

Such possibilities in the processes of  
place

Dissertation by Design: Part 1

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## Abstract

Perth planners, developers and urban designers are faced with the global challenge of how to enact urbanism that supports local socio-ecological sustainability. Perth suburb residents are used to the reproduction of low-density homogeneous suburbs that has instilled a closed cycle within which densification and urban change is difficult. By examining the complexities of relationships between residents and urban landscapes, designers can better identify strategies with which to affectively engage with the built environment and societal change.

This study explores the use of place attachment and theory of affordance models for identifying interdisciplinary ideas relevant to supporting urban designers in this context of change. Relevant research and design approaches centre on offering more (and more diverse) opportunities for residents to form place attachments, while highlighting the processes by which values can be diversified through day-to-day interactions.

Designers should be cognisant of how place attachment mechanisms influence conceptions of liveability and neighbourhood, offer understanding of NIMBY responses, and underpin better design evaluation techniques. Coordinated complexity can be used to seed 'place potentials' in spaces and unintended interactions between people should always be encouraged. Infrastructure and garden-like approaches can be used to establish spaces with underdetermined use specification, that inspire creative responses.

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# 1 Introduction

Urban landscapes are taking strain under the confluence of environmental pressures and the simultaneous need to accommodate more than half the world's population (Nations 2014). Globally, urban designers are at the forefront of tackling local challenges and "urban planning and design has become a top priority in the sustainability discourse" (Marcus, Giusti, and Barthel 2016).

In Australia the focus of this challenge is concerned with "minimizing the burden of infrastructure costs, commuting times and the concentration of socio-economic vulnerabilities on the fringes ... as well as maintain[ing] and protect[ing] both agricultural and biodiverse areas" (Bolleter 2016b). Somewhat more poetically Gleeson posits that "our cities must become the urban 'lifeboats' which will enable us to sail through the coming storms of resource shortages and climate change" (Gleeson, 2010 in (Bolleter 2016a)). In low-density cities, a common response to this challenge is to increase the density of residential areas and constrain the spatial footprint of the city.

In Perth, the need to enact this response is particularly acute; the city has sprawled beyond what seems justifiable within a global biodiversity hotspot (Weller 2007, 2009, Seddon 1972). Perth's "ubiquitous suburban fabric" (Bolleter 2015) is seen as a "generally unhealthy, costly, unsustainable and unproductive form" (Bolleter 2016b). Densification via densification targets "underpinned by the concepts of sustainability and resilience thinking" (Allen, Haarhoff, and Beattie 2018) is a key mechanism by which urban change is planned to occur. However, action to this effect is not progressing as fast as environmental concerns and governmental mandates require (Grose 2010, Bolleter 2016b).

Reasons for this inertia include the "clunkiness" of the planning process, the view that "...standardisation [is] safe...rather than substantive innovation" (Grose 2010) and NIMBY (not in my backyard) responses from suburb residents who oppose change (Bolleter 2016b). Negative responses to urban infill plans are often based on experiences of developments that don't "leverage greater liveability outcomes" for residents (Bolleter 2016a). Surveys indicate that only 11% of communities support densification in their area (Bolleter 2016b).

The challenges of change perpetuate a cycle of set built environment norms driving developers' economic responses while urban designers are required to satisfy both (see Figure 1). Within such a closed cycle, urban design is limited to "generating predefined spatial outputs" (Palazzo 2020) and little changes.

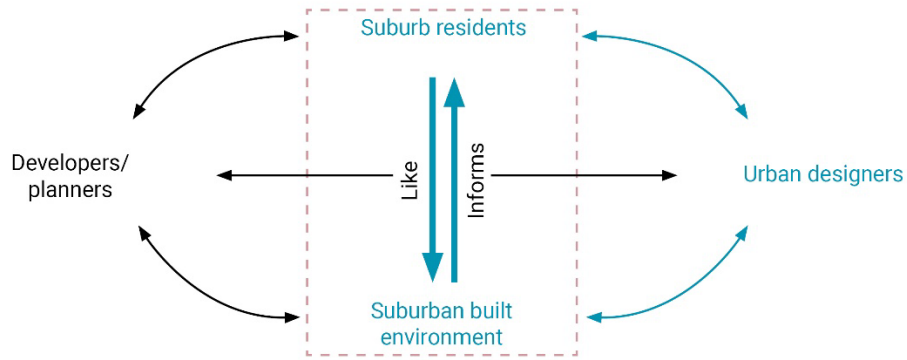


Figure 1: Urban development cycle that inhibits innovation and change.

There is a recognition that thoroughly understanding people-place interactions is key to successfully moving forward (Marcus, Giusti, and Barthel 2016, Palazzo 2020, Manzo and Perkins 2006, Hester 2014, Hes et al. 2020). Consideration of ‘place’ is not new to urban designers, however this study proposes that there is value in a more nuanced examination of the “multifaceted relationships of people and places in transformation” (Palazzo 2020). A purposefully broad exploration of processes, mechanisms and relationships is presented here, seeking to reveal a breadth of ideas and approaches with which designers might affectively intervene in a limiting urban development cycle.

## 2 Hypothesis

The hypothesis driving this study is as follows.

