 2. Location of study areas in the city of Malmö.

MALMÖ DEMOGRAPHICS								
2008 DATA	AVERAGE	M11/M12	M20	M31/M32/M33	M41/M42/M43	M51/M52/M53/M54	M61/M62/M63	M70
Population	280801	4199	2048	3188	1684	3894	3683	1701
Population per hectare	18	95	54	97	53	45	102	85
% children (< 16 years)	17	12	14	15	12	14	24	5
% foreign background	37	21	47	63	16	41	75	30
% unemployment	3	2	3	5	3	4	6	3
% higher education	41	67	43	28	50	23	24	52
Mean income in SEK	226140	216601	168477	155942	209562	191413	174633	139606

Data: Malmö stadskontor (2008 data) http://www.malmo.se/Kommun--politik/Om-oss/Statistik-om-Malmo/C-Omradesfakta-for-Malmo/Omradesfakta-2008-rev.-areal--och-biluppgifter/Malmo-08.html

Table 1. Social data on Malmö and the study areas in Malmö (Malmö stadskontor 2008).

See separate pdf.

Figure 3. Images of study areas in Malmö.

In Malmö, Areas 1 and 2 are closed perimeter blocks with small and large closed yards, respectively. Areas 3, 4, 5 and 6 are slab-type buildings configured with open yards in-between buildings. Area 7 is comprised of three point buildings with open space surrounding them. The areas are dispersed within Malmö, with areas 1, 2 and 7 located in the heart of the city centre, areas 3 and 4 near to but outside the historic centre and areas 5 and 6 located at the perimeter of Malmö proper.

9.1.2 STUDY AREAS IN STOCKHOLM

A follow-up study incorporated a comparative study of eleven urban tissues in Stockholm to verify the methodology and results. A similar breadth of morphologies was sought with a range of more closed to more open block formations. Again, the areas are dispersed within Stockholm. DESCRIBE

MORE FULLY! The results of the questionnaire will be relayed first for the Malmö study, followed by the Stockholm supplemental study, before discussing the spatial analysis for all areas and finally the statistical analyses.

See separate pdf.

Figure 4. Location of study areas in Stockholm.

STOCKHOLM DEMOGRAPHICS								
2008-2010 DATA	AVERAGE	S08/S09	S10	S11/S12/S13	S14	S15	S16	S17/S18
Population	847073	13719	11315	13719	10223	20404	4401	15314
Population per hectare	43	158	152	158	185	237	40	102
% children (< 16 years)	17	12	14,2	12	13	13	12	20,6
% foreign background	29	20	15,1	20	17,9	17	22	17,2
% unemployment	4	3	2	3	3	3	3	2
% higher education	54	59	63,4	59	31	60	67	68,2
Mean income in SEK	299200	273500	326100	273500	290700	311900	315900	370600

Data: USK.stockholm.se (2008-2010 data) http://www.usk.stockholm.se/tabellverktyg/tv.aspx?projekt=omradesfakta&omrade=0

Table 1. Social data on Stockholm and the study areas in Stockholm (USK Stockholm 2008-2010).

See vignette between Part I and Part II.

Figure 5. Images of study areas in Stockholm.

9.2 RESULTS OF THE QUESTIONNAIRE

9.2.1 RESPONSE RATE

In relaying the questionnaire findings, it will be necessary to refer back to the images and graphic representations of each area to explain the results. To begin with, the response rate bears mention. DISCUSS RESPONSE RATE IN GENERAL TERMS, WHY 30% ADEQUATE AND CITE. FOR NOW THIS IS IN PART II, CH8.

To the residents who received the questionnaire, it must have been evident from the questions posed that the questionnaire was about capturing perceptions toward the ground space associated with buildings in the study areas. One suspects that those who completed the questionnaire were more enthusiastic (andra grunder, språk, jargong, context) if they had some opinion, positive or negative, about the spaces in question (not specifically denoted as "yards" in the questionnaire). Antal? hur manga skickades den till? So, while the average response rate for the Malmö questionnaire was 30%, departures from this average bear mention. The pie charts in image n below show two things: The grey slice is the proportion of non-respondents

(those who received the questionnaire but did not send it back). The green slices show the distribution of responses to question 7[1]:

> "Do you think the word 'yard' is an accurate description of the ground near the building where you live?" alternatives? yrad by definition?

Areas 1 and 7 had quite high response rates of 38% and 37%, respectively. However, morphologically speaking, these areas are each other's reverse and reflect the changing urban paradigms over the past century. why mix response rate and morphology? finns ngt samband? Area 1 (completed 1908) has perhaps the most traditional open space configuration with relatively small (SPECIFY) yards enclosed within the subdivided perimeter blocks in the historic city center. Area 7 (completed 2007) is morphologically speaking the reverse; the three point buildings are set in a field of continuous open space (see Figure 3).

See separate pdf.

Figure 6. Response rate by area in bar graph.

Interestingly, the responses to question 7 are also reversed; the consensus among residents in Area 1 is that the open space *can* be called a "yard" (32% of those questioned – in effect 82% of respondents) while most respondents in Area 7 agree their open space *is not* (32% of those questioned – in effect 86% of respondents). Whether these opinions reflect a consensus among residents overall is impossible to say, but one can conclude that those who feel strongly that they do or do not have a yard were those who took most interest in the questionnaire and took the time to respond. Evidently these respondents had some interest in the question of yards.

Areas 2, 3, 4 and 5 all had response rates around the average (30%) – namely 27%, 29%, 32% and 29% respectively. Where Area 2 differs is in the share of respondents who thought their open space was a yard. Image n shows responses from these four areas. In Area 2, a clear majority of respondents (in effect 85%) responded in the affirmative to the question of whether they consider the open space to be a yard. In Areas 3, 4 and 5 in contrast, the respondents were more split down the middle: A majority of respondents

[1] The dark green indicates those who responded affirmatively (e.g. very much so or partly so), whereas the light green indicates the share of respondents who responded in the negative (e.g. not really, not at all or not sure). The variation in response rate may have other of explanations, including demographic factors such as education level, age and health, and even Swedish literacy might play in.

answered in the negative in Area 4 (58%) and Area 5 (60%) while roughly half in Area 3 (48%) did. So while Area 2 respondents exhibit the strongest consensus that the open space is a yard, in Areas 3, 4 and 5 respondents are ambivalent on this question. Looking at the morphology may again give some indication as to why. Image n shows these four areas as urban tissue. The open space is somewhat framed by the buildings, but nowhere completely enclosed, reflecting the mid-twentieth century penchant for "freeing the ground" as discussed in Chapter 3.

Area 6 had by far the lowest response rate at 18%. The neighbourhood in which Area 6 is located is a large-scale housing estate located in the outskirts of Malmö. Demographics will be discussed later on, but it bears mention that response rates in a segregated area are not uncommonly lower than in areas where unemployment and education levels are higher. The high immigrant population may be less inclined to respond to a questionnaire in Swedish. What is significant in terms of response rate is that the low response rate from Area 6 may mean that there is a sampling bias in the data from this area, which needs to be considered in analysing the results. A sampling bias occurs when there is reason to suspect that those who responded are not representative of the overall perceptions of residents[2]. In social research including questionnaires, it is not uncommon to *over-sample* in socioeconomically impoverished areas, e.g. send out more questionnaires, in order to achieve a statistically stronger number of responses (Ceccato and Wikström 2012, Gerell 2013). Alternatively, efforts can be concentrated into following up a questionnaire with reminders and even personal visits. Since this was not known at the time of the questionnaire, these strategies were not considered.

The evident lack of interest in the questionnaire may also mirror a lack of interest in the open spaces in this neighbourhood. Area 6 is in a larger housing estate[3] consisting of a mix of 8-storey and 3-storey apartment buildings organized around a fluid open space. Image n shows the urban tissue of Area 6. Buildings are late modernist, prefabricated and with similar elements repeated many times. Variations occur in the colour of details rather

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[2] This is sometimes referred to as a *non-response bias:* "Non-response bias occurs in statistical surveys if the answers of respondents differ from the potential answers of those who did not answer" (http://en.wikipedia.org/wiki/Non-response_bias accessed on 2014-10-31).

[3] The public housing estate itself has a mix of tenures today, but was initially built as renter-occupied units, the shift has occured due to residents being offered to buy their apartments, not due to new construction within the area. Within study area 6, all the units are renter-occupied.

than in the architecture itself, a hallmark of an economically optimized form of urban design. To the extent that buildings frame space, it is loosely framed and quite spacious. As with Areas 2, 3, 4 and 5, the treatment of the open space is quite ambivalent, with park-like as well as yard-like elements. The yards are somewhat framed but never entirely enclosed. Most entrances in Area 6 are in the internal spaces of the block, reached by a pedestrian/bicycle network separated from the external streets designed primarily for cars. Of respondents, a distinct majority do consider this a yard – 11% answered question 7 affirmatively and 7% answered negatively. What is worth mentioning in this context is that this housing estate, called Holma, has been the site of a pilot project where the housing authority MKB has tested a new model for engaging residents in the care and planning of the open spaces[4]. It would appear that a result of this effort is that more respondents than might be expected find the open spaces to be yard-like, even though the overall response rate is still low. The implication is that institutional efforts to improve the autonomy of residents in shaping their own milieu can be effective, although only further study could confirm this to be true. Once again, this would appear to confirm the suspicion of a sampling bias, if for instance those involved in the design and upkeep of the yards completed the questionnaire to a higher degree.

9.3 RESULTS OF MALMÖ QUESTIONNAIRE

The term "yard" was avoided in the questionnaire, as it was feared this would conjure up a mental picture that would interfere with more immediate responses to the questions asked. Only one question used the term "yard", in order to discern whether residents themselves viewed the open space as a yard. In describing the results however, the term will be used throughout, regardless of whether the open space was enclosed or open, programmed or not. To begin with, how the yards are used (Question 3) and the way the yards are conceived (Questions 11 & 15) will be described according to what residents reported in the questionnaire. Following this, the results will be summarized according to the four themes discussed in Chapter 8: Frequency & Utility, Safety & Solitude, Borders & Control and finally Sense of Ownership. (references for themes)

[4] Lex Holma was a court case (YEAR) which set a legal precedent whereby money given for instance to an organized group of residents by a management company (in this case MKB, Malmö Kommunala Bostadsbolag) for the purpose of for example creating and maintaining gardens and other facilities, became exempt from a tax which formerly penalized such transactions, taxing these as income. The law is named after this area, Holma – e.g. area 6 in the empirical research.

9.3.1 HOW THE OPEN SPACES ARE USED

In order to arrive at a sense of how yards are used, the questionnaire asked (Question 3) which activities residents engaged in within the adjacent open spaces. Response options were: play with children, eat/barbecue, rest/relax, gardening and other. These categories were intended to capture a breadth of possible recreational activities, however it seems that the options were inadequate to cover possible activities engaged in on yards. It was difficult to obtain a clear picture of the use of yards since the predominant response across the areas was 'other.' In area 7, fully 58% selected this option followed at a distant second by relaxing (25%). Only Areas 1 and 4 selected one of the responses besides 'other' more often – namely eating/barbecuing and relaxing, respectively. In fact, eating/barbecuing is the activity cited most on closed yards; in the smallest yards, it is the predominant activity by far (area 1: 37%) and in the larger enclosed yard of area 2 eating/barbecuing is close second (25%) to the most common activity, relaxing (28%). Correspondingly, the more open yards in areas 5, 6 and 7 boast very little eating/barbecuing, according to respondents (7%, 5% and 6% respectively).

See separate pdf.

Figure 7. Bar chart showing how the yards are used.

Otherwise, relaxing seems to be most popular activity among respondents in area 4 (41%), while least relaxing is done in areas 1 (12%), 6 (17%) and 5 (21%). Gardening is not an activity engaged in by many respondents, only area 6 respondents report gardening to a degree worth mentioning (14%)[5], more often than eating/barbecuing, but less often than both play with children (25%) and relaxing (17%). In comparing the areas, play with children is most cited in areas 6 (25%), which has the highest share of children according to the area demographics (figure n), followed by areas 3 (16%) and 1 (15%). Play with children was cited least often in areas 2 (7%), having a low share of children according to the area demographics (figure n), as well as in areas 4 (8%) and 5 (9%). Evidently other uses are considered more important by the respondents. Area 6, it must be noted, has the most children 24% of residents in this district are below the age of 16, according to demographic data (see Table 1). Areas 1, 2, 3, 4, and 5 have around 12-15% children under 16 years, so here it is something else which is causing the difference. Recall that only one response

[5] The high reporting of gardening in area 6 may reflect the likely sampling bias mentioned earlier – gardening-interested residents were more inclined to complete the questionnaire perhaps.

option was allowed to all of the questions, so only the top activity was selected.

clarify yard, open space, courtyard throughout!

9.3.2 FREQUENCY & UTILITY: Questions 1, 2 & 5

After seeking trends in responses related to the question of *how* open space is used, *how often* if it is used is a relevant parameter to discuss. Most noteworthy is that 27-50% of respondents in Malmö never use their yards at all (Figure n showing frequency of use diagrams for all areas). Most 'never' responses came from area 7 (e.g. 50%). Morphologically, as noted above, this is the most open configuration of the cases studied with its open space largely unframed by buildings, but rather the reverse, e.g. a field of open space frames the three point buildings. The open space is also largely taken up by parking. Area 5 also has a high share of never responses (46%), but also a fair share of responses indicating daily or several times daily use of the yard (29%). This ambivalence is shared with areas 2 and 4 with respondents indicating never using the yard (37% and 40%, respectively) versus using the yard daily or more (22% and 25%, respectively). No respondents used the yards in area 1 on a daily basis. This might be due to the small size of yards in area 1 – an assumption confirmed by fill-in responses to the questionnaire, in which respondents cited lack of sun and high visibility (from neighbours living on the ground floor presumably) as reasons they did not use these yards more frequently.

On the other hand, the yards in area 1 do appear to be used by children, evidenced by 27% of respondents in area 1 reporting the yards were used daily or several times a day by children. To be precise, these are not necessarily the respondents' own children but rather "children observed playing in the open space associated with the building" as the question is phrased. In comparison, only 19% of respondents in area 7 indicate that children use the open space daily or more[6]. This is remarkably low in comparison with the frequency of use of the yard by children in area 2 (reported as daily or more by 82% of respondents), but few children actually live here either. Seeking a morphological explanation one needs look no further than the spaciousness of the enclosed yard in area 2 – the open space

[6] In areas 3, 4, and 5 children use the yards daily or more according to 50%, 43% and 51% of respondents, respectively. In area 6, 70% of respondents cite this frequent a use by children, consistent with the high percentage of children under 16 living here, as mentioned previously.

is continuous, comprising an entire city-block which is enclosed on all sides. One puzzling inconsistency is that so few respondents in area 2 – only 7% (as mentioned earlier) cited play with children as their preferred use of the open space. While it may be that children play unattended or that parents are present but otherwise occupied, another possibility is that children are observed playing by respondents who do not themselves have children. In fact, the latter appears to be true since 66% of these responses (e.g. daily and several times daily) come from respondents without children living at home. The fact that the open space is configured in one large yard might also be a factor in making the children's play visible to many residents.