If you pay close attention to how people respond to built environments, how they identify and form attachments with places, then you can design urban landscapes which best facilitate and affect those processes. In doing so you can offer more (and more diverse) opportunities for people to engage with places and each other. This encourages the formation of social ties, enriches what people learn from their urban landscapes, and influences societal ‘norms’ and adaptability. The end goal being the design of resilient socio-ecological dynamic urban systems that are able to adapt to change.

## 3 Research Questions

The following questions guide this study:

1. What are the processes of place attachment and cognitive affordance?
2. Why should these processes inform urban design?
3. How can these processes inform urban design?

## 4 Scope

This study is motivated by the perception that urban design challenges are best met with wide-ranging interdisciplinary ideas and approaches, however, it is not possible to cover them all here. A number of relevant topics that have not been included:

- An analysis of current Perth planning policies. Instead, this study is responding to published commentary on policies, developments and densification goals (Weller 2009, Kullmann 2014, Grose 2010, Duckworth-Smith 2015, Bolleter 2016a).
- Collaborative or participatory design approaches. The value of these methods is not contended and some thinking around 'placemaking' is referenced (Palazzo 2020, Hes et al. 2020). The intention is that this study might better enable future participatory approaches.
- Green infrastructure or nature-based solutions to urban change. These frameworks are considered important parallel processes to those explored in this study.

## 5 Methodology

This study is not specifically seeking to propose the best methods of tackling design for densification in Perth. Rather, it aims to highlight how urban designers can harness the affective nature of the built environment to support urban and societal change (where densification is one challenge). The literature selection was purposefully interdisciplinary and broad, able to reveal confluences of often siloed ideas. The key ideas of the study are shown in Figure 2 and the structure of this document is as follows.

Part 1: an introduction of the theories of place attachment and affordance processes. These models reveal the details in how the built environment influences people and vice-versa. The components and mechanisms of the theories are discussed. A joint model is proposed to guide assessments in Parts 2 and 3.

Part 2: an exploration of why urban designers should work with a detailed understanding of place attachment and affordance processes. The section covers the reasons why encouraging experiences of place attachment in city residents is good, and many reasons why design methods and decisions should be made with knowledge of place attachment and affordance processes.

Part 3: a presentation of urban design approaches centred on maximising conceptions of place and facilitating social interactions (two key processes in the place attachment model). Examining the designers' methods through this lens reveals the design specifics that can be used to support built environment and societal change.

Discussion: a concise summary of the most important ideas from Part 2 and 3 and how they might be useful in the context of design for density change in Perth.