Additionally, entrances to the buildings are on the yard side – residents gain access to the yard from four entry points at the perimeter (using a key or entry code) and once in the yard can enter their respective stairwells. Having entry points on the interior of the block appears to translate to a higher frequency of meetings between neighbours. Meeting and spontaneously socialising with neighbours are most frequent in area 2 (0.48 times per day) compared with the average for all areas (0.31 times per day) followed by area 3 (0.45 times per day) and area 6 (0.44 times per day). Whether interior entrances are a factor even here is something that the spatial analysis results may shed light on. Meetings with neighbours are least frequent in area 1 with small yards and fewer residents (0.15 times per day).

9.3.3 SOLITUDE & SAFETY: Questions 6, 9 & 21

The theme of solitude & safety will cover three questions that appear to be related. Question 6 asked whether the associated open spaces provided peace & quiet or space to be alone while question 9 asked if the outside environment was safe (see appendix for exact wording of questions). To the latter question, most respondents regardless of area responded that their outside spaces were safe. Figure 8 illustrates the area-by-area responses. Interesting to note are the deviations from the average shape of the curve. Most notable is that area 1 had 64% of respondents describing the open space as very safe, the highest by far in comparison with the other areas. Additionally, 30% selected the option "safe". This shift toward the more positive responses is also apparent in areas 2 and 4. Here about an equal share of respondents cite "safe" or "very safe" (approximately 43-48%).

See separate pdf.

Figure 8. Safety by area.

According to the questionnaire, areas 3 and 6, where 48% and 45% respectively responded "not really safe" or "not safe at all". Seeking a

morphological explanation for safety is somewhat precarious. It is not uncommon for perceptions of safety to be tied to different neighbourhoods in the city. The spatial analysis may shed light on this aspect. The urban tissue of perimeter blocks with clearly defined public streets versus private property is shared by areas 1 and 2, which are thereby closed to strangers from the street. Perhaps the large sized yard in area 2 compromises safety somewhat, so that it performs more like area 4, whose yards are enclosed on three sides and border on a park on one end. Although given the potential accessibility to strangers, area 4 is considered surprisingly safe. Likely the high education level and incomes as well as the low percentage of residents with foreign background in this neighbourhood contribute.

Related to safety is the notion of solitude, captured in Question 6. Here residents were asked to assess whether the open space associated with their buildings was "a place to find peace and quiet or to be alone". It turns out that none of the yards provide this if the questionnaire is accurate. The most safe yards area 1 and 2 provide quiet and solitude "not so well" according to about 40% of respondents in each area. Compared with the average curve, which peaks at "fairly well" for most areas (such as areas 3, 4 and 6), these enclosed yards peak to the left in the diagram (see figure n). Although area 7 respondents have an entirely different morphology of point buildings surrounded by open space, their responses are more similar to areas 1 and 2 in this regard, also tending toward the negative on the question of quiet and solitude, 27% responded very poorly and 25% not so well.

See separate pdf.

Figure 9. Solitude by area.

The ultimate expression of wanting solitude was designed to be captured in question 21 that asked whether residents would like a private outside space near the building where they live. The general consensus among respondents across the areas was for about half to indicate wanting private open space, with 49% responding either "very much so" or "partly." The preferred response in area 1 was "very much so" (39%) at about twice the rate that responded "not at all" (21%). Respondents in area 2 were far more likely to respond "not at all," than others questioned, however an equal share (31%) selected "very much so" indicating an ambivalent population. The yards in

areas 1 and 2 have quite different characters although they are all enclosed[7]. In area 1 the yards are quite small, being subdivided within the overall perimeter block; in area 2, the entire perimeter block shares the open space. In area 1, quiet and solitude may be difficult to find due to the small size as well as visibility from ground floor apartments. In area 2, quiet and solitude may be compromised by sharing the space with so many other residents. Yet some area 2 residents may recognize there are some affordances in having a larger shared space, perhaps there are social gains that make the desire for private outside space less acute. Recalling that the frequency of meetings with neighbours was highest in area 2 and that relaxing was the predominant activity cited by respondents implies such a connection in which social qualities help to define the space in question not as a place of solitude but as relaxing in some other sense. People-watching and spontaneous socialisation, are examples of activities associated with other individuals being present that also may be seen as relaxing.

9.3.4 BORDERS & CONTROL: Questions 16 & 17, 13 & 14 and 8

As with the theme of frequency & utility, some trends were apparent which indicate that morphological factors help to explain differences in the questionnaire results by area. On whether the boundary is clear between open space associated with the residents' buildings and adjacent land (such as neighbouring properties or public land), responses correspond with the more fluid treatment of open space in some areas (question 16 in the questionnaire). Figure 10 shows responses on the question of clarity. The most common responses for areas 1 and 2 (closed perimeter blocks) were that boundaries were "clear" by a rate of 67% and 63%, respectively. In the remaining areas, the responses were not as uniform, but taking the two options "not so clear" and "not clear" together, one finds that areas 6 and 7 have least clear boundaries with 56% and 59%, respectively, followed by area 3 with 52%. Areas 4 and 5 are morphologically speaking comprised of buildings arranged around semi-enclosed open space and respondent perception is also split, but with a clear majority stating that boundaries are clear or partly clear (52% and 49%, respectively). In areas 3, 6 and 7 the common perception is the reverse; respondents indicate by a clear majority that boundaries are not so clear or not clear at all (52%, 56% and 59%, respectively). Beyond confirmation that perimeter blocks have more clear boundaries than the morphologies with varying degrees of openness, it is difficult to pinpoint what makes areas 4 and 5 more clear than 3 and 6 in the

[7] Area 1 contains two small and enclosed yards, Area 2 is one larger enclosed yard.

eyes of respondents. One factor might be the size of the open space, which in areas 4 and 5 is concentrated in larger swaths, compared with area 3's smaller yards and 6's mix of smaller yards and more freely placed slab buildings. The morphology of point buildings surrounded by open space in area 7 has least clarity of boundary to surrounding space, which makes sense. Evidently, a wire fence surrounding this property does not affect perception of boundlessness to a great degree.

See separate pdf.

Figure 10. Unclear vs. clear borders for all areas.

Whether clarity of borders matters to use is inconclusive based only on the questionnaire. Question 17 asked residents whether they would use the open space more if boundaries were clearer, as by fences or hedges. In areas 3, 5 and 7 respondents indicate that clearer boundaries would encourage greater use. However, only in area 3 is this a majority opinion (45% as opposed to 36% thinking boundaries would make no difference). In area 5, half think clearer boundaries would make a difference, half that it would not and in area 7, 38% think clear boundaries matter to use versus 47% who feel they do not. Several mention greater enclosure and vegetation as factors that would improve the utility of the open space in area 7. Yet recalling the responses to question 17 this is puzzling since a minority of respondents connected boundaries to greater use. It may be that control is motivated by other reasons than use (or congestion), which question 17 also does not capture.

The primary role played by boundaries, besides delimiting and communicating what is an edge of some sort is of course one of regulating access and control. Two questions (13 & 14) attempted to capture first whether strangers were present and second, whether this was positive or a problem in the opinion of the respondent (see figure 11). According to the questionnaire, strangers use the open space associated with the residents' buildings in areas 3, 6 and 7 – 73%, 70% and 75% respectively responded that strangers were "often" or "sometimes" present. In comparison, only 32% in area 1 and 27% in area 4 responded similarly. Area 4 is not enclosed but one suspects that strangers use the adjacent park instead. Recalling that the residents here felt as safe as in the enclosed areas 1 and 2, it seems likely that the presence of strangers is low rather than that residents do not recognize strangers from residents, although this is a possibility as well. Area 5 meanwhile has a moderately high presence of strangers with 60% citing their presence. Surprising is that area 2 has many strangers, since it is also closed to outsiders with access codes at each point of entry in the perimeter (50% responded that strangers were "often" or "sometimes" present).

See separate pdf.

Figure 11. Are there strangers present and are strangers a problem?

Looking at question 14 sheds further light on the notion of control of space since whether strangers are seen as a problem or not perhaps also influences whether residents are prone to notice them. This may in fact explain the high note taken of strangers in area 2, since 47% of respondents felt that strangers here are a "slight problem" and "big problem". Fill-in responses to the questionnaire[8] indicate that a contingent of residents and their guests use the yard for drinking and occupy the space too long, which is surely a factor in the high percentage of respondents finding strangers problematic. Strangers are also seen as problematic in areas 3 (41%), 6 (42%) and especially 7 where 47% find strangers problematic. However, an equal share in area 7 responded "neither/nor" to this question. As these are the areas with the highest prevalence of strangers, this is perhaps to be expected. In area 5, only 26% find strangers problematic. The explanation may lie either in the low use of the open space by residents (46% never use the yard) and it's more park-like character (only 29% considered the space to be a yard), which might incline residents not to feel the open space is their amenity exclusively, and so strangers are to be expected here.

The last question on the theme of Borders & Control is question 8 which inquired into whether residents found competition over space to be frequent. Interestingly, regardless of how spacious the open space was, very few respondents across the areas cited competition over space to be something they often experienced, the most in area 6 (6%). However, including those who cite that there sometimes is not enough space to go around provides a picture of where congestion is at least periodically an issue. Area 2 stands out with 31% indicating lack of space is sometimes or often an issue, followed by area 1 which has admittedly tiny yards (24%). 21% of residents in areas 3 and 5 and 22% in area 6 cite congestion sometimes or often, but only 6% in area 4, presumably in part due to the park immediately adjacent. In area 7 9% cite congestion, which is lower than might be expected given the note taken of strangers and perception that this is a problem. Recall, however that residents here do not use their yard frequently, either. Congestion is evidently not the

[8] Question 24 asked "What would make you likely to spend more time on the grounds associated with the building?" Several mentions were made of alcoholic residents using the seating areas with friends from outside the bulding. Skateboarders were also noted as a problem, although there is no mention of whether these are residents or strangers.

basis for resenting strangers in this case; rather it might be simply the lack of control. In fact, fill-in responses for area 7 indicate that some strangers are students from an adjacent secondary school who stand around and smoke, which was noted by several respondents. Others described strangers letting their dogs run unleashed and not cleaning up their droppings.

9.3.5 SENSE OF OWNERSHIP: Questions 11 & 15

The last theme which will be discussed concerns the sense of ownership, captured in question 11:

> "Do you feel that the ground associated with the building where you live is mainly for residents?"

Respondents in area 2 (82%) and area 1 (71%) feel quite emphatically that the ground is "very much" for residents. "Partly" is the most common response in areas 4 (48%) and 5 (39%), indicating some ambivalence on the issue. Adding together the "very much" and "partly" responses, results in the following area-by-area comparison: Area 1 (82%), 2 (91%), 3 (46%), 4 (73%), 5 (60%), 6 (56%) and 7 (59%). Ownership appears to be supported either by closed blocks or as in area 4, where enclosure is sufficient given that an adjacent park means that space is uncontested by others. This might also explain the relatively high sense of ownership in area 7, whose point buildings surrounded by open space has no other residential buildings within it's block contesting the space. Also, the fence around area 7's perimeter implies that besides the enclosure by building (e.g. primary boundary), enclosure by a fence/hedge (e.g. secondary boundary) helps to support sense of ownership. Why area 3 has a comparatively low sense of ownership is unclear[9].

An interesting result illustrates that residents' perception of a space as defined by buildings does not entirely align with space defined more socially and captures how the urban form affects resident perception of the open space. In order to gauge how residents identified with the open space associated with their residential buildings, two questions were designed to test whether the spaces are seen as belonging to the residents or whether the spaces are seen as belonging to the building as a sort of territorial buffer.

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[9] One factor noted in the site visit to area 3 is that the yards are programmed for different purposes; the impression is that the nine smaller yards in the southeast of area 3 at least are used not only by immediate residents but also by residents in the area at-large. The indication of this is that two of these yards are programmed for children to play, some have more of a gardening theme and several have water features designed as part of an upgrade to the water-runoff in the area. Rather than repeating certain program elements.

Although similarly phrased, these questions point to what might be considered a difference between whether the yard is seen as physical space and/or as social space. The two questions (Questions 11 and 15) were phrased as follows (see figure 12):

> "Do you feel that the ground near the building where you live is mainly for residents?"
> (response options: very much so, partly, not really, not at all or not sure)
>
> " Do you feel that the ground near the building where you live belongs to your building?"
> (response options: very much so, partly, not really, not at all or not sure)

A question that the research hoped to address is whether territories exist when the spaces in question are vacant. This experiment if you will, is an attempt to deconstruct the overlay of conceived, perceived and lived space.

See separate pdf.

Figure 12. Q11 and Q15 differences compared areawise.

why again? ~~As has already been mentioned, there were differences in how residents responded to the question of whether they would describe the open space as a "yard." The highest share of responses describing the open space as a yard were in the closed blocks – areas 1 and 2 had average responses of 4,27 and 4,53 respectively (5 being the highest) indicating that their open space was a yard. Respondents in area 7 were emphatically of the opposite opinion; the average response here was only 2,5 which translates to somewhere between "not at all" and "not really" in the scale of response options.~~ In the fill-in responses to the questionnaire, one resident in a slab building wrote "I wish I could access my yard directly from the building, now I have to go around it to the back to get to the yard." This articulates the situation of identifying with a rear yard and seeing that compromised by not having direct access to it, rather having to go the same way as everyone else. Later, the statistical correlations will help to flesh out what variables relate to this notion of "yardness". A more thorough discussion on why some open space is perceived as yard and some not will be taken up in Chapter 12.

9.3.6 SUMMARY OF KEY RESULTS IN MALMÖ QUESTIONNAIRE

As has been discussed, effects of the urban form do appear to explain some variations in questionnaire response by area. For instance, it is clear that area 1 and 2 perform similarly in terms of safety and types of use and in response to some questions on clarity of borders except where congestion is

concerned. Here area 2 appears to enjoy some affordances from a high degree of contact between neighbours (socialising is common) but also some disadvantages due to lack of space and antisocial behaviour. Area 1 residents enjoy some advantages of the small and enclosed yards, using these predominantly for eating/barbecuing, but the small size is an issue, which impacts frequency of use negatively. Area 3, 5 and 6 have some similarities. All are within larger housing developments, with a mix of mid-rise and higher slab buildings and a variety of spatial situations characteristic of open block configurations, which help to explain some lack of consensus from respondents in these areas. Area 4 is a bit of an anomaly. In spite of having yards open on one side, it performs much like areas 1 and 2 in terms of control and presence of strangers. Safety is high and residents here do not seem to want clearer boundaries either, likely seeing the immediate access to the adjacent park as an advantage. The spaciousness of these yards (and the park) and sense of safety seems also to make residents less prone to problematize strangers. Area 7 is most open and responses here consistently differ from other areas, especially from the perimeter blocks in areas 1 and 2. This is especially true on the matter of clarity of borders (low) and presence of strangers (high). Compared to other areas, area 7 had the highest share of respondents citing “never” using the open space.

Summarizing the perceptions by residents as captured in the Malmö questionnaire, seven key results were:

- Use of yards is quite low overall; in fact a majority of respondents never use their yards at all.
- Internal entrances seem to have an impact on meetings between neighbours.
- Children play more in enclosed and spacious yards.
- Respondents in closed yards tend to find these safer than residents with more open space.
- More closed configurations translate to clearer boundaries in the eyes of residents.
- More open configurations translate to more strangers noted in the open space.
- Sense of ownership is supported by closed blocks.

9.3.7 ADJUSTMENT OF STUDY AREAS

Before moving on to the spatial analysis, the finding that morphology does seem to play a role in terms of the themes discussed above suggested that the seven study areas in Malmö ought to be subdivided further to better reflect the distinctive morphological characteristics. Since the questionnaires were bound to address points, this was simply a matter of redrawing the study

area boundaries more morphologically. (If respondents had not indicated their address, that questionnaire was removed from the sample, which resulted in a removal of a handful of questionnaires)[10]. For instance, areas 3, 5 and 6 contain both mid-rise buildings in one area and higher slab buildings in another, an indication that the density might be different. Additionally, having found that the more closed blocks may elicit a stronger sense of ownership made it necessary to capture this morphologically with as much precision as possible. Returning for a moment to question 7, regarding whether the open space is a "yard," illustrates this further. In figure n below, the areas with mixed morphologies have been subdivided further. In the chart, what was formerly area 1 are now areas 11 and 12, area 2 is 20, area 3 is now area 31, 32, 33 (and so forth).

See separate pdf.

Figure 13. Bubble diagram showing variations within the original study areas which resulted in the further subdivision.

In Figure 13, the x-axis represents the area number, the y-axis is the degree to which the open space is considered a "yard" and the size of the bubble indicates the third variable, namely frequency of use. It is clear that both the sense of the open space as a yard and frequency of use vary somewhat within the areas, supporting the subdivision in the on-going research. What is also interesting to note is that area 2 and areas 61, 62, and 63 (formerly area 6) are more yard-like than the trend line indicates is to be expected. Area 7 meanwhile, is less yard-like. This may point to differences in how the yards perform as social arenas. While not due to immediately morphological causes, if it can be found that for instance larger yards or internal entrances as in area 2 encourage residents to identify with their yards and identify these as yards, this is a finding that would be useful translated to practice. Alternatively, institutional changes such as self-governance in terms of yard design and maintenance as in Area 6 may also prove effective. An alternate reading of the chart above, which sorts the areas fairly chronologically is that due to the treatment of open space in Swedish urbanism during the 20th century, space became less yard-like over time. Before discussing the relevance of this type of claim, the results of the spatial analysis and statistical analysis will need to be outlined. First, however, the questionnaire in Stockholm will be discussed according to the same themes as above, but

[10] According to statistical expertise consulted, a smaller sample per area is acceptable when seeking spatial trends in the data (cite properly).

more summarily, in terms of how the results confirm the Malmö results or if relevant differences were found. From here on, the 17 Malmö areas will have an M-prefix and the 11 Stockholm areas an S-prefix to differentiate them. As a result, there will be a total of 28 study areas. Appendix 2 provides an overview of the areas for reference.

9.4 RESULTS OF THE STOCKHOLM QUESTIONNAIRE

Part of this repeats ch8! The Stockholm questionnaire was conducted in the spring of 2010 within the thesis project of architect Martin Losos[11]. His study looked at how residents used their yards differently for instance allowing children to play alone or not, and introduced hypotheses about the built form and architecture playing a role without using spatial analysis however. Martin generously incorporated into his questionnaire some questions similar to those used in the Malmö questionnaire, in some cases phrased somewhat differently. The Stockholm questionnaire generated 981 responses out of 1600 distributed, e.g. a 61% response rate[12]. The results are incorporated here to the extent that these correspond with the Malmö questionnaire. Again, the results will be presented thematically, according to frequency & utility, safety, borders & control and sense of ownership. Following this, the Malmö and Stockholm areas had the same spatial analyses performed on both, which will be presented shortly.

9.4.1 FREQUENCY & UTILITY

The following section is still too heavy on numbers, revise!

On the question of frequency of use, (Question 1 in the Malmö questionnaire), results in Stockholm indicate that even here a majority of residents never use the open space associated with their building[13]. In Malmö 27-50% never used their yards at all and the results in Stockholm confirm this. More specifically, areas S08 and S09 have a very low share of residents stating they never use the yards, only 17% and 14% respectively, followed by areas S15 and S10. S11 represents the average in terms of use, with 38% using the

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[11] Thesis project "Appropriering av Bostadsgårdar" by Martin Losos under supervision of Anders Wilhelmsson, and advisement by Eva Minoura.

[12] In Stockholm the questionnaire was distributed personally by architecture student Martin Losos to residents' post boxes and collected in boxes in each building entryway; this generated a response rate double that in Malmö (30% overall).

[13] The frequency of use was normalized for the two areas to account for variations in response options.

open space at least weekly, 13% occasionally and 50% never. Having gleaned something about the utility of the open space in the Stockholm areas, it is interesting to see if the morphology is a part of the explanation for comparative differences. Figure 14 shows the frequency of use by area. The most used yards are all closed perimeter blocks, although area S09 is accessible through an arched gateway. More open configurations have lower daily use; Areas S17, S14, S12, S18, S16 and S13 all have lower than average daily use, consistent with the Malmö questionnaire.

See separate pdf.

Figure 14. Frequency of use by area.

Most frequent meetings between neighbours were reported in areas S09 and S15. Both areas are served by internal entrances in addition to those at the perimeter, which will be discussed further on in the spatial analysis results. This corresponds with the Malmö findings. Meetings were on average in the other enclosed blocks of S10 and S08, as well as the almost fully enclosed S13. Frequency of meetings is reported at a rate below the average (16%) in the partly open block configurations (areas S11, S16, S17 and S18). The very lowest frequency of meetings (9%) was in S12 having an open space sandwiched between slab buildings. S14?

Interestingly, frequency of use by children (corresponding to Question 2 in Malmö) in Stockholm seems to correspond with more frequent meetings between neighbours, as in areas S09 and S15. If this constitutes a trend is not clear from the questionnaire alone, but this point will be returned to in the spatial analysis. It may be that being more friendly with neighbours is reinforced in using the open space for child's play; it may also be the reverse, e.g. that it is the play of children that generates opportunities for contact. For now, it is worth noting that use by children is most frequent in these two areas as well as in areas S13, S17 and S18. S13 has a childcare facility located in the yard and it is likely that the high note taken to children is due to this fact. Children in areas S12, S11, S10, S16 and S08 least often use the open space. S11 and especially S12 have a high share of respondents saying children never use the yards – 57% and 72% respectively.

9.4.2 SAFETY & SOLITUDE

As solitude was not related to any questions asked in the Stockholm questionnaire, it is impossible to draw any conclusions on this aspect of resident perception. Perception of safety was above average in the closed blocks, (areas S08, S09, S10 and S15) with between 82-95% of respondents finding the open space safe (Figure 15). Partly enclosed areas S16, S17 and

S18 were around the average of 67% reporting the open space safe. Meanwhile areas S11, S12, S13 and S14 had a markedly lower share of residents saying the open space was safe (only 33-48%), but more evident is the large share of residents who felt ambivalent on the issue; 36-45% of residents reported being unsure whether they felt safe or not and 14-25% reported feeling unsafe – the highest in comparison with the other areas in Stockholm. Safety, it seems, also corresponds with the urban form to a notable extent and the space in between slab buildings is least safe according to these results.

See separate pdf.

Figure 15. Safety by area.

9.4.3 BORDERS & CONTROL

On the theme of borders and control, two questions in the Stockholm questionnaire were relevant – namely Question 14 on presence of strangers and Question 16 on whether borders were clear or not. Not surprisingly, it was the closed blocks of S08, S09, S10 and S15 that had the lowest presence of strangers in the associated open spaces, according to the responses to the questionnaire. Area S15 especially stands out with strangers noted only 0,05 times a day. It is clear in looking at the diagram for presence of strangers in Stockholm that a clustering effect is recognizable in which properties of the urban form do seem to correspond in many cases with the results of the questionnaire. It is especially evident that the closed blocks are often easy to pick out in the bar graphs, which figure n (not included), showing presence of strangers shows quite well. Noticing strangers was reported most frequently in the partly open areas S17, S16, S13 and especially in S14, where the daily note made of strangers was 0,37 times daily (more than twice the daily average in all areas, which was 0,17). Areas S12 and S18 represent the average of 0,17 times daily.

See separate pdf.

Figure 16. Clarity of boundaries by area.

Why the closed blocks perform so similarly is too soon to say, but it is striking that figure 16, showing the clarity of borders is so similar to both presence of strangers and perceptions of safety, (see figures 11 and 8). The clearest borders are found in the closed blocks (S08, S09, S10 and S15), while the most unclear boundaries correspond with configurations of slab buildings, especially in area S14, where only 19% of respondents found the borders to be clear. Rather than attempt to explain the internal differences between areas falling well below the average of 58% reporting clear boundaries, it is

worth noting that area S16 has a higher than expected clarity of borders, perhaps due to a combination of hilly topography and some fences (observed on-site) which reinforce the legibility in spite of the slab configuration. It is also puzzling that the partly open perimeter blocks (areas S13, S17 and S18) differ so markedly from the fully closed blocks, but it is tempting to connect this to the low frequency of use in these areas. Recall that 66-78% of respondents reported never using the open space in question in these areas.

9.4.4 SENSE OF OWNERSHIP

The last theme of Sense of Ownership corresponds with Question 13 in Malmö, which asked whether the open space was considered to be for residents (see figure 17). Here there was less variation in response than has been seen in the previous themes and respondents overwhelmingly find the open space to be for residents, with only a few noteworthy exceptions. By far the lowest share perceiving the open space was for residents was in area S14, where only 36% found the space to be theirs and a majority of 53% thought the open space was no more theirs than anyone else's. (Even area S12 was far higher with a 60% sense of ownership). S14 is located next to a large park and a high presence of strangers moving within the area has already been mentioned. This might also explain why areas S11 and S12 have relatively strong sense of ownership – it may be that fewer strangers means that fewer outsiders are vying for the same space, leading to an ownership by default, if you will.

See separate pdf.

Figure 17. Sense of ownership by area.

Areas S13, S17 and S18 again perform similarly, and again it is a bit puzzling that these areas do not have responses more in line with the closed blocks. Evidently, being almost enclosed is not enough to support ownership if there are internal entrances (S13 and S18) or deliberate access routes through the block (S17).

9.4.5 SUMMARY OF KEY RESULTS IN STOCKHOLM QUESTIONNAIRE

Summarizing the perceptions by residents as captured in the Stockholm questionnaire, the principal result is that yes, the trends seen in Malmö are also evident in Stockholm. To reiterate:

- Use of yards is quite low overall; in fact a majority of respondents never use their yards at all. Confirmed in Stockholm.
- Internal entrances seem to have an impact on meetings between neighbours. Confirmed in Stockholm.

- In Stockholm, children play most in yards where frequency of meetings between neighbours is high. CHECK AGAIN FOR MALMÖ
- Respondents in closed yards tend to find these safer than residents with more open space. Confirmed in Stockholm.
- More closed configurations translate to clearer boundaries in the eyes of residents. Confirmed in Stockholm.
- More open configurations translate to more strangers noted in the open space. Confirmed in Stockholm.
- Sense of ownership is supported by closed blocks. Confirmed in Stockholm.

It would appear that the findings in Stockholm do corroborate the Malmö findings. Figure 14 above shows the average frequency of use of the open space for Stockholm and Malmö, illustrating that in spite of some differences in responses, the general trend-line is the same. Most respondents never use their open space, but this trend is stronger in Stockholm than in Malmö. In fact, if adding the regular users together, it would appear that a majority of Malmö respondents on average use their open space with some regularity (occasionally or more).

LIST ANY OF THE STOCKHOLM FINDINGS NOT SEEN IN MALMÖ BUT STILL IMPORTANT, like strangers corr to less use!

Additionally, it is worth mentioning that the Stockholm results appear to correspond even more with the urban form than in Malmö. This is especially evident in the case of the closed blocks whose respondents repeatedly show similarities in their views on strangers, borders, safety, use etcetera. Recall that in Malmö, use did not seem to correspond with the closed blocks. The closed blocks in Stockholm selected for study all happen to be quite spacious, which may have something to do with why their open space is more like that in area M02 in Malmö than the smaller M01 yards. Large, enclosed yards appear to be used most often – this was the case in Stockholm and in Malmö. While some consistencies have been noted above, it is important to note how precarious it is to draw too far-reaching parallels between Malmö and Stockholm. For one thing, the cities are quite different and the spread of areas within their respective cities with 17 in Malmö and 11 in Stockholm is by no means a large enough sample to capture the complexity of factors outside of the urban form. Demographic differences have been mentioned and will be discussed further on, but even other locational properties likely play a role. For instance, the study areas in Malmö are more dispersed within the city, while those in Stockholm are all within what is considered the central city, with the exception perhaps of areas S17 and S18. Whether this matters to the findings is of course difficult to say without further research. A suggestion would be to look at varying morphologies in closer proximity in Malmö and/or

more dispersed in Stockholm, but that is beyond the scope of the research presented here.