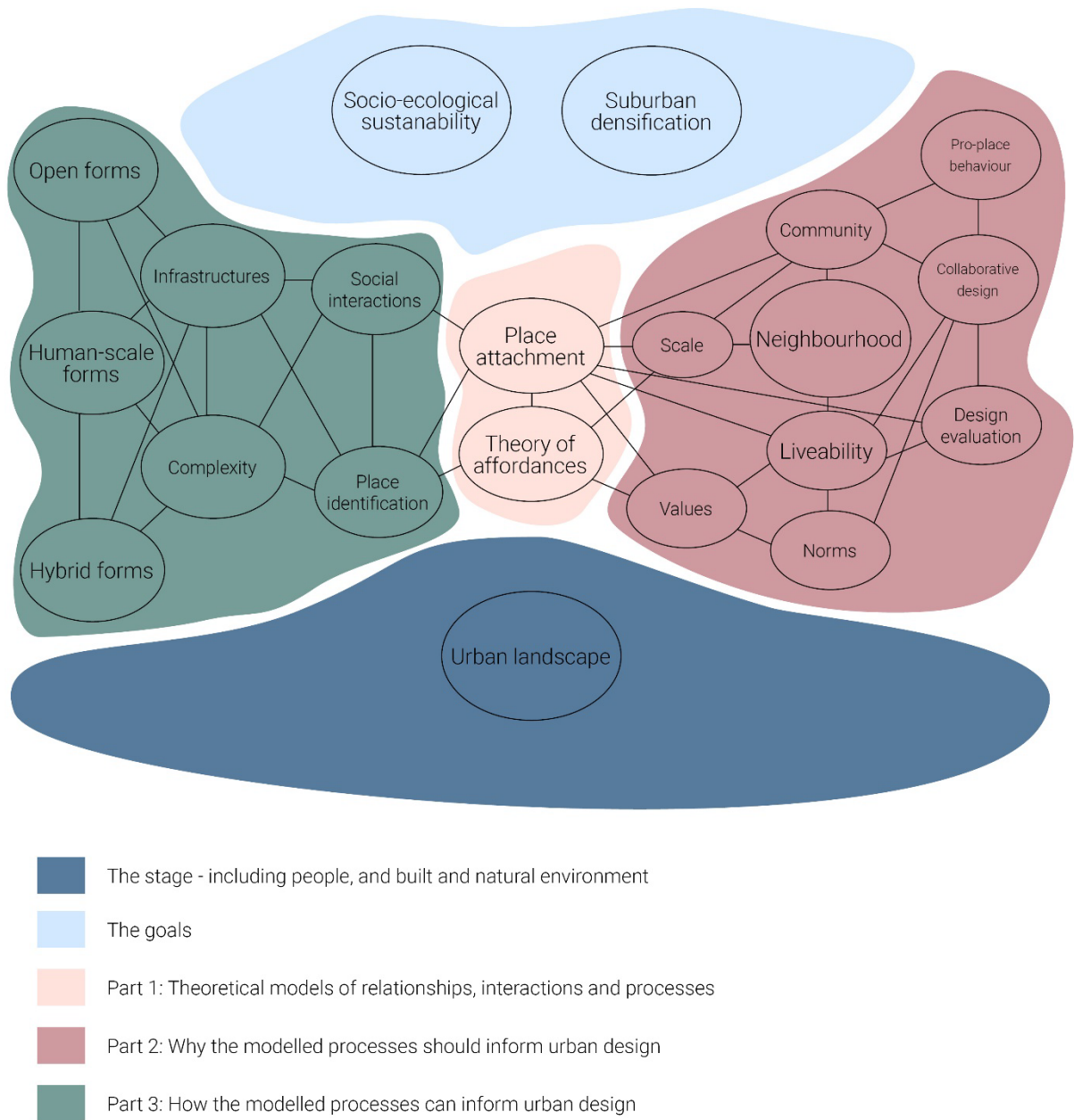


Figure 2: Diagram of key ideas explored in this study.

Key words: environmental psychology, place attachment, affordance theory, liveability, open cities, people cities, hybrid typologies, sustainable urbanism, densification, urban change.

Terms: for the purposes of this study the urban landscape is considered equivalent to the built environment, and they are considered to encompass both man-made and natural elements.

## 6 Literature Review

### 6.1 Part 1: Place attachment and affordance theory

This study seeks to understand how meaning and learning is generated from people-place interactions and how those processes can inform good design. Two linked theoretical (and empirically supported) frameworks have been identified as useful in this context: a model of place attachment (and associated place-based processes) and the theory of affordances. The reason to use this theoretical approach is explained in Figure 3.

**Why such a theoretical approach?**

Traditional approaches to urban design are based on Le Corbusier's modernist specification to cater for "**production (workplaces), reproduction (housing), recreation (green areas) and transportation (tracks and roads)**" (Marcus, Giusti, and Barthel 2016). These closely-linked functions and forms are recognised as limiting and Marcus, Giusti and Barthel (2016) suggest that rather than merely replacing Le Corbusier's functions with new requirements like density, mixed-use zones and walkability, there is the more nuanced need to "**deepen the epistemological understanding** of the various relations between human behaviour on the one hand, and built form and physical ecosystems on the other". Taking this perspective, this study is concerned with the interdisciplinary details of people-place interactions and design that directly engages them.

It is useful to consider an underlying epistemological barrier that may be holding up urban design progress. Persistent **perceptions of dualities** involving people versus the outside world are variously described as subject/object (Gibson 1986), **human/environment** (Marcus, Giusti, and Barthel 2016), inner/outer space (Malpas 1999), mind/body (Portugali 2011), dwelling/building (Sennett 2018) and figure/ground (Spencer 2011). These dualities leave design responding to "publically shared social norms, economic beliefs, aesthetic trends or other positions disconnected from *in situ* dynamics" (Marcus, Giusti, and Barthel 2016).

The space that exists between these dualing entities is about **relationships, processes, dynamics, systems, movement, production and action**. The mechanisms of place attachment and affordance exist as location-based relationships within this boundary space and provide useful processes for bypassing the dualities. The space into which a urban designer works is not a "fixed form, but rather...a myriad of processes already underway, into which we as actors ... can intervene" (Dodd 2020).

Figure 3: Explanation of why such a theoretical approach in this study.

Across disciplines there are countless 'place' terms – often used interchangeably and often without a specificity of intention – place identity, place attachment, place dependence, sense of place, and person-place identification. Urban designers are most commonly concerned with intentions to provide a 'sense of place', seeking some way to convey the *genius loci* of a place – "its essence, which ... is imbued in the setting itself" (Stedman 2003). By contrast "place attachment is the environmental psychologists' equivalent of the geographer's sense of place" (Brown and Raymond 2007) and it is not held within a space but arises from dynamic interactions with a place.

A common description of the transition from space to place is that what "begins as undifferentiated space becomes place as we ... endow it with value"(Tuan 1977). Place attachment is commonly defined as "the bonding that occurs between individuals and their meaningful environments" (Scannell and



Gifford 2010). This simple statement belies the complexity and situation-specific variability in how this bonding occurs and what it means for both person and place.

Models of place attachment commonly consider it as “an overarching concept” within which place identity and place dependence are “conceived as subdomains” (Jorgensen and Stedman 2001). A long-time place attachment researcher Lewicka (2011) favours a more complex (and more specific) tripartite model developed by Scannell and Gifford (2010) (see Figure 4). This is the place attachment model adopted for this study. The model explains the place attachment bond as a product of a person identifying a place (influenced by their individual and societal perspectives, and the characteristics of the place), identifying with it (the place) and becoming connected to, and responding to it, via cognitive, behavioural and emotional processes (Scannell and Gifford 2010). The step of a person identifying a place and then identifying with it is not explicit in this model but is explained by Zenker and Petersen (2014) and Brown, Reed, and Raymond (2020). They suggest that a space is identified as a place once you have a “mental representation of it” (Zenker and Petersen 2014) and have “assigned” it value (Brown, Reed, and Raymond 2020). When your “held values” (Brown, Reed, and Raymond 2020) – that form part of your identity - match the place’s assigned values then a “person-environment fit” emerges with place attachment properties (Zenker and Petersen 2014).

When conceptions of place are shared then place-based social ties can form between those who share those representations. Place attachment is therefore described as having physical – eg. feeling attached to “beautiful nature... or physically stimulating environment” (Marcus and Koch 2017) – and social dimensions – eg “attachment to the social group” and “sense of safety” (Scannell and Gifford 2010). The social is considered most in this study.

Lewicka (2011) adds more detail to the model by noting the empirical presence of operational place attachment predictors, which she groups into (1) Socio-demographic (length of residence, homeownership), (2) Social (community ties and sense of security) and (3) physical-environmental (upkeep, aesthetic, architecture design, uncivilities, building size, disorder). They overlap with the attachment dimensions are conceptually distinct and differ in how they’re treated in empirical research. Lewicka notes that identifying predictors does not explain the psychological mechanisms by which they contribute to place attachment. She suggests that thinking from the “theories of motor cognition or Gibson’s theory of affordances” might prove useful to understanding these mechanisms (Lewicka 2011).

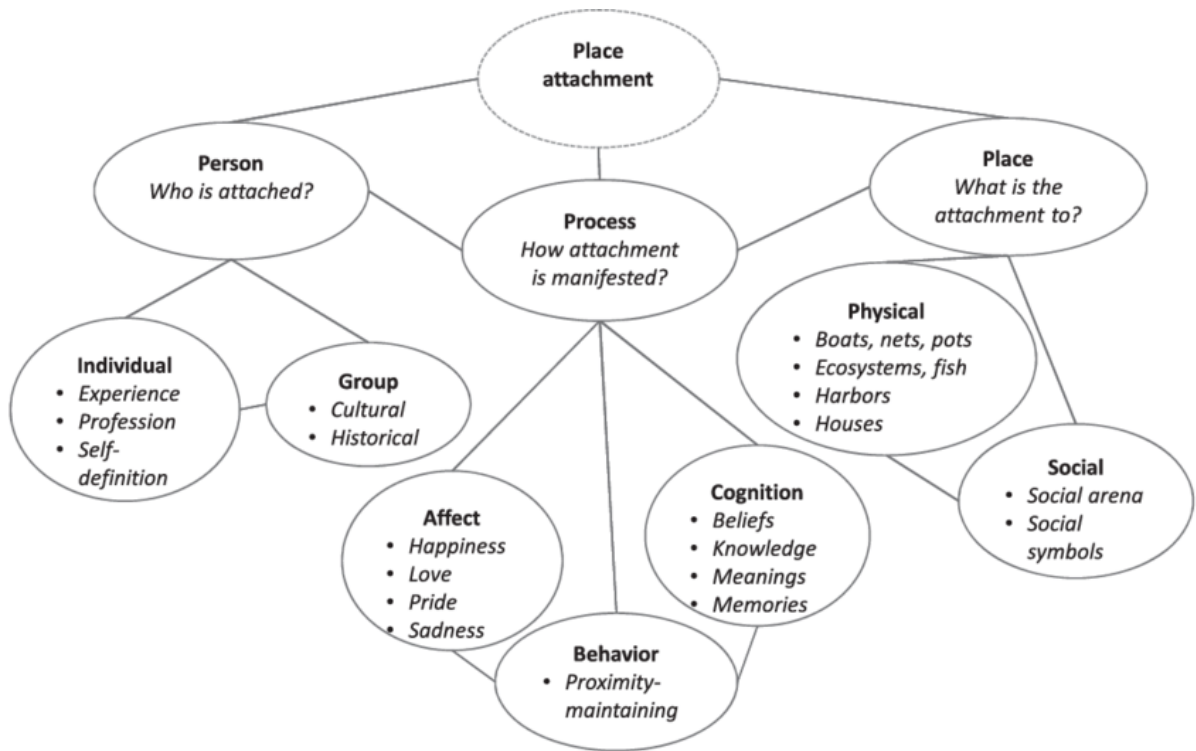


Figure 4: Tripartite place attachment model (in Garavito-Bermúdez and Lundholm (2016) modified from the original by Scannell and Gifford (2010))

Gibson's (1986) theory of affordances – perhaps more than frameworks of place – seeks to break down the perceived human-environment duality. The “affordances of the environment are what it offers the animal, what it provides” and “an affordance...is equally a fact of the environment and a fact of behavior...physical and psychological, yet neither” (Gibson 1986). What Gibson describes is now labelled ‘physical affordance’ (Marcus, Giusti, and Barthel 2016) by virtue of the affordance being about what one might be able to do, physically, in a particular space (eg. standing, sitting, leaning). Portugali (2011) describes the notion of affordance and resultant action within a model of “embodied cognition in which a perception and action form a single system” and where the subsystems are brain, body and the environment, in Figure 5.