9.5 RESULTS OF THE SPATIAL ANALYSES

The spatial measures are the quantitative complement to the qualitative analysis comprised of the questionnaire, described in detail above and by way of the site audits that will be described in chapter 10. Quantitative measures of the urban form are especially useful for comparison between areas, since by themselves values such as density FSI (Floor Space Index) give quite an incomplete picture. Taken together however, even quantitative measures can be fairly descriptive and capture some aspects of the built environment, which are relevant to how spaces must be experienced by users on-site (Berghauser Pont and Haupt, 2010). This can be confirmed with an evidential approach, which attempts to verify based on actual experiences what the measures mean. In the following section, correlation analyses will attempt to do just that, connecting spatial parameters to social responses as gleaned from the questionnaire.

For the moment, the spatial analysis results will be described in a more comparative way, seeking trends or patterns in Malmö versus Stockholm, but mainly of course seeking to describe the built environment in a way that is useful to further conceptualize the role played by the urban form in underpinning social behaviour. It is also important to be aware of what limits there are in drawing generalizable conclusions from the data, for instance by examining if there are gaps in the sample. If the differences between Malmö and Stockholm are too great, it is perhaps difficult to make assertions that the urban form has a definitive impact. With this in mind, a broad range of morphological types had been selected in both cities. As has been noted above, how the areas are dispersed within their respective cities mean that locational differences exist between areas, but the spread of morphologies and contexts is considered good enough for the purposes of the research. The spatial analysis results will be described from the local to the locational, first in terms of the derived local measures of enclosure and internal entrance share. Following this, the density measures (FSI, OSR and GSI) will be reported as a description of the immediate context. Lastly, the configurative analysis of the network integration will be addressed as a way of capturing the locational properties of each study area in their position within the city as a whole.

9.5.1 THE ENCLOSURE MEASURE

Enclosure is measured in a GIS operation that quantifies the percentage of the building mass concentrated to the perimeter of the block. A high enclosure thus means that the perimeter is more built and the open space consequently is more framed.

The Stockholm cases are far more enclosed on average than the Malmö cases, 79% versus 28% in the Malmö study areas.

See separate pdf.

Figure 18. Enclosure diagrams for each area.

9.5.2 THE INTERNAL ENTRANCE MEASURE

Entrance density captures simply the total number of entrances within the study area normalized for differences in size. Stockholm has a higher entrance density with 15 entrances per hectare to Malmö's 11. While this may say something about the potential for exchange between inside and outside, the share of entrances that are on the inside of the block (internal) versus at the perimeter (external) is captured in the internal entrances measure. The Malmö average is 49%, meaning that half of the entrances are on the inside of the block, versus 27% or roughly a quarter in Stockholm.

See separate pdf.

Figure 19. Bar graph showing internal vs. external entrances.

9.5.3 OPEN SPACE

In general, the Malmö study areas are larger; the average size is 2,91 hectares versus 1,29 in Stockholm. In the Malmö study areas, 68% of the open space is on private property, the remaining open space is legally speaking in the public realm. In the Stockholm areas, 48% of the open space is on private property, the remainder is on public property.

ADD % OPEN SPACE ON PRIVATE PROPERTY FOR ALL AREAS AS WELL.

9.5.4 THE DENSITY MEASURES: OSR, FSI AND GSI

In terms of density, Malmö cases are far less dense on average: the FSI averages 0,80 in Malmö compared to 1,61 in Stockholm. This is also reflected in the ground coverage GSI, which is 0,24 in Malmö and 0,33 in Stockholm. As will be seen shortly, the ground coverage is an indicator also of enclosure,

since as density FSI goes up, unless buildings go up in height (not generally the case in Swedish cities due to tall buildings being rare), the built mass has to expand *out* rather than extend *up* (Berghauser Pont and Haupt, 2010)[14]. The third density measure, OSR captures the pressure on the open space as a factor of the FSI and GSI. Both how much space is framed and how many potential users are in the vicinity are relevant. The average OSR in Malmö is 1,09 versus 0,28 in Stockholm. This translates to about three times greater pressure on the open space in the Stockholm cases than in the Malmö cases.

See separate pdf.

Figure 20. Areas in Spacemate graph (Berghauser Pont and Haupt, 2010); the size of the circles indicate enclosure and this correlates with the sense of ownership. Larger circle = more enclosed yard = higher perception of ownership.

9.5.5 THE NETWORK CONFIGURATION

WRITE LATER! SPACE SYNTAX REFERENCES ETC.

9.6 RESULTS OF THE STATISTICAL ANALYSES

Many noteworthy[15] correlations were found between built form and trends in the responses of residents in the questionnaire. Methods of spatial analysis, including material analyses quantifying built form parameters and locational analyses, proved quite fruitful and when responses, averaged by area were tested for correlations with the spatial data, several spatial variables proved to correspond with questionnaire results. Once run through statistical programs, even statistically significant correlations were plentiful. That being said, as has been often cautioned, *correlation is not causality*! Given the complexity of factors influencing territorial behaviour, interpreting the results was not necessarily straightforward. In fact, explaining the correlations is in many ways a qualitative task, one that incorporates observations on-site as well as experiences from practice. Architecture is not always, but at it's best a collaborative and holistic endeavour. Being an inquiry within the field of architecture, various contextual factors as well as knowledge gleaned from site visits and conversations (with residents, rental management and other stakeholders and colleagues in the field) will be considered in order to paint a

[14] There are presently quite strong political and popular opinions favouring taller buildings in Stockholm, these are quite often seen as an easy way to add more density and thereby more housing, but demonstrate an insufficient understanding of the consequences at ground level, generally more open space and hence distance between buildings is a byproduct of taller buildings, at least if these are to have windows on all sides.

[15] Only correlations which held statistical significance were considered reliable, that is correlations significant at the 0,01 or 0,05 level (* and **, respectively in the correlation tables).

more complete picture of how urban form impacts the utility of the open space.

While the results of the spatial and statistical analyses will be presented first without much flourish, subsequent chapters (particularly Chapters 11 and 12) will discuss implications of the findings. In this chapter, the focus will be mainly on the built environment and specific characteristics that were analysed in relation to what residents reported in the questionnaire. Subsequently, chapter 10 will explore how taking ownership of space through appropriation can be analysed using site audits of traces of use and vested interest in the open spaces studied.

9.6.1 CORRELATION RESULTS

Once again, the statistical results will be presented thematically, first with a focus on the correlation results and following this with a multiple correspondence analysis MCA (not yet done). Appendix n is a table listing the correlation results. The following variables were tested for correlations:

Explanation of Measures:	
Year	year construction completed
Tenure	renter occupied RO; owner occupied OO
Area(ha)	area, in hectares
OSprop	open space (on property), in hectares
Enclosure	% overlap between building mass and 10M buffer inside property line
Frequency	total frequency of use, averaged by study area
Ownership	sense of ownerhsip of yard, averaged by study area
Safety	sense of safety, averaged by study area
Strangers	rate that presence of strangers was noted
Appropriation	share of intrinsic to extrinsic approp. traces
GSI	total building footprint / area of study area
FSI	total floor area / area of study area
OSR	1 - GSI / FSI
r2(500)	avg network integration at 3 axial steps within 500m metric radius (local)
r8(500)	avg network integration at 9 axial steps within 500m metric radius (neighborhood)
OS(prop)	share of open space on property to open space in study area
Inside entrances	percent of adress points not within 10M buffer inside property line
Entrance density	total adress points / study area in hectares

Table 3. Spatial measures used in correlation analyses.

Results will be presented according to the four questionnaire themes and will consider the spatial analysis variables found significant. Only statistically significant correlations will be reported since these are generalizable to a larger population than the sample. Lower significance may say something about correlations within the sample but are not possible to extrapolate beyond the sample. In general, the more interesting correlations for this

research are those that relate to the urban form, e.g. the medium in which architects, urban designers and planners work. Additionally, where it is relevant to do so, correlations between questionnaire questions will be noted as well as correlations between spatial measures. In the work of Berghauser Pont and Haupt (2010) the relation between the density variables (GSI, FSI, OSR) and urban form (including enclosure) are explained extensively. Most important to mention here is that higher coverage (GSI) results in a more peripheral disposition of buildings on the plot and create more enclosed yards. The relation between enclosure, GSI and the other density variables can be represented in the Spacemate diagram developed by Berghauser Pont and Haupt (Figure 20).

A mention should be made of what is a strong correlation, or in statistics termed "effect size" for Pearson's r (the correlation coefficient). In the following, a value for r = +/- 0,5 is considered a large effect, r = +/- 0,3 is considered medium, and r = +/- 0,1 is considered small. Additionally, only effects that were similar in Stockholm and Malmö will be considered generalizable, even if the overall correlation is high in one city. For instance if the correlation is positive in Malmö and negative in Stockholm, the inconsistency can only be speculated on without further research.

9.6.2 THEME 1: CORRELATING FREQUENCY OF USE TO SPATIAL MEASURES

Frequency of use		OS_prop_ha	FSI	OSR	GSI	%_ins_entr	enclosure	r2_500m	safety	strangers	ownershp	freq_total	%_OS_prop	entr_to_area
freq_total	Pearson Correlation	,483**	-,605**	,528**	-,521**	,280	-,541**	,013	,167	,261	-,175	1	,358	-,379*
	Sig. (2-tailed)	,009	,001	,004	,004	,150	,003	,947	,396	,180	,374		,061	,047
	N	28	28	28	28	28	28	28	28	28	28	28	28	28

*. Correlation is significant at the 0.05 level (2-tailed). **. Correlation is significant at the 0.01 level (2-tailed).

Table 4. Pearson's correlations with frequent use.

Frequent use by residents of the open space associated with their buildings correlated most highly with density, expressed as FSI (Floor Space Index), but negatively so – as FSI goes up, total frequency of use goes down (r = - 0,50). OSR also correlates positively, indicating that use goes up as share of open space increases (r = 0,528). (GSI is also significant due to the close interrelationship with FSI, which was most significant of the three density measures)[16]. This is quite a high effect! Additionally, entrance density

[16] After FSI, the enclosure measure had the highest correlation with the total frequency of use (r = - 0,51), but this was not found to be statistically significant. Within the sample however, the negative correlation holds, so for the areas studied, the more enclosed open space had less frequency of use. The amount of open space on property also had a relationship with use, but not a statistically significant one. The effect is

(expressed as total number of entrances divided by the area in hectares), has a negative correlation with use (r = - 0,38). It might be puzzling to see entrances as a deterrent to use, but two factors are likely at work. First, more entry points are related to density – unless the density is in the form of taller buildings, the ground coverage GSI tends to be greater, hence more entrances are needed to service the added building mass (Berghauser Pont and Haupt 2010). Second, the entrances themselves may cause an increase in movement and pedestrian traffic in the yards, which may deter use simply by using space that might otherwise have recreational potential. In fact many spatial variables do relate to each other in ways that are not immediately apparent.

See separate pdf.

Figure 21. Spacematrix diagram again but with colour indicating frequency of use.

Figure 22 illustrates four study areas that had a comparatively high frequency of use relative to the other areas – two in Malmö and two in Stockholm. Interesting to note is that even though enclosure correlates negatively with frequency of use, the most used Stockholm cases (Areas S08 and S09) are both enclosed. It may be that the negative correlation with enclosure needs to be qualified a bit. Whereas enclosure of very small open spaces (such as in area M01) is negative from the standpoint of use, in a larger open space the enclosure might have a negligible effect on use. This is important to point out since it is too simplistic to say that enclosure always affects use negatively. There simply are not enough very large enclosed yards in the sample to say what happens at this end of the spectrum. What the material does say, however, is that enclosed yards if large enough may still be used, as seen in areas S09 and S08 (Figure 14). Area S09 then appears to be large enough (1,12 hectares) and have a low enough FSI (1,27) that use is high, in spite of being enclosed. S12 has a lower FSI (1,18), but is used only half as frequently (0,23), also indicating that there is more to consider than merely density. Here, a multiple correspondence analysis could shed light on how the combination of use and enclosure affect the other variables.

Figure 22. M33, M43, M51 and S09

In Malmö, areas M33 and M51 (both large and having low enclosure) have the highest frequency of use. For it's size, area M43 has a high frequency of use

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positive (r = 0,46) indicating that the size of the open space in absolute terms has a relationship with the total frequency of use, but we can only claim this for the areas studied.

but this is likely attributable to the adjacent public park; in other words the open space probably feels more spacious as result. Area M51 is most representative of the combination low FSI (0,53), large open spaces (4,22 hectares) and low enclosure (13%) being predictors of a high frequency of use (0,67).

9.6.3 THEME 2: CORRELATING SAFETY & SOLITUDE TO SPATIAL MEASURES

Sense of safety		OS_prop_ha	FSI	OSR	GSI	%_ins_entr	enclosure	r2_500m	safety	strangers	ownershp	freq_total	%_OS_prop	entr_to_area
safety	Pearson Correlation	-,329	-,129	,020	,180	,101	,117	,452*	1	-,153	,313	,167	-,185	,100
	Sig. (2-tailed)	,088	,512	,918	,358	,609	,554	,016		,437	,105	,396	,345	,614
	N	28	28	28	28	28	28	28	28	28	28	28	28	28

*. Correlation is significant at the 0.05 level (2-tailed). **. Correlation is significant at the 0.01 level (2-tailed).

Table 5. Pearson's correlations with sense of safety.

The most statistically significant spatial correlation relating to safety was with the spatial variable capturing the very local network integration within 500 meters of the study areas. The effect (0,35) is a positive one, with higher degree of safety reported in areas with a high local integration, a trend seen in both Malmö and Stockholm. Jane Jacobs was an early advocate of "eyes on the street" as a way to promote safety in city neighbourhoods, something which numerous studies using Space Syntax have also found (cite some). Higher network integration has been found to be an accurate predictor of which streets will tend to be populated. What is noteworthy is that in both Stockholm and Malmö, the sense of safety also correlated quite strongly and negatively with presence of strangers (-0,49); however as this was not found to be statistically significant it may only reflect the views of respondents in the study and thus is not generalizable. Still, it is plausible that strangers on the street is one thing, but strangers in the yard is quite another and potentially unsettling situation.

Figure 23. M62, S15 and S18

Generally, the closed blocks fared quite well in the assessment of safety in the questionnaire. As it happens, this typology is plentiful in central urban areas where a combination of expensive real estate and a traditional urban tissue with perimeter blocks is the norm in both central Stockholm and central Malmö. Rather than illustrate safety with these closed blocks, it is more interesting to look at open examples where safety is low or high and relate this to the morphology. Safety is not entirely due to taking strangers out of the equation; if it were, then presence of strangers (and enclosure) would have a more statistically significant correlation with safety. In Malmö, area M41, M42 and M43 have already been discussed as being safer than might be expected, being near (and open to) a park. Here, the high network integration

(r2) again suggests that this area has locational affordances that come from a combination of spaciousness and high centrality in the network (EXPLAIN AS PROXIMITY TO THE CENTRE). Area M62 on the other hand is spacious with low network integration, a combination that is unsafe according to respondents. Vast open spaces can feel safe if others are present but may be threatening if too solitary, at night for instance. In Stockholm, area S14 is located next to a large park and is considered unsafe. Here the network integration is just below the average (2,44). Area S18 is the reverse, with a high local integration and is safe in spite of an open configuration[17]. From the standpoint of safety, it may well be that in areas of low integration, closing the blocks is a way to improve the perception of safety by way of supporting control. This may or may not reflect actual safety, however. As mentioned previously, current praxis is often the reverse: Closed blocks in central high integration areas and more open configurations outside the city centre where integration tends to be lower. This is likely due to construction economy and the impetus to maximize FSI where cost of land is highest.

As the question relating to finding peace and quiet was posed in the Malmö questionnaire but not in Stockholm it is a bit precarious to dwell on the theme of solitude at any length. Predictors of a positive response to this question were spontaneous meetings/greetings with neighbours, finding the yard to be safe and greater size of the yard. A strong correlation was found in Malmö between finding peace and quiet and responses to the question of whether the open space available was a "yard" (also a question not posed in Stockholm). The correlation was tested both for each area (correlation r = 0,34) and tested on individual responses for the Malmö data (n = 309) and the effect was found to be statistically significant at the 0,01 level (r = 0,36). The question of what spatial variables support the sense of a yard will be discussed further on.

9.6.4 THEME 3: CORRELATING BORDERS & CONTROL TO SPATIAL MEASURES

Strangers present		OS_prop_ha	FSI	OSR	GSI	%_ins_entr	enclosure	r2_500m	safety	strangers	ownershp	freq_total	%_OS_prop	entr_to_area
strangers	Pearson Correlation	,510**	-,264	,287	-,300	-,034	-,457*	-,147	-,153	1	-,484**	,261	,367	-,534**
	Sig. (2-tailed)	,006	,175	,138	,121	,865	,015	,455	,437		,009	,180	,055	,003
	N	28	28	28	28	28	28	28	28	28	28	28	28	28

*. Correlation is significant at the 0.05 level (2-tailed). **. Correlation is significant at the 0.01 level (2-tailed).

Table 6. Pearson's correlations with presence of strangers.

[17] Worth mentioning is that S18 is an owner-occupied area within a neighbourhood with predominantly the same tenure; area S14 is a renter-occupied area within a mixed-tenure neighbourhood.

Having already discussed strangers abstractly in the context of safety above, in the theme of borders and control (VGA) it is necessary to expand upon these results. Whether strangers are present it has been argued, reflects one aspect of how controllable the open space is. Correlating with a high presence of strangers is first the size of the open space. Larger open space tends to have more strangers in it according to respondents in the questionnaire (0,51). This is quite intuitive as is the second highest correlation, for the spatial measure of enclosure (- 0,71). The negative effect indicates that these are inversely related such that low enclosure correlates with a high presence of strangers to a statistically significant degree. Recalling that the spatial measure of enclosure has a social counterpart in the questionnaire (asking whether boundaries were clear or unclear), a comparison between the enclosure measure and perception of legibility of boundaries was done. These were done independently in Malmö and Stockholm since the questions were phrased somewhat differently; still the results were similar. Enclosure and clarity of boundaries correlate very strongly by 0,83 in Malmö and 0,76 in Stockholm. NEEDS STATISTICAL SIGNIFICANCE! What this means is that the spatial measure of enclosure is quite a good proxy measure of how clearly boundaries are perceived. Clarity, like enclosure has a negative relationship with presence of strangers (- 0,51). It is striking in fact, that the spatial measure enclosure better corresponds with presence of strangers than the reported perception of clear boundaries in the questionnaire. This means that if one is interested in a social response, such as a sense of whether strangers are noted by residents in an area, a desktop analysis of the enclosure might in theory give a fairly good indication. But whether strangers are a problem is more complex and would need further study. What is clear from the material is that whether strangers are perceived as an intrusion depends, a theme which Chapter 11 will pick up.

In Malmö, presence of strangers correlated with a high entrance density (-0,41), which also had statistical significance overall. But this is likely because as enclosure goes up, number of entrances tend to also. In Stockholm it was rather share of internal entrances (-0,34) that correlated with presence of strangers – a more plausible explanation. A larger sample, preferably in more cities, would undoubtedly shed light on whether these are generalizable trends, since there were not many cases in Stockholm with internal entrances. Also, the notion of whether the open space was yard-like correlated well with the enclosure measure (0,63), although this could only be tested for Malmö since the question about yards was only included in that questionnaire.

Figure 24. M32, M63, S14 and S11

In areas S14 and S11, the sense of clarity is low (boundaries were clear according to only 25% and 19% of respondents, respectively), but the enclosure of 67% and 66% is moderate. Yet the presence of strangers is far higher in S14 than in S11 (a daily rate of 0,37 and 0,13 respectively). Area S14 is estate-like with a homogeneous building stock of high-rise slabs and is 2,67 hectares to area S11's 1,0 hectare. Telling strangers from neighbours is more difficult in a larger estate of fluid open space, which is why S14 illustrates the role played by the size of the open space so well, since S11 is otherwise similar.

In Malmö, the largest area, M32 (5,08 ha) has an average level of clarity (the average response was "not really" (response 3), but the low enclosure of only 12% likely reflects the high presence of strangers (0,82). The same is true in M63, (4,40 ha) where the average awareness of boundaries is again "not really" (response 3,38, e.g. between "not very clear" and "partly"). Here, a high presence of strangers of 0,91 corresponds with the low actual enclosure of only 9%.
TRANSLATE MALMÖ RESPONSES TO SAME SCALE!

9.6.5 THEME 4: CORRELATING SENSE OF OWNERSHIP TO SPATIAL MEASURES

Sense of ownership		OS_prop_ha	FSI	OSR	GSI	%_ins_entr	enclosure	r2_500m	safety	strangers	ownershp	freq_total	%_OS_prop	entr_to_area
ownershp	Pearson Correlation	-,641**	,457*	-,468*	,566**	-,144	,678**	,175	,313	-,484**	1	-,175	-,568**	,503**
	Sig. (2-tailed)	,000	,015	,012	,002	,466	,000	,372	,105	,009		,374	,002	,006
	N	28	28	28	28	28	28	28	28	28	28	28	28	28

*. Correlation is significant at the 0.05 level (2-tailed). **. Correlation is significant at the 0.01 level (2-tailed).

Table 7. Pearson's correlations with sense of ownership.

The variables with statistical significance with regard to sense of ownership are enclosure, size of the open space, % open space on private property, GSI and entrance density. In effect, the more enclosed a yard is, the more people feel that it is theirs; the variable which correlates most strongly with ownership is enclosure (r = 0,68).

Sense of ownership goes down as the absolute size of the open space (in hectares) goes up (r = - 0,64). Ground coverage by buildings, GSI (r = 0,57) correlates with higher sense of ownership. In other words, larger yards decrease the sense of ownership, while enclosure and higher building coverage support sense of ownership. That GSI correlates to the sense of ownership is not surprising because GSI and enclosure are themselves strongly correlated (r = 0,88). The perception of ownership increases in more enclosed yards and thus in areas with a higher GSI (and FSI).

Similarly, a positive correlation was found between entrance density (r = 0,50) and sense of ownership. It would appear that the density of entrances plays a role in generating more opportunities to pass through the yard, which might impart a higher sense of ownership. That would be one interpretation of the result. However, another explanation can be found in the correlation between entrance density, enclosure and GSI. As density (FSI) and GSI (and consequently also enclosure) go up, entrance density must also increase simply to service the greater façade length. This might explain the increase in entrance density.

Figure 25. M54, M70, S14 and S15

Comparing areas S14 and S15 from the standpoint of ownership is illustrative. Both have comparable FSI of 2,11 and 2,23 respectively, but area S14 is an area of high-rise slabs with 2,04 hectares of open space, while S15 is half of a closed perimeter block framing 0,54 hectares of open space (on the respective properties). The enclosure measures reflect the morphology – 69% enclosed in S14 versus 100% in S15. The combination of lower enclosure and larger open space in S14 corresponds with a far lower sense of ownership (0,36) than in S15 (0,93). In fact, this is the lowest sense of ownership of all, shared with the Malmö area M54. Not surprisingly, M54 has a very low enclosure of 9%; that it is also spacious with 1,84 hectares of open space does not help the sense of ownership, according to the correlations.

In terms of the measured enclosure, M70 is only 6% enclosed, which is the lowest of all 28 areas. As a consequence of the siting of the buildings, very little of the open space is enclosed by the built form. Rather, the open space is characterized by its openness and subsequent exposure to the intersection of two major streets at the southwest corner of the plot. However, the property is fenced off almost entirely with a permeable metal fence that allows visibility into and out of the open space and free access through a couple of gates. Based on the low enclosure by building one would expect a very low sense of ownership, however ownership is higher than in areas with a similar low enclosure but without the secondary boundary (compare M70 with M54 for instance). We might thus suspect that secondary boundaries can substitute for primary boundaries in some cases. Further, as was mentioned earlier, ownership correlates negatively with presence of strangers (r = -0,484), supporting the notion that fences support control.

9.6.6 WHAT RESIDENTS SEE AS YARD-LIKE

		FREQUENCY	CHILDREN PLAY	MEET NEIGHBOURS	SOCIALISE	SOLITUDE	SAFETY	YARD FOR RESIDENTS	YARD BELONGS TO BUILDINGS	CLARITY	AREA_ha	OS_prop_ha	FSI	OSR	GSI	ENCL	r2_500m	perc_OS_prop	perc_ENTR_ins	ENTR_area_ratio
IS THE OPEN SPACE A "YARD"	Pearson Correlation	,157**	,204**	,150**	,125*	,357**	,287**	,369**	,418**	,347**	,005	-,054	,264**	-,225**	,383**	,395**	,209**	-,335**	-,276**	,420**
	Sig. (2-tailed)	,006	,000	,008	,028	,000	,000	,000	,000	,000	,933	,347	,000	,000	,000	,000	,000	,000	,000	,000
	N	309	309	309	309	309	309	309	309	309	309	309	309	309	309	309	309	309	309	309

**. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).

Table 8. Pearson's correlations with having a yard. Based on Malmö data, not aggregated by area.

Before discussing the implications of the findings, the topic of what is a "yard" must be raised again since there were interesting correlations between open spaces which residents find more yard-like and several other variables. These correlations were based on comparing the Malmö questionnaire results with the spatial analysis results, but since the statistical significance is high in many cases, the general applicability of the findings seem worth clarifying. For starters, the sense of having a yard correlated with sense of ownership, both in terms of the space belonging to the buildings (question 15) and belonging to the residents as opposed to everyone in the neighbourhood (question 11); correlations were 0,42 and 0,37 respectively. Following this, being able to find solitude (peace & quiet) was found to correlate with the more yard-like potential (0,36) as was the clarity of borders to surrounding open space (0,35). It would appear that these are the key social components that go along with a sense of having a yard, according to this questionnaire, however other parameters are possible. For instance, a study in Latvia found that residents considered large trees to enhance the feeling of a yard (cite Treija et al 2012).

In terms of spatial factors underpinning the most yard-like areas, a high ratio of entrances had the highest correlation (r=0,42) followed by enclosure (r=0,40) and GSI (r=0,38). As has been noted, these are likely interrelated and the high entrance-density reflects the need for more entrances to service the greater ground coverage (or façade length more likely). Even taken together, the role that these enclosure-type variables appear to play in supporting a sense of having a yard is compelling. Two variables which had negative correlations are also worth noting – namely OSR (r=-0,38) and the share of internal (versus external) entrances (r=-0,28). Internal entrances of course have a tendency to be accessible not only for postal workers, deliveries and visitors but also to strangers generally. So while entrances per se are positive, internal entrances may undermine the open space's potential as yard. In many respects, whether the open space is considered yard-like is supported by enclosure but not by spaciousness, OSR (r=-0,23) and even less by the percent of open space on private (versus public) property in the tissue (r=-0,34). This implies that a certain intensity of users is not a disadvantage and that solitude is possible even in a yard shared by other residents. The theme of what is yard-like will be developed further in Chapter 11. Known users? In correlating with enclosure, but not OSR, the sense of having a yard appears to

align more with spaces of ownership than with spaces of use.

9.7 MAKING SENSE OF THE FINDINGS

Here follow the findings providing most insight moving forward into considering open spaces associated with buildings as having "territorial performativity." Both sense of ownership and frequency of use are strongly associated with enclosure, open space and the density measures FSI, GSI and OSR. However, the correlations are each other's reverse: the sense of ownership increases when yards are more enclosed, smaller in size and at higher densities. More notable, however is that the correlations are inversed from the findings for frequency of use. A higher FSI, enclosure and GSI have a negative effect on use; the higher these are, the less frequently the yards are used (according to the answers given in the questionnaire). But, as described earlier, more residents experience the yard with higher FSI, GSI and enclosure to be their own. In other words, more spacious yards (higher OSR) are used more frequently, but the sense of ownership is lower as well as the sense that one has a yard.

See separate pdf.

Figure 26. Use and ownership graph.

Understanding sense of ownership and frequency of use as responses underpinned by different spatial factors is a potentially powerful finding where architectural intervention is concerned. In some cases, it may come down to a choice between the two. A sense of ownership is supported in absolute terms by small, and more importantly, enclosed yards with clear boundaries to neighbours and to the public realm. Enclosure can be said to define the group sanctioned to use a space by defining who is excluded. The *perception* of being part of this entitled group (as opposed to the excluded group) engenders feelings of ownership. This may be the reason why too large yards see a reduction in the sense of ownership – the group entitled to the space becomes too big. A low degree of enclosure means implicitly that excluding others is not supported by the built environment. Figuratively speaking, any breach in enclosure means that control of the territory is compromised. This corresponds to theories on territories by Robert Sack and Ellinor Ostrom claiming that territorial production is closely tied to control. When an area is enclosed by buildings (e.g. a primary boundary), individuals or groups can control that space. Secondary boundaries (e.g. fences or hedges) do not seem to be able to produce the same result, but can help to arrive at a somewhat higher perception of ownership. More research is needed to arrive at conclusions on the precise role of secondary boundaries.

It seems clear that apart from control, exposure to view by those outside the open space is a factor to consider. The difference between enclosures by primary or secondary boundary, as derived here, is precisely one of visibility. However, enclosure is not necessarily beneficial to the frequency of use.