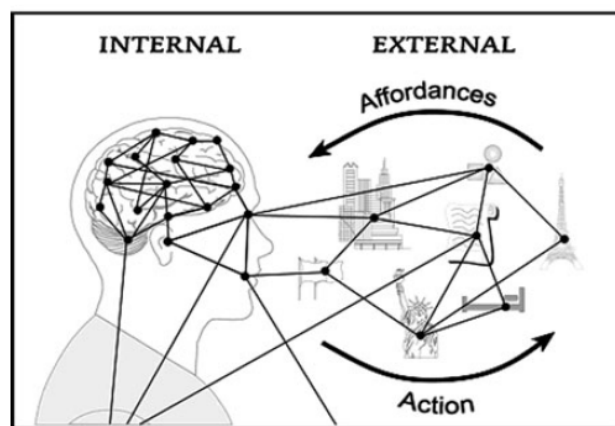


Figure 5: Embodied cognition using the affordance process (Portugali 2011)

The potential to consider place attachment and affordance approaches together, towards enriching understandings of place in the context of sustainable urban design, has been proposed by Raymond, Kyttä, and Stedman (2017). Raymond, Kyttä, and Stedman (2017) propose that place attachment and affordance theory operate as interrelated processes, whereby “immediately perceived and socially constructed place meanings”, together, guide our behaviour. They position the processes of place attachment as the ‘slow’ processes that occur with the passing of time, while affordance perceptions are the ‘fast’ “real-time or direct perception-action processes” (Raymond, Kyttä, and Stedman 2017). A model of their inclusion of affordance theory in sense of place research is shown in Figure 6. These suggested combined interactions are only proposed at scales where we can move through a space and perceive what it affords (including houses, streets and parks/plazas/squares).

This proposition is interesting because it emphasises the need to consider “sensory or immediately perceived meanings” (Raymond, Kyttä, and Stedman 2017). The built environment is given greater consideration in their models compared to place attachment research that has primarily “privileged the slow” (Raymond, Kyttä, and Stedman 2017). Affordance responses are likely contenders for Lewicka’s unknown mechanisms and are probable components of place attachment processes.

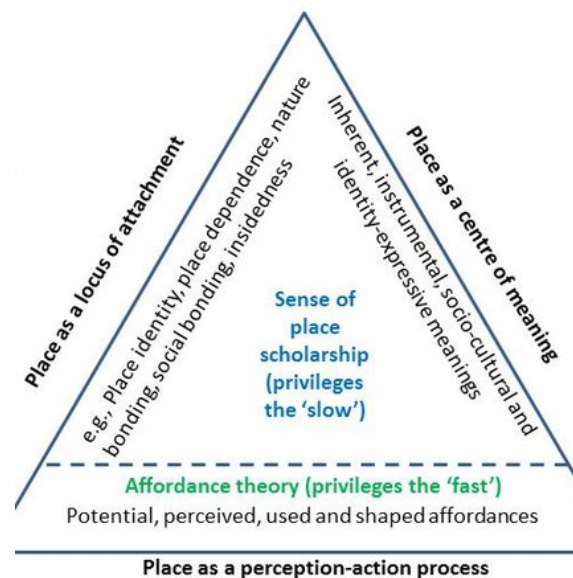


Figure 6: Perspectives of place model (Raymond, Kyttä, and Stedman 2017)

A subset of the theory of affordance – cognitive affordance – is proposed to be useful in recognising the urban landscape as a “learning environment in which the norms and values of urban life ... are cognitively constituted” (Marcus, Giusti, and Barthel 2016). They separate the cognitive from physical affordance by explaining that “urban form engages humans not only through locations for different physical activities and uses, but also mentally by giving opportunities for learning and creation of meaning” (Marcus, Giusti, and Barthel 2016). Others have gone another step further to specify that cognitive affordances are about

learning, social affordances offer social interactions, and emotional affordances describe emotional reactions (Mehan 2017) – each offered to a person moving through a space. In this research theories of affordance are not considered in connection to place attachment.

A proposed theoretical framework that combines the different models of place attachment and affordance is presented in Figure 7. This model includes the predictors of place attachment (Lewicka 2011), the affordance mechanisms of place identification at smaller scales (Raymond, Kyttä, and Stedman 2017, Lewicka 2011, Mehan 2017), identification with place (Zenker and Petersen 2014, Brown, Reed, and Raymond 2020), the social processes surrounding the social dimension of place attachment (Lewicka 2011, Scannell and Gifford 2010), the long term implications of affordance processes (Marcus, Giusti, and Barthel 2016) and the outcomes place attachment predictions (Manzo and Perkins 2006, Lewicka 2011, Hester 2014, Hes et al. 2020, Devine-Wright 2009, Kusenbach 2008). The participation outcomes of place attachment are only briefly considered in this study but are included to demonstrate the cyclical nature of the model. The insertion of the theory of affordances into place models is highlighted in red.

The remainder of this study is primarily concerned with how the built environment (the physical-environmental predictor) interacts with the social dimension of place attachment via the processes of place identification and place-based social interactions. The relevant processes are highlighted in blue in the model.

### Part 1: Key ideas

- Strong theoretical approach useful to place emphasis on relationships rather than objects/ subjects.
- Place is space endowed with meaning.
- Place attachment is one of many 'place' terms.
- Place attachment describes a bond between a person and a place.
- A tripartite model of place attachment is common: place, people and processes.
- Place identification and formation of social ties are processes associated with forming place attachment.
- Predictors of place attachment are socio-demographic, social and physical-environmental.
- The social dimension of place attachment is associated with experiencing social inclusion/ sense of community and a sense of safety (and more).
- The physical dimension of place attachment is associated with experiences of appreciating nature (and more).
- An affordance is something the physical world offers/provides for a person
- There are physical/cognitive/other affordances.
- An affordance is experienced as a 'fast' direct perception.
- Affordances can be considered as mechanisms in the place attachment model.
- A combined model of place attachment and affordance processes is useful.