As FSI and GSI go up, so do sense of ownership; use on the other hand goes down at higher densities and coverage. Since FSI impacts use negatively, congestion is more a factor in use than in ownership and at already high densities, perhaps producing yards for intense use is optimistic. At lower densities, on the other hand, one might venture that use rather than ownership is a more realistic aim. A higher relative OSR and absolute size of the open space are further factors that affect use positively but ownership negatively. Interestingly, more generous open space improves sense of safety; this is in spite of the increase in presence of strangers. It may be that there is "safety in numbers" as the old saying goes, or that what Jane Jacobs called "eyes on the street" applies to yards as well. Here network integration played an important role; local r2 integration correlated positively with sense of safety. Otherwise, network integration had no correlations with the questionnaire, which perhaps points to the open space of yards being a product of rather a local situation (as opposed to locational). To the extent that yards are open, neighbourhood safety likely matters more. Accessibility within the neighbourhood is positive from the standpoint of safety – a finding supported in multiple other space syntax research (Hillier 2004). Other factors also enter into a sense of safety, such as ownership, finding peace & quiet and perceiving that the space in question was for residents. Check entrance density as proxy of movement in yard – mention if good or bad for use versus ownership. . .

It is noteworthy that size correlates to finding peace & quiet, but enclosure does not. This implies that other users are not an obstacle to peace & quiet per se, but that congestion can be. This finding is further reinforced by the somewhat surprising fact that spontaneous meetings with neighbours is not an impediment to peace & quiet. This suggests that the type of relaxation sought in yards is not dependent on solitude, but rather is harmonious with other residents. Hence yards should accommodate activities and interactions of a social nature. Perhaps there is even an expectation of some social activity in a collectively used yard and a degree of tolerance with it as long as there is enough space for everyone. In Malmö, predictors of higher rates of use included socializing with neighbours, finding peace & quiet, and having spontaneous meetings with neighbours. Apparently the social component has a strong bearing on use. Evidently, peace & quiet and engaging with

neighbours are not mutually exclusive; both support use as long as the FSI is not too high.

Whether residents notice strangers seems to be dependent mostly on enclosure, entrance density and the size of the open space on property. In more enclosed and smaller yards, strangers are not noticed or, more likely, they are not present. In larger partially open spaces, often combined with less density (e.g. less fellow residents) and less enclosure, strangers are noted and also identified as such. Recognizing strangers of course relies upon a degree of familiarity with fellow residents. In very large housing estates, research has shown that residents are unable to tell who is a fellow resident and who is a stranger (sources besides maybe Newman?). According to Richard Sennett (Sennett 1996), the public realm is (among other things) a place where strangers meet. When the yard is not differentiated from the public realm, as by enclosure from it, the yard becomes a place where residents meet strangers. Internally-fed housing configurations with entrances on the yard-side rather than the street-side will tend to have more strangers present within the open spaces, even if these are sanctioned visitors, postal employees or deliveries.

Whether residents saw their open space as a yard was supported by a higher sense of ownership of the open space provided, greater ability to find peace & quiet, higher degree of enclosure of the open space, feeling the yard to belong to the residents, greater size of the yard and clearer boundaries. Having a yard correlates with the perception that the open space was provided for the residents specifically (as opposed to the neighbourhood or population at-large).

9.8 DISCUSSION

When dealing with interactions of spatial variables, everything is dependent. In particular this was found with FSI, GSI and enclosure. The focus here then is not on finding some supposedly independent *spatial* variables affecting dependent *social* variables; this would be far too reductive. Rather the focus is on understanding the interactions themselves. Admittedly, there will be always be unaccounted-for factors that affect patterns in perception. For instance, it is important to mention that the less enclosed yards with lower densities (FSI and GSI) are in neighbourhoods with more peripheral locations as well as demographically having lower education level, more unemployment and lower (see Appendix n for full correlation results, including demographic data). The results can thus be influenced by these

demographic factors in combination with spatial parameters. More research is needed to clarify this, but currently it is difficult for ethical reasons to obtain demographic data at the same resolution (e.g. address level) as the spatial data generated by spatial analysis and social data derived from the questionnaire. The problem is one of varying resolutions in the data. Thus, drawing any conclusions from the demographic profile of the districts in question vis-à-vis the results of this research are hardly helpful at this time, even if factors which might affect patterns can be speculated on.

While conceding that demographic variables likely do matter to patterns of use and sense of ownership of yards[18], focusing on spatial parameters is arguably not only pragmatic (being an architectural inquiry after all), but also prudent from the standpoint of the built form being something malleable, able to be altered, while the demographic profile of residents admittedly changes over time but not by the hand of architects. Another argument for staying within the realm of architecture comes from the other science of space, geography (Harvey, cite properly). The first law of geography states that everything depends upon everything else, only closer things more so (Tobler, 1970). Hence looking for clues to patterns of use and sense of ownership in spatial and material factors immediately framing and producing a context for the open space in question is arguably a good place to start to understand how these specific territories are perceived and used. The role of the urban designer or architect then, is to translate such knowledge into better designs that consciously create spatial conditions for use and ownership. Simply put, this is about understanding that the way we design (produce form) sets the stage for residents to use it more or less, to facilitate ownership or not. The architect and planner have a responsibility to see that areas have and retain an appeal for residents over time. It may seem instrumentalist, but producing attractive yards and open space in the process of building is one way to ensure lasting utility and by extension to support social interaction, it seems. The urban form may not produce social outcomes directly, but may certainly facilitate these by providing suitable settings such as shared open spaces that perform as yards. Possible implications for

[18] Additionally, differences in tenure may have bearing on sense of ownership, although perhaps not in the manner expected. While it is common to presume and research does support the notion that owner-occupants have a greater vested interest in their property, anecdotal evidence suggests that renter-occupants may actually reside longer and take greater pride in community-building aspects of their living arrangement. In Stockholm for instance, owner-occupants have a strong financial incentive to climb the property-ladder, upgrading their living standard every few years, while renter-occupants move for other reasons, given the essentially static rental market that requires trading apartments rather than seeking vacant ones. Thus, in some cases, owner-occupants are less likely to care about aspects like yards.

architecture and planning practice should be clear. In producing territories like yards, "is it use or sense of ownership we are after?" is perhaps a question to ask on a project-by-project basis. The implications for professional responsibility were referred to in Chapter 2 and Part IV deals with this topic more extensively. Having synthesised the qualitative and quantitative dimensions of the empirical study, a conceptual framework will again be useful, much as it was in designing the research, in order to consider the results in generalizable terms. Hence, results that initially seem perhaps banal may be developed into a more nuanced picture of urban territoriality, as the discrete components of the research are fleshed-out. For instance, the procedure of testing the initial results in current planning schemes (see chapter 13) produced an additional level of insight into the territorial problematic in practice.

Although some statistically significant correlations were found between variables, some of the correlations are only moderate. What is more, we can only conclude that these spatial measures can be associated with the territorial responses and that is certainly not the same as establishing the spatial measures as causing the territorial responses. Although this might seem obvious, it is important to state it as practitioners might read the results too much as normative prescriptions for territoriality. On the other hand, we can say that the probability that yards will be used more increase when they are larger, for instance. Chapter 13 in particular will examine the extent to which open configurations in current residential housing proposals have territorial consequences in light of what this empirical portion of the research has shown matters to use and sense of ownership of space. In chapter 14, a case will be made for an adaptive densification considering territorial outcomes.

add comparison with Latvia study if relevant! (Treija, Bratuškins et al. 2012)

10. WHAT DO RESIDENTS DO?

Transparency only reveals everything in which you cannot partake.
(Koolhaas, Junkspace: 150)

Use and sense of ownership do not have the same built form indicators; use appears to be related to the size of the yard and small (below 200m2) enclosed yards were used very infrequently. In spacious yards, competition over space is not a problem and frequency of use tends to be higher. Sense of ownership, based on chapter 9, is best supported by enclosure, but may also be strong in yards where the presence of strangers is reduced by other factors, such as being near a park. Since the enclosure simultaneously restricts access and visibility, at least in the case of primary boundaries (secondary boundaries observed were generally more permeable to sight), sense of ownership might also be considered as the potential for privacy control. Such an interpretation is supported by the finding that as presence of strangers goes up, sense of ownership as well as sense of safety go down. Use? For the sense of having a yard, both enclosure and use, as well as interactions with neighbours support the perception of having a yard.

What is interesting with regard to the site audits is whether the previous findings are borne out by the actual evidence of appropriation on-site. Do residents use and identify with the yards as they say they do? If so, we would see a higher share of appropriation traces in the yards with a higher sense of ownership, and less in the yards with a higher frequency of use; the latter may actually be quite park-like due to their size and accessibility. Further, since the sense of having a yard is supported by use (thereby also size) *and* enclosure, we would expect to find greater evidence of the space serving as social arena, e.g. a greater intensity of traces in these examples. Having sought correspondence between the questionnaire findings and the spatial analysis in chapter 9, this chapter will outline the audits performed on-site in Malmö and Stockholm in the spring of 2011 and 2012, respectively. It should be clear from the preceding chapter that the approach taken is inductive, that is: "A long, interactive process of identifying key themes, developing an elaborate coding scheme, and eventually synthesizing the results" (Groat and Wang 2001, 174).

Again, the research stems from the question of whether morphological configuration affects the use of yards. Having found that not only use, but also sense of ownership are affected by spaciousness and enclosure as well as other variables, now the task is to identify if this finding can be confirmed in

the natural setting of the sites in question. If so, then it should be possible to generalize about what use and ownership of yards might *look like*.

As part of the tripartite methodology, both qualitative strands in the research (questionnaire and site audit) attempted to capture the *experience* of the open space. For the questionnaire, meaning in context meant gathering the perceptions of respondents; for the site audit, meaning in context meant observing the natural settings of the open spaces in question in order to test whether residents use yards differently in ways that relate to their perceptions of the yards. Hence, the insider's perspective of the questionnaire is balanced with "outsider's observations" much in the way Dana Cuff outlines as research methodology in *Architecture: The Story of Practice* (Cuff 1992). However, where Cuff in her own words rejects "positivist notions of the social world" in order to embrace interpretation and what she calls "meaning in context," here the quantitative dimension of spatial analysis is seen as a necessary complement to the qualitative portions. Moreover, as was described earlier, making sense of the quantitative data is in many respects an intuitive and iterative process, incorporating impressions, professional experience and dialogue with others; so, in many respects also qualitative. Thus, while the spatial data might appear abstract on it's own, it can be an extremely powerful tool (if somewhat unwieldy) when qualified with meaning. As before, the findings will be correlated with spatial data derived for the study areas as well as data from the questionnaire.

10.1 OPEN-ENDED EMPIRICAL ANALYSIS

Chapter 8 described the principles of "grounded theory" (see Groat and Wang 2001), in which theory building grows out of the data in an open-ended process. This means stepping back from the results from time to time to see which direction the research needs to take. In analysing the questionnaire, some anticipated connections between the urban form and use were found not to be so simple. For instance, enclosure did not seem to support greater use, which was a "hunch" going in. And, it was the finding that use and sense of ownership have different spatial underpinnings that had potentially the greatest bearing on the research moving forward. To begin with, a broadening of the conception of what is a territory was necessary. Chapter 6 reviewed territoriality theory, establishing that for the purposes of this research, a distinction is made between social territories and the morphological and legal territories that underlay them. Legal and morphological territories may or may not be appropriated, it was argued, but are territories nonetheless, just not social territories. This chapter will concern itself mainly with the latter. Social territories include the spaces we

appropriate in an ownership sense, but also spaces we appropriate through use. Appropriation is here defined as the production and upholding of territories through practices; the human and social (as opposed to spatial) processes in which spaces gain meaning. Appropriation may be fleeting or more permanent. The public space of a park is appropriated by use, but this ends when the user leaves. Taking ownership of a space establishes a more permanent relationship with it. Hence, understanding use and ownership as separate forms of appropriation is something that the site audits needed to consider. These were initially intended to simply verify the resident perception findings, confirming that traces of use were more prevalent in the more used yards and vice versa. Now, it seemed, a refinement was necessary that incorporated the findings on ownership. In short, was it possible to distinguish from traces whether yards were more of the use- or ownership-variety?

10.1.1 STUDY AREAS

Chapter 9 described the procedure in which 7 Malmö study areas were subdivided into 17. With the addition of 11 Stockholm areas from an architectural student's thesis incorporating a similar questionnaire, a total of 28 areas were analysed spatially and statistically. For the site audit, 19 areas were analysed – namely 8 open space configurations (yards) in Malmö and all 11 in Stockholm. In the Malmö cases, the built form frequently framed several open spaces that might be considered yards. At the time of the site audit, the Malmö areas had not yet been subdivided and some were therefore quite large (namely areas 3, 4, 5 and 6 before the subdivision). Thus, for practical reasons it was not possible to audit each and every yard so the site audit instead began with selecting on site the yard most representative of the open space configurations. In Malmö area 3, two yards were analysed since the morphologies were quite different. For comparison with the findings in Chapter 9, areas will be discussed by their subdivided names, such as M32 and M33. As before, the results of this portion of qualitative study will be described thematically.

10.1.2 SITE AUDIT PROCEDURE

Systematic site audits were conducted in May 2011 in Malmö and April - May 2011 in Stockholm. In each study area, yard situations were determined based on enclosure by buildings or other elements like fences or bushes, but in open configurations without enclosure, a judgement was made in each case of what was the extent of the yard. Observations of features were subsequently mapped according to a fieldwork protocol. The fieldwork protocol is included as Appendix n. Elements of the building interface, such as windows and entry-points were noted. Features were then mapped,

including installations that reflect a program-intent, such as benches, waste-bins, tables, grills, etcetera as well as *traces of appropriation*. Traces of appropriation are artefacts that indicate variations of human activity, such as furniture, plantings, toys or clothing left behind. Traces of the antisocial variety, like litter and tags/graffiti were also noted. Appropriation traces, it was believed, potentially reveal how residents comprehend and take ownership of the spaces in question. The notion of traces comes from the field of archaeology, referring to the study of material artefacts representing past cultural practices. This is not to be confused with *tracings*, which in the opinion of landscape urbanist James Corner simply describe what is already known.

> Thus, mapping *unfolds* potential; it re-makes territory over and over again, each time with new and diverse consequences. Not all maps accomplish this, however; some simply reproduce what is already known. These are more 'tracings' than maps, delineating patterns but revealing nothing new. (Corner in Cosgrove 1999, 213)

The aim in mapping installations and traces was to be able to compare whether the relative intensity of features in the study areas had any correlation with the utility of the yards in question. First, whether the implicit invitation to use space signified by installations, such as sandboxes and seating options were responded to by residents in the evidence of appropriation and personalization. Second, whether traces were concentrated to particular sites of recurrent activity. The hypothesis is that programmed features represent a "sanctioning of use" of a conceived territory but that this invitation may or may not be picked up by potential users or enacted in their lived practices. In short, the site audit portion of the research asks:

> Are territories lived according to how they were perceived in the questionnaire? Further, do traces of practices correspond with how the areas are configured (e.g. conceived)?