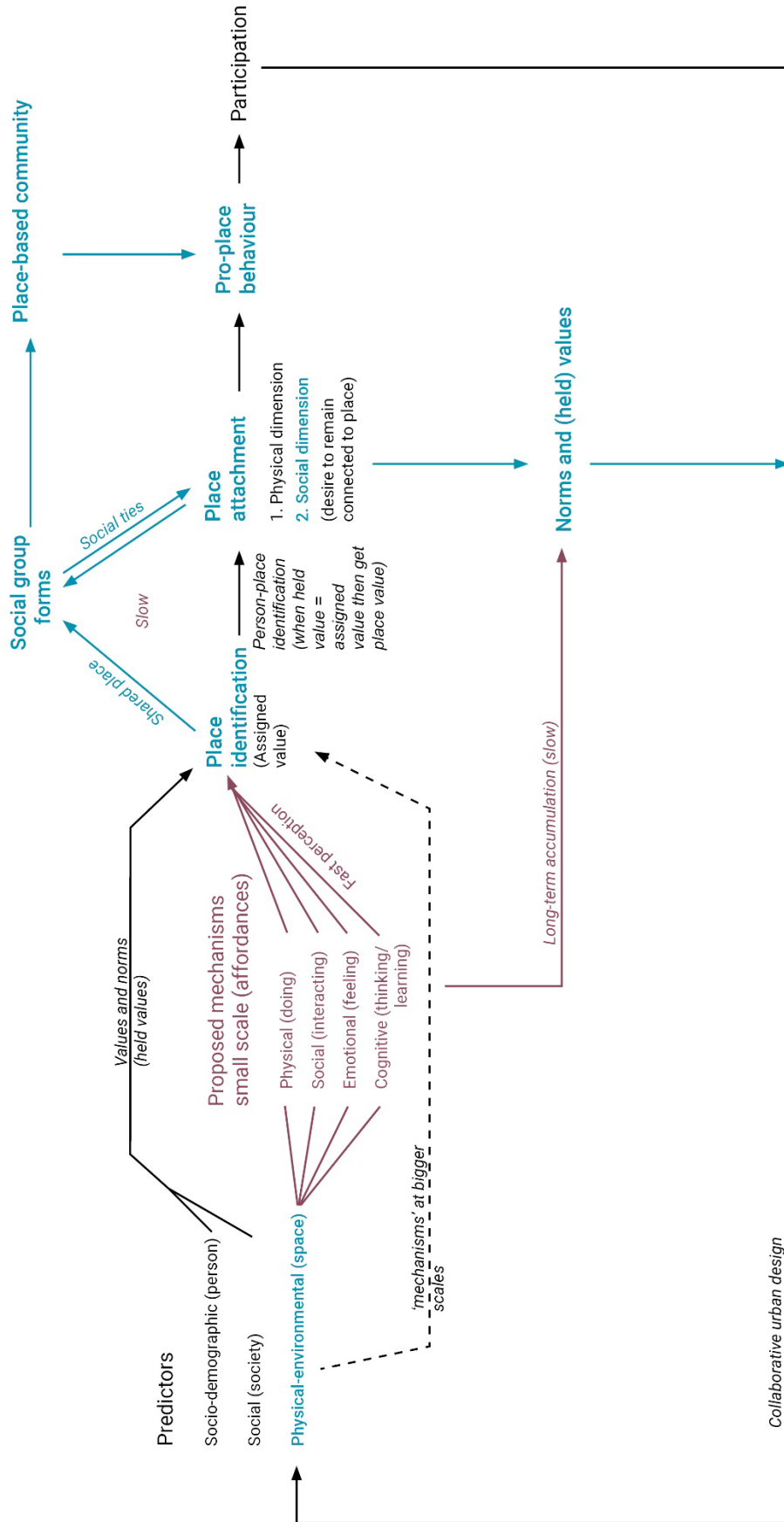


Figure 7: Proposed combined place attachment and cognitive affordance model

## 6.2 Part 2: Why consider place attachment and affordance processes?

This section will explore why the frameworks of place attachment and affordance theory are useful for urban designers in the context of enacting urban change. It is suggested that they are useful for both informing the design process and driving the design content.

### 6.2.1 Encourage place attachment and be aware of affordance processes

#### 6.2.1.1 *Place attachment*

There is a pervading recognition that “a shift from a traditional biophysical focus to a more social and interdisciplinary one is perhaps most logical in cities... because humans [are] important driver[s] of environmental change” (Palazzo 2020). So, while this study examines the details of why and how to work with the social dimensions of urban life, it is not with the intention of neglecting ecological systems – rather it’s an acknowledgement of the need to engage residents towards enabling socio-ecological change. Examination of the details is important because

“[t]heory on place attachments and meaning ... can help us to understand how particular preferences, perceptions, and emotional connections to place relate to community social cohesion, organized participation and community development” (Manzo and Perkins 2006).

From a resident’s perspective, “[p]lace attachment is a positive element that can ...promote emotional wellbeing, fulfilment and happiness” (Ujang and Zakariya 2015) and have “positive impacts on health, community participation, civic behaviour and perceptions of safety” (Hes et al. 2020). In the context of increasingly “dense, diverse and mobile communities” designers need to facilitate “a sense of community” because it underpins social sustainability and resilience (Hes et al. 2020). Some suggest that “collective attachment to place exerts the most positive influence of any single force on the design of community” (Hester 2014). Certainly, a force to be understood and harnessed during all stages of the design process.

The elements of the model in Figure 7 that come ‘after’ place attachment describe how strong people-place relationships can lead to a greater desire to maintain the attachment (social and/or physical) and act on behalf of the place (community or environment). This behaviour response is a good predictor of people who would likely participate in collaborative design. Hence, by facilitating place attachment urban designers can influence residents’ future willingness and ability to participate in the collaborative planning processes proposed by many (Palazzo 2020, Hester 2014, Hes et al. 2020, Manzo and Perkins 2006).

### 6.2.1.2 Norms and values

The theory of affordances explains how people’s everyday experiences “will be ‘edited’ through urban planning and design [and] ... may have a staggering effect on the type of sustainable future they will choose together” (Marcus, Giusti, and Barthel 2016). The perception of an affordance is described as ‘fast’ but the slow accumulation of these perceptions over the long term is what influences our conceptions of ‘normal’. This is the power of the suburb – exerted on people via the humble daily commute. Figure 8 illustrates the model of learning and feeling via acting in (moving through) an urban space, where each element encountered affords a response, however unconscious.

Marcus, Giusti, and Barthel (2016) present an example of comparing values and norms held by children growing up in neighbourhoods with different tree coverage (see Figure 9), finding that those who pass by more trees in their everyday life are more environmentally aware and cognisant of non-human life. Extrapolate this to an adult who makes a commute to work for years – all that she perceives on that route becomes her conception of what is normal. This is the space where urban designers can influence that normal.

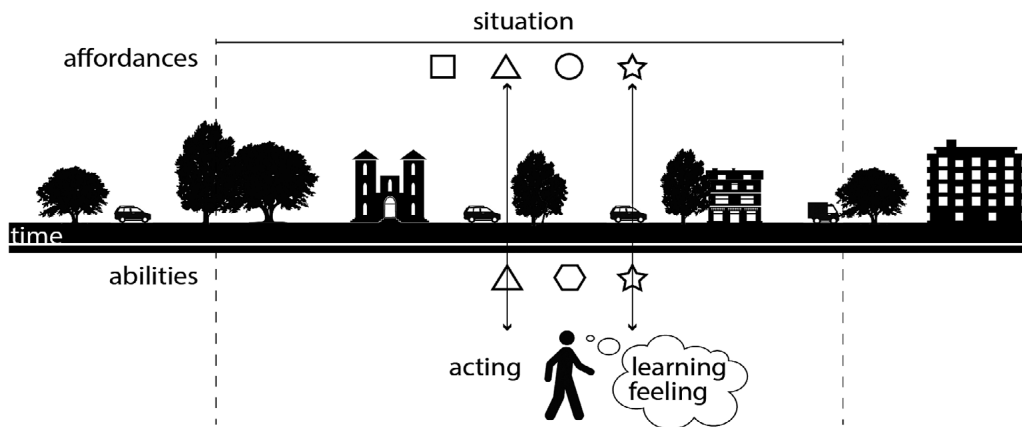


Figure 8: A figure showing “the interdependences between the spatial configuration of cities with its embedded affordances and situations, and linked behavioral, emotional and cognitive processes of an inhabitant” (Marcus, Giusti, and Barthel 2016)

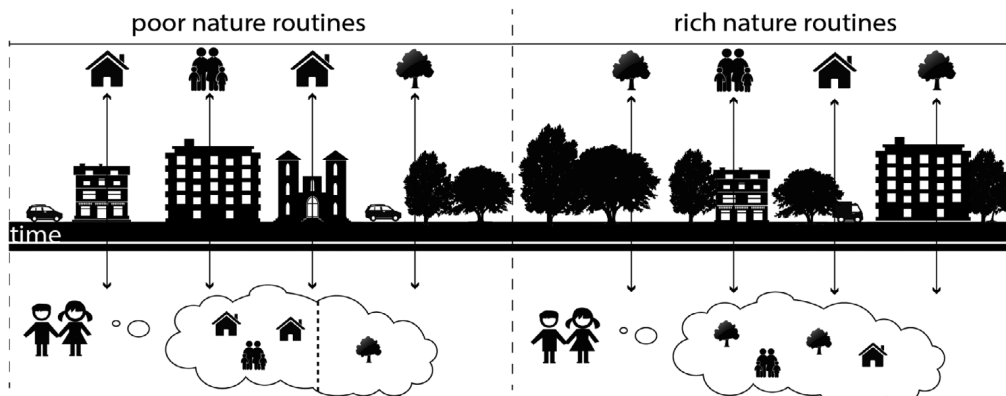


Figure 9: The implications of streetscape nature content on the formation of children’s environmental knowledge and perception of urban landscape norms (Marcus, Giusti, and Barthel 2016)

Directly related to our conceptions of 'normal' are the values we hold. There are many types of value but this study is interested in the idea of value as "meaning articulated" (Chiaradia, Sieh, and Plimmer 2017). While a conception of meaning may be "unsayable" by considering associated values "it is possible to communicate meaning succinctly", which is useful for clear communication (Chiaradia, Sieh, and Plimmer 2017).