While characteristics of the interface (where building meets yard) were noted, upon analysing and comparing the mappings produced in the site audits, it was rather the traces of appropriation and intensity of features that seemed to say something about resident practices in the yards in question. Although actual users (specifically those inhabiting the space and not simply passing through) were noted in the site audit, differing weather conditions and time of day were considered to have a strong bearing on the number of users observed. Hence, focusing on evidence of appropriation seemed a measure that might make for more objective comparisons between areas.

The categories of *intrinsic* and *extrinsic* emerged as an attempt to add a performative dimension to E. T. Hall's notion of fixed and semi-fixed features. A distinction was made between features placed there by those who conceived the spaces (planners, architects, building management) versus features or interventions added later, by resident initiative. The former were categorized as *extrinsic traces*; the latter as *intrinsic traces*. These will be discussed as separate themes in the following.

10.1.3 THEME 1: EXTRINSIC TRACES (PROGRAM FEATURES)

Installations and features were mapped according to categories borrowed from Edward T. Hall's notions of fixed-features and semi-fixed features (Hall 1988). Here, *fixed-features* were those elements provided as part of the program for the physical environment, such as sandboxes, trellises, and masonry grills etc. Likewise, *semi-fixed* features were defined as moveable elements intended to invite use, such as furniture of an institutional character, for instance picnic tables, benches, free-standing grills, etc. Additionally, a category called simply *installations* was defined to include institutional provisions with purely functional characteristics, such as waste-receptacles, lampposts, bicycle stands, signage, etc.

Figure 4. Site audit showing appropriation traces in areas 2 (left) and 7 (right).

A hypothesis the site analysis wished to test was whether an imbalance in the degree of programming in a yard vis-à-vis the degree of appropriation by residents signifies a territory that is not *self-reinforcing*. For instance, it was observed in the site visits that moderately appropriated yards felt far more inviting than yards with little or no appropriation, even if program elements implied that use was sanctioned. In fact, yards with very high degree of programming paradoxically felt more sterile than yards left more or less alone. Richard Sennett calls this *over-determination* of urban form, arguing that it produces an urbanism inadaptable to change; appropriation can be seen as a form of change (Sennett in Burdett and Sudjic 2010). Another catch phrase popular in planning today is *open-ended*, arguably the opposite of over-determination.

10.1.4 THEME 2: INRINSIC TRACES (OF APPROPRIATION)

Intrinsic traces are here treated as a proxy measure of whether spaces are used in a way that indicate taking possession of a space – more than one would in an urban park or public square. Children's toys left behind and private furniture left in a shared yard imply a use that is recurrent, where the convenience of leaving something behind for next time outweighs the possible inconvenience of losing it. Private plantings likewise represent a

vested interest, the fruits of which are left behind for others to enjoy as well. Quantifying traces in this case aims to detect if patterns in appropriation vary according to the urban form by comparing traces of use with reported use in the questionnaire. Evidence of appropriation was documented, including both traces of use and personalization, such as tended plantings, furniture, flower-pots, children's toys as well as those of antisocial connotation, such as tags (graffiti), litter and vandalism.

Figure 5. Site audit montage

10.1.5 THEME 3: THE APPROPRIATION MEASURE

It is proposed here that the relative balance of intrinsic to extrinsic traces is an indicator of how appropriated the open space is. Traces can be seen as remnants of practices in the yards; practices, which to the extent that they are a personalization of space, stem from what de Certeau calls *habitus*. It is argued that the extent to which we inhabit space reflects how we appropriate it. Appropriation is an enactment of a sense of entitlement to space, where a high share of intrinsic traces results in a high appropriation measure. In other words, a higher appropriation value is an indicator of space appropriated by users; a low appropriation value is an indicator of space with potentially less practices taking place there. However, as has been mentioned, appropriation by use may not be captured by this method. A highly programmed but little-appropriated yard is one in which the territory is reinforced top-down, by rental management or whoever implemented the programming, rather than bottom-up. If this can be connected to the urban form remains to be seen. Check that this is all reflected in Chapter 8!

10.2 RESULTS OF THE SITE AUDIT

Among the intrinsic features, it was clear some traces had not been left by accident. The clearest examples were plantings and interventions to the landscape, like enclosing a portion of lawn to make a flowerbed or placing items of furniture or grills there. It was deemed unlikely that interventions such as these would be accidental; rather they seemed to signify that residents take ownership and have vested interest in their yards. The site audit was concluded by transferring the mapped elements to table form (Table n). Features were compared both in terms of the intrinsic and extrinsic features normalized for size[19] as well as in terms of the share of intrinsic to

[19] An alternative might have been to normalize for density or OSR.

extrinsic traces, generating the so-called appropriation value. The site audit results are compiled in table n and will be discussed according to the same themes as above.

Site audits May - July 2011	S12	M70	M62	M52	S14	S18	S16	S17	M20	M42	M33	M31	S13	S09	S11	S15	S10	S08	M12	average
Interface elements																				
floor height	5	5	3, 8	3, 9	9	5, 6	4	6	4	3	3, 6	3	6	4	3	5	4	5	4	
approx. audited area in hectares	0,24	0,76	0,93	1,11	0,36	0,76	0,39	0,34	0,56	0,84	0,62	0,74	0,33	0,66	0,57	0,53	0,39	0,49	0,06	0,56
entry points within audited area	8	3	15	9	8	7	15	4	19	8	3	8	10	14	16	14	16	11	2	
blind doors within area	3	1	10	6	6	5	8	2	2	5	0	0	1	3	7	0	2	4	0	
balconies	0	0	104	90	29	74	59	21	0	48	60	48	40	18	0	97	27	0	0	
windows	131	210	445	282	333	550	226	178	312	330	288	55	156	242	104	176	232	225	37	
Boundaries and surfaces																				
through access (y1/n0)	1	1	1	1	1	1	0	1	0	1	1	1	1	0	1	0	0	0	0	
controlled entry points (at perimeter)	0	0	0	0	0	0	0	0	4	0		0	1	1	0	7	5	3	1	
ground fl intervisibility (y1/n0)	0	1	0	0	0	0	0	0	1	0	0	0	0	1	1	1	1	1	1	
Appropriation traces																				
fixed-features	5	4	8	16	10	19	17	11	18	4	5	5	13	2	0	10	1	9	4	
program installations	21	16	44	14	23	56	42	26	24	12	6	12	17	20	16	30	17	28	6	
semi-fixed features	5	8	12	8	0	0	10	0	4	3	7	7	3	12	2	9	11	9	4	
sum extrinsic	31	28	64	38	33	75	69	37	46	19	18	24	33	34	18	49	29	46	14	37
traces left behind	0	0	1	0	0	2	5	3	11		2	0	15	2	1	76	25	10	19	
traces of personalization	0	0	0	1	1	1	6	4	6	8	7	13	3	18	17	12	36	110	24	
sum intrinsic	0	0	1	1	1	3	11	7	17	8	9	13	18	20	18	88	61	120	43	23
antisocial traces	0	2	12	12	0	1	0	1	1	0	0	0	0	4	0	3	5	2	1	
EXTRINSIC traces normalized	128	37	69	34	92	99	177	107	83	23	29	32	99	51	32	93	75	95	224	83
INTRINSIC traces normalized	0	0	1	1	3	4	28	20	31	10	15	18	54	30	32	166	157	247	688	79
Approp. value (intrinsic feature share)	0,00	0,00	0,02	0,03	0,03	0,04	0,14	0,16	0,27	0,30	0,33	0,35	0,35	0,37	0,50	0,64	0,68	0,72	0,75	0,30

Table n. Site audit results. Intrinsic and extrinsic as well as entrance density. Include morphology. Discuss!

Illustrate with pie charts here. Subdivide intrinsic showing portion of traces that reflect ownership. Explain how extrinsic, intrinsic and ownership traces fit in with each other.

10.2.1 THE EXTRINSIC AND INTRINSIC TRACES

Looking at the extrinsic traces first, the average number of extrinsic traces was 37 (mean = 33). Least extrinsic traces (normalized for size) were 14 program features (fixed and semi-fixed traces as well as functional installations) observed in area M12 to 75 such features in area S18. Areas M42 and M33, built in the1950's, had quite few program features relative to their size; both are located near park-like green space and themselves have park-like qualities and landscaping. For instance M33 has several water-features that take care of water runoff. Other yards have less in the way of natural affordances, but a high number of program elements, examples are M62 and S16. S11 is noteworthy in that the extrinsic and intrinsic traces were equal – a relatively low 18 program features were noted in the site audit.

Intrinsic traces then (personalization as well as items left behind, like toys), were most prevalent by far in area S08, where 120 traces of appropriation were noted. This yard was relatively highly programmed with 46 program features, but was so intensely appropriated as to feel very much like a yard that residents felt affection toward and invested time and energy in personalizing. S08 is one of the largest of the closed yards (size) taking up an entire perimeter block. Topographical features divide up the space somewhat, however, so there are many smaller territories and places to find solitude within the larger territory of the yard. Least intrinsic traces were found in areas S12, M70, M62, M52 and S14. Morphologically these are point-, slab- or L-shaped buildings with relatively open yards. M70 is most open in terms of

enclosure by buildings but has a fence along the property's perimeter. In terms of appropriation traces, the effect of the fence is negligible, however sense of ownership in this yard was higher in the questionnaire than the lack of building enclosure might lead one to expect. S09 is noteworthy in having far fewer appropriation traces than the other perimeter blocks (M12, S08, S10 and S15), which may be attributed to its partly open configuration with n% enclosure. The same trend is shared with S13. The average number of intrinsic traces was 23; (mean = 11). Traces like graffiti and litter were a separate category of traces, which although they denote taking liberties with the space and arguably demonstrate a certain type of *habitus*, were not included in the intrinsic measures in the results. Still, it is worth noting that areas M62 and M52 had most "antisocial" traces of the yards studied; both had 12 such traces, far higher than any other yards.

10.2.2 DERIVED APPROPRIATION VALUE

The share of all traces and features that were intrinsic, e.g. signs of appropriation practices by residents, generated the appropriation value for each area audited. It has been argued that this indicates whether the territorial production *as planned* is matched by the practices of residents. Figure n is sorted by derived appropriation value. What is striking is how closely the appropriation value appears to be tied to the morphological type, such that a clustering effect is evident. The average appropriation value was 30%, as in M42 in the middle of the chart.

Figure n. Appropriation value results in bar graph. Include morphology.

A much higher share of intrinsic than extrinsic traces, generating an appropriation value in the range of 64-75% was found in the closed perimeter blocks. These four areas are M12, S08, S10 and S15. All had a high sense of ownership in the questionnaire as well as high sense of safety. Safety is likely a factor in the relatively high number of items left behind, for instance. With the exception of M12, which is quite small (0,06 hectares), the yards all had a high frequency of use due to their generous yard area[20] (0,39 – 0,53 hectares). S15 differs somewhat from the other three in that the vast majority of intrinsic shares are made up of items left behind (lighter green) rather than items of personalization (darker green). This simply reflects the intensity of children's toys left in the yard. At 0,53 hectares, area S15 has quite a large yard. Given

[20] The yard area is the approximate area of the audit yard which is not exaclty the same as the measured yard in the spatial analysis portion of Chapter 9. A judgement call was made on site as to what was yard when for instance a yard had unclear boundaries to adjacent open space.

it's dense urban context and one of the highest FSI; highest of the Stockholm cases, it is no surprise to find that this yard is an oasis for parents with small children. In the questionnaire, FSI correlated negatively with use but positively with ownership. S15 is a good example of a spacious yard balancing the FSI such that both use and ownership are supported spatially. The highest appropriated yards all have complete enclosure by buildings (e.g. primary boundary), however all the fully enclosed yards are not this highly appropriated, as will be apparent below.

Moderately appropriated yards with between 35-50% appropriation were, in (descending order of appropriation), areas S11, S09 and S13. As was seen in Chapter 9, area S09 had a high sense of ownership in the questionnaire, but when it comes to enacting this sense of ownership, residents do not choose to personalize the space with the intensity seen in the other wholly enclosed yards. S09 is almost a closed yard (96% enclosure); the relatively lower appropriation may point to the breach in enclosure, however slight, as impacting appropriation practices negatively. S09 has markedly fewer items left behind (like toys) compared with the closed yards. S13 stands out in this respect, the majority of traces were items left behind, predominantly children's toys, probably due to the pre-school located in this yard. This is also a mostly enclosed morphology. Worth mentioning is that for S11 the appropriation value is 50%, e.g. the share of intrinsic and extrinsic traces are equal. Hence, one might attribute the appropriation value as much to a modest degree of programming as to the intrinsic traces themselves. As is evident in Table n, the total number of traces is relatively low (18 extrinsic; 18 intrinsic not normalized for the size). This impression from the site visit explains how this yard has a higher share of intrinsic traces even than the almost closed S09 and S13. To be sure, in absolute terms these yards have many more traces. S11 is made up of slab buildings configured in a U-shape around the yard. There is through-access and exposure from street, which although quiet, makes the yard quite un-private.

The partly open yards M31, M33, and M42 have appropriation values of 30-35%, representing the average seen in the site audits. Morphologically, these yards are comprised of L-shaped and slab buildings in open configurations set in park-like open space which produced low block enclosure measures (9-13%). In the questionnaire, M31 and M33 had quite high frequency of use – 46% and 68% respectively; the latter was the highest rate of use in Malmö and corresponds with the finding that use is higher in spacious areas. Looking at the intrinsic traces, most were in the form of plantings and traces of personalization (furniture, grills) rather than items left behind. All three areas

were considered fairly safe in the questionnaire, which was attributed in part to high network centrality (local integration r2). Especially area M42 stands out in this respect, with 90% of residents citing it as safe. But sense of safety is not in itself a predictor of in intrinsic traces as much as enclosure is, this much is clear.

Areas M20, S17, S16 and S18 had lower-than-average (4-30%) appropriation. M20 is one of the closed yards, since a tall fence completes the enclosure in the gap that is not enclosed by building. It is surprising to find the appropriation value (27%) significantly lower than in the other closed or almost closed yards. The combination of congestion and presence of strangers noted in the questionnaire is likely why. Safety was lower in this area than might be expected given the potential for control at the perimeter by way of access codes at all points of entry. As indicated by residents in the questionnaire, safety here is undermined by unsanctioned behaviour (e.g. drinking and loitering) of a resident contingent and their friends who spend a lot of time in the yard. Not strangers in a strict sense, these are more akin to unwelcome guests, it seems. Traces of personalization and items left behind were less than might be expected; toys however were plentiful. Residents claim they use this yard, and sense of ownership is high (91% of residents saw the yard as “theirs”), but this does not translate to a very high share of intrinsic traces, which is the reason why this yard has least appropriation of the enclosed yards.

S16, S17 and S18 are quite a bit below the average share of intrinsic traces at 14%, 16% and 4%, respectively. Traces of personalization as well as items left behind were few, but it is important to point out that these areas are generously programmed and not lacking in features and installations (the extrinsic traces). In fact, this contributes to a low appropriation value since the intrinsic traces do not come close to the extrinsic traces in quantity. But looking at the low frequency of use of these areas, it is clear that the lack of appropriation traces is reflecting the low use. These yards also had quite strict and ordered landscaping and paving, which instead of leaving room for open-ended use makes for a sterile feeling in walking around.

The least appropriated yards were S12 and M70, having 0% appropriation. As was just noted, this does not mean these yards are uninviting; quite the reverse, in terms of installations and features and even landscaping and plantings (which were not audited) these are more than adequately fitted-out. But, if anything they too come across as sterile. Area S12 also had a low reported use in the questionnaire of only 12% average frequency of use, but

area M70 had a reported use of 38%, which is puzzling. The complete lack of traces here indicates that whatever residents are using the yard for; it is not leaving a mark. Configured as three point buildings placed in the centre of the plot with its open space all around, the yard is likely largely a through-passage, as one resident noted in the questionnaire. Coming to or leaving the building requires passing through the open space, which most residents in fact did not consider a "yard." Both areas S12 and M70 have highly trafficked streets running past them. Since the morphology is mainly open, the traffic noise is ever-present in these yards. Further, visibility into these areas from the street is high; they are fully exposed. Apart from the aforementioned point building morphology in M70, the least appropriated yards are in morphologies where open space is sandwiched between slab buildings (in area M52 these are grouped around a U-shaped yard). It is worth noting that being surrounded by in some cases 8 and 9 level buildings, the yards in areas S14, M52 and M62 offer no real sense of solitude and sectional scale?. You never know if you are being watched when hundreds of windows surround you. As was mentioned previously, antisocial traces were most prevalent in areas M52 and M62. Were these last three considered yards at all?

10.2.3 PARTIAL FINDINGS

Before moving on to the correlation analyses, the findings thus far will be summarized. If features reflect the intended territorial production, albeit top-down, traces reflect what happens when users of that territory react by leaving their mark. Or refrain from leaving a mark, as the case may be. The share of intrinsic to extrinsic traces does appear to reflect the morphology of the study areas, and it is even possible to group these areas in clusters, which relate both to the urban form and to the appropriation response seen in these yards. In terms of the urban form, it is the yards with complete or partial enclosure that have a significant share of intrinsic traces. Yards that are fully enclosed have most appropriation, followed by the U-shaped yards. Least appropriation was seen in the yards of slab buildings and point buildings. It is surprising to find the morphology so reflected in the appropriation, even though for instance enclosure is not the only determining factor.

It is striking that a third of the yards have next to no appropriation, 4% or less. While it is clear that traces of personalization and children's toys do confirm some patterns of sense of ownership, it is less evident what traces say about use. The best way to capture use (frequency and types of use) as stated earlier, is to observe actual use, which was not feasible in this study but would be a natural follow-up to supplement this investigation. In the meantime, we

must defer to the questionnaire results to say anything about use. connect back to questionnaire!

10.2 RESULTS OF THE CORRELATION ANALYSIS

The appropriation measure introduced earlier was found to correlate strongly with the sense of enclosure (r=0,56). The greater the enclosure of the yard, the greater was the share of intrinsic traces, a trend more pronounced in Stockholm than in Malmö. This confirms the sense from the results just discussed that the morphology is a significant factor. In the least enclosed yards, the yards were less appropriated, indicating that the residents use the yards in ways that do not leave traces or that they do not use their yards at all. (Use will be discussed in a moment). Sense of ownership was supported by enclosure in the questionnaire, but also corresponded with safety (positively), and with the presence of strangers (negatively). The appropriation measure derived here also correlates positively with safety (r=0,51 for Stockholm and Malmö) and negatively with presence of strangers (r=-0,43 for Stockholm and Malmö). In the case of strangers the trend was far more pronounced in Stockholm with r=-0,73 compared to -0,54 in Malmö. In sum, the patterns of correlations indicate that appropriation assessed by the presence of traces do verify the sense of ownership and that the crucial spatial variable is the degree of enclosure. Further, the sense of having a yard (from the Stockholm questionnaire) correlates (r=0,58) with the appropriation measure. As was seen in chapter 9, the sense of having a yard did tend to align more with perceptions of ownership rather than frequency of use. We might say that these findings in fact confirm that residents' perceptions, insofar as these relate to sense of ownership, sense of safety and sense of having a yard, also translate to practices that signify and perhaps also reinforce appropriation. Enclosure once again is crucial. all correlations need to be checked for statistical significance.

Figure n. illustrate with a graph the appropriation and use for each yard, maybe safety as well!

Grounded theory research, referred to at the beginning of the chapter, can be described with an assumption that "the object of study cannot be fully explained 'on the first take'. Instead, observation, data collection, and data structuring must take place in an iterative process before a theory can emerge" (Groat and Wang 2002). Specific intrinsic traces were suspected to correlate with use versus ownership. For instance, whether to see toys as items left behind *in use* or as improvements on the yard signifying *ownership*

is an example where it is difficult to draw the line. Likewise, semi-fixed features, sometimes are obviously institutional in character, but may also have been purchased by residents as a group initiative. It is difficult to know for sure whether to see semi-fixed features like picnic tables as signifying use or ownership. One way is to use correlations to supplement the picture and inform the theory building. Correlations were tested with various combinations of trace categories, seen in the table below. Sense of has strong correlations with personal items left behind and toys, and increases with the inclusion of semi-fixed features. Surprisingly, the highest correlation with ownership was found when only traces left behind (e.g. toys), were considered, indicating that as much as toys may suggest patterns of use, correlations with ownership are undeniably strong.

correlations with ownership	
normalized intrinsic (toys)	**0,47**
normalized intrinsic (personal+toys+semifixed)	**0,46**
normalized intrinsic (personal+toys)	**0,45**
normalized intrinsic (toys+semifixed)	**0,45**
normalized intrinsic (semifixed)	**0,43**
normalized intrinsic (personal)	**0,42**
correlations with use	
normalized intrinsic (personal+toys+semifixed)	**-0,2**
normalized intrinsic (personal+toys)	**-0,2**
normalized intrinsic (personal)	**-0,12**
normalized intrinsic (semifixed)	**-0,16**
normalized intrinsic (toys+semifixed)	**-0,26**
normalized extrinsic (fixed+program)	**-0,74**
normalized extrinsic (program)	**-0,75**

Figure n. Pearson's Correlations with intrinsic and extrinsic traces normalized for area audited.

Evidently, traces are a better proxy of ownership than of use. Use, generally fleeting and temporary, is harder to pin down based on traces it seems. Beyond the factors like spaciousness OSR and absolute size of the open space reported in Chapter 9 as supporting use, there is not much to add from the site audit results. For one thing, correlations between frequency of use and intrinsic traces were somewhat inconclusive with negative correlations in Malmö (r=-0,68) and positive correlations in Stockholm (r=0,61). Thus the overall correlation was low, only r=-0,20. This leaves us with an incomplete picture on use vis-à-vis traces and suggests that there may be local cultural differences that explain why increase in use translates to a decrease in intrinsic traces in Malmö but an increase in intrinsic traces in Stockholm.

Puzzling too was that frequency of use had a strong negative correlation with extrinsic traces (r=-0,66) in Stockholm and Malmö. In other words, the more programmed the spaces were, with features and fixed installations, the less the frequency of use. Or, more likely, it is the other way around – the less used yards elicit more care and concern from management (top-down interventions) to promote use, by all appearances without the desired result of encouraging greater use. Further research, conducted before and after such interventions, would be needed to confirm this. For now, all we can say is that the most programmed spaces were also the least used spaces; when fixed features are removed from the extrinsic traces the correlations are even stronger, r=-0,75 for the program elements alone.

Interestingly, removing from the intrinsic traces the semi-fixed features and calling this "ownership traces" (thus comprised of traces of personalization and traces left behind, like toys) is supported in the correlation analysis. In particular, enclosure correlates to ownership traces, as it also correlated with sense of ownership in the questionnaire. Moreover, the ownership traces correlate negatively with OSR, but positively with FSI, GSI, and sense of ownership in the questionnaire, confirming that calling these "ownership traces" has some merit. We now can confirm that in denser and more enclosed yards the perception of ownership is higher and the physical proof that residents really do claim the open space is also present in traces of ownership. In larger and more open yards the sense of ownership decreases, but the frequency of use is greater. In these areas, further study into the actual observable use of the yards is needed. For now we can only state that less ownership traces are found there.

10.3 MAKING SENSE OF THE FINDINGS

The appropriation measure, derived from the share of intrinsic to extrinsic traces does appear to capture the dialectic relationship between top-down and bottom-up appropriation of space. It is apparent when the balance between programmed space and emergent behaviours is skewed. In the least appropriated yards, the ubiquitous program features appear vacated, compared to the heavily appropriated yards, which abound with traces of human activity. Under-appropriated and over-programmed spaces tend to feel very un-private; conversely over-appropriated and under-programmed

yards feel almost too private[21]. Some traces represent a claim on space not necessarily intended to be excluding to others, but may be perceived as such. A small vegetable garden placed in part of a lawn is not easily repurposed for other more temporary uses for one thing; and a furniture group placed out on private initiative may or may not feel inviting to another residents to use. Ownership traces arguably represent a more intense appropriation than use, which has a more transient character.

Toys in the yards leave an impression of being left almost by accident, for convenience maybe, but the strong correlation with ownership implies that leaving toys is an intentional strategy to improve the play potential in the yard. As a tactic this is implicitly communal, certainly parents know that most children play with whatever is at hand. Hence, a culture of toy sharing may be a social behaviour that emerges out of patterns of appropriation. Further study would add insight on what conditions need to be met for toys to be left behind, but it is clear that enclosure matters for such practices. Why fewer toys are left in open yards is a bit unclear since toys are relatively low-cost items, but perhaps hints at the importance of a notion of a collective body that will use the toys. If all the neighbourhood residents (and children) use the yard, perhaps the fear, whether founded or not, is that items left behind are likely to disappear. Garret Hardin's theory of the tragedy of the commons predicts that a limited resource will tend to be depleted by those with access to it. Or, as was related by a developer, open yards with open access are less likely to be upgraded with an above-average level of equipment or installations since it is likely that that will draw more users and more maintenance due to wear.

Not surprisingly, the sense of safety seems to play a role in relation to the presence of traces. The number of ownership traces like gardening tools, plantings, personal items and the like increase in absolute terms if the sense of safety is higher. Fill-in responses to the questionnaire in area M20, for instance indicate that unsanctioned behaviour, such as drinking and loitering (by a resident contingent and their friends) lower the perception of safety and evidently also the absolute amount of intrinsic features. It makes sense that leaving behind items of some affection would be most contingent on a sense of safety. As was seen in the questionnaire results, sense of safety was lower where presence of strangers was higher.

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[21] Even for purposes of performing the site audits, some yards were so evidently and intensely inhabited that I hurried about so as not to disturb for too long. I felt like an outsider, having not been invited formally.

One notion being tested was whether traces ought to be seen as signifying use or ownership. It is clear from reading traces that appropriation of space and reported use do not correspond. To begin with, a high frequency of use of the yards is not necessarily combined with a large share of intrinsic traces in these yards. The presence of such traces seems to be more related to the sense of ownership. As for sense of ownership, safety matters. Residents may use a yard or feel it belongs to them, even in the absence of feeling safe there, but specific appropriation behaviours that signify a vested interest (be it time or money) in the space, such as improving on plantings or contributing items to domesticate the space are closely tied to the sense of safety. Of the spatial variables, appropriation of space (share of intrinsic traces) correlates most strongly to enclosure (and GSI). FSI and the size of open space are of less importance.

10.4 DISCUSSION

A pattern is emerging where distinct types of territorial response need to be treated independently, each providing a dimension on how spaces are appropriated by users. As has been mentioned, appropriation of space by use (even recurrent use) is not exclusive in the same way as leaving traces can be. Taken to the extreme, appropriation traces can be interventions that produce new territories within territories. When traces have a degree of permanence, they may be such strong signals of vested interest that others feel unwelcome. There are circumstances when habitual use may also be excluding to others, as when someone appropriates a seat in a restaurant so routinely that it comes to be known as that person's table and even "occupied" in their absence. A relative lack of appropriation traces might be taken as evidence that use of a space is infrequent or fleeting. This too may be unwelcoming, but we do not know. Traces, it seems, tell us more about ownership-type appropriation than use.

The usefulness of the appropriation measure is verified. It confirms the correlations seen earlier with sense of ownership relating to strangers and safety. An implication for practice is that in assessing the sense of ownership, looking at traces on site can be quite informative. This is obviously far simpler than administering a questionnaire and sorting through the results, but also in some cases easier than making desktop analyses of the spatial variables like enclosure and GSI, at least in those cases when the object of study is built and not simply a proposal on paper. The most significant spatial variable supporting appropriation is enclosure. Understanding the role played by enclosure and safety point to the importance of considering the residents'

ability to feel control of the open space. In fact, another way to think of ownership is precisely that – as the sense of control over one's environment. We may recall from Chapter 5 the notion of home territory in proxemics, in effect the space *where regular participants have a relative freedom of behaviour and a sense of intimacy and control over the area*. When it comes to open-ended design, "the general symbolic and emotional ties with the house, the need to territorialize and personalize, the need for expression may be more important than physical flexibility, although they are related" in the words of Amos Rapoport (Rapoport "Personal Element in Housing" RIBA journal 1968, 300). In terms of yards, this comes down to the ability to influence and shape one's environment. Chapter 12 will discuss a nuancing of the notion of ownership to encompass a sense of agency and reflexivity as a way to conceive of the interplay between social behaviour and the spaces where this plays out. What is less clear at present is how to assess use patterns and utility from traces. A puzzling finding is that spaces with more program features and installations are used less. While interesting in itself, this has unclear implications for the designer and would need further study.

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