The values of stakeholders are the primary drivers of design outcomes (Chiaradia, Sieh, and Plimmer 2017) and it would be useful, in the context of innovation and urban change, if stakeholders held a diversity of values, leaving more scope to the designer propose creative solutions. For this reason designers should aim to encourage diverse responses to their landscapes in whatever small way they can.

Values are central to the complex clashes between densification of urban environments (ecologically motivated) and the parallel local loss of green residential spaces (backyards and verges) with associated heat, habitat and hydrologic consequences (Duckworth-Smith 2015, Bolleter 2016a). This arises when residential lots become smaller and residents prioritise house, driveway and small (unusable) boundary gaps over trees, deep planting and permeable surfaces. This is an entirely a value-driven outcome and a product of the situation described in Figure 1.

Similarly, coastal suburb development in Perth is driven by a very specific closed loop of values. 'Benching' – whereby "mining-scaled earthmoving processes [enable] steep coastal sand dune terrain to be readily remodeled to facilitate rapid suburban sprawl" (Kullmann 2017). This approach allows developers to maximise the number of house sites, to optimise the number with sea views and to offer residents build cost certainty via precisely flat building sites. They may be meeting density targets but the local ecological implications are dire (habitat, micro-biology, water quality, hydrologic processes all affected) and the homogeneity is bad for social well-being (Kullmann 2014, Grose 2010). While "ocean views [are] more valuable than the cost of moving sand" this approach will continue, unless designers and planners can influence social values and reorientate perceptions (Kullmann 2017).

## **6.2.2 Place attachment informing methods**

### ***6.2.2.1 Liveability – more than satisfaction***

Urban designers and planners aim for 'liveability' for the residents of their developments (Allen, Haarhoff, and Beattie 2018, Bolleter 2016a, McCrea and Walters 2012, Haarhoff, Beattie, and Dupuis 2016). There is good intention behind the aim, however, a vagueness surrounds "what exactly 'liveability' is and how it is to be assessed" (Haarhoff, Beattie, and Dupuis 2016). Perth's *Liveable Neighbourhoods* initiative, for example, calls for the provision of good transport systems, access to services and facilities, and the cultivation of "a sense of community and strong local identity and sense of place in neighbourhoods and



towns” (WAPC 2009) but there is no definition of liveability provided and there are no measures of liveability suggested.

Haarhoff, Beattie, and Dupuis (2016) note that in the parallel rise of density and liveability as urban planning goals, an assumed correlation between the two has formed. This notion is firmly dismissed by most (Sendra and Sennett 2020, Hes et al. 2020, Gehl 2011). To date liveability studies commonly use the “degree of satisfaction of residents with their urban environment” to assess perceptions (Haarhoff, Beattie, and Dupuis 2016). Given the complexity of people-place relationships it is not clear that this is a sufficient measure.

When assessing an infill development Haarhoff, Beattie, and Dupuis (2016) found that “despite ... expressing satisfaction with their higher density housing ... [when considering] ... future housing options, most [residents] selected a lower density, detached house type” (Haarhoff, Beattie, and Dupuis 2016). This is a predictable outcome within the societal context but if we are considering the urban designer’s role in shaping urban aspirations and facilitating change should we question whether this form of satisfaction is sufficient to deem a development successful? Could the bar of success not be raised a little higher to the point where residents, if given the option, would choose to stay?

Stedman (2003) studied place attachment and place satisfaction finding that place attachment has the potential to change in focus without a loss of strength because it is integrated with the meaning of a place. Satisfaction on the other hand is often modelled as a subordinate component of place attachment (Lewicka 2011) and is more reactive to change in the immediate physical environment. This means that satisfaction is likely to be an easily changeable measure, while place attachment could offer a more robust indication of the positive people-place relationships that liveability is seeking to represent.

Placemaking advocates have proposed an urban design evaluation model that, while not specifically intended for measuring liveability with respect to densification, may be useful in that space (Figure 10). They suggest that rather than evaluating the built space (eg. ‘do you like your house’) it is better to assess the relationships between “space, community and self” (Hes et al. 2020). They prioritise the interrogation of place and their model encompasses many commonly intended liveability outcomes (such as sense of community, local identity, well designed spaces). Their model splits space into human-made environments and natural environments which adds an extra degree of specificity. As mentioned at the outset of this study, this differentiation is not considered in this study, however it is noted as an important distinction to make in future thinking.

Hes et al. (2020) focus on the relationships as the measure of space success because they recognise that “positive relationships” indicate that a resident is “more inclined to invest in the place” – more likely to consider the space important, care about it and want to look after it (Hes et al. 2020). They suggest a suite of measures to assess each relationship type. There is likely a greater robustness in the measurement of place-based relationships using multiple tailored measures solely satisfaction can. A

sound response to the call for a “more nuanced understanding of the liveability outcomes that could be experienced in future neighbourhoods” (Allen, Haarhoff, and Beattie 2018).

An important related issue is the ‘not in my backyard’ (NIMBY) response sometimes expressed by residents surrounding new developments. A summary of thinking around the role of place attachment in NIMBY responses is given in Figure 11.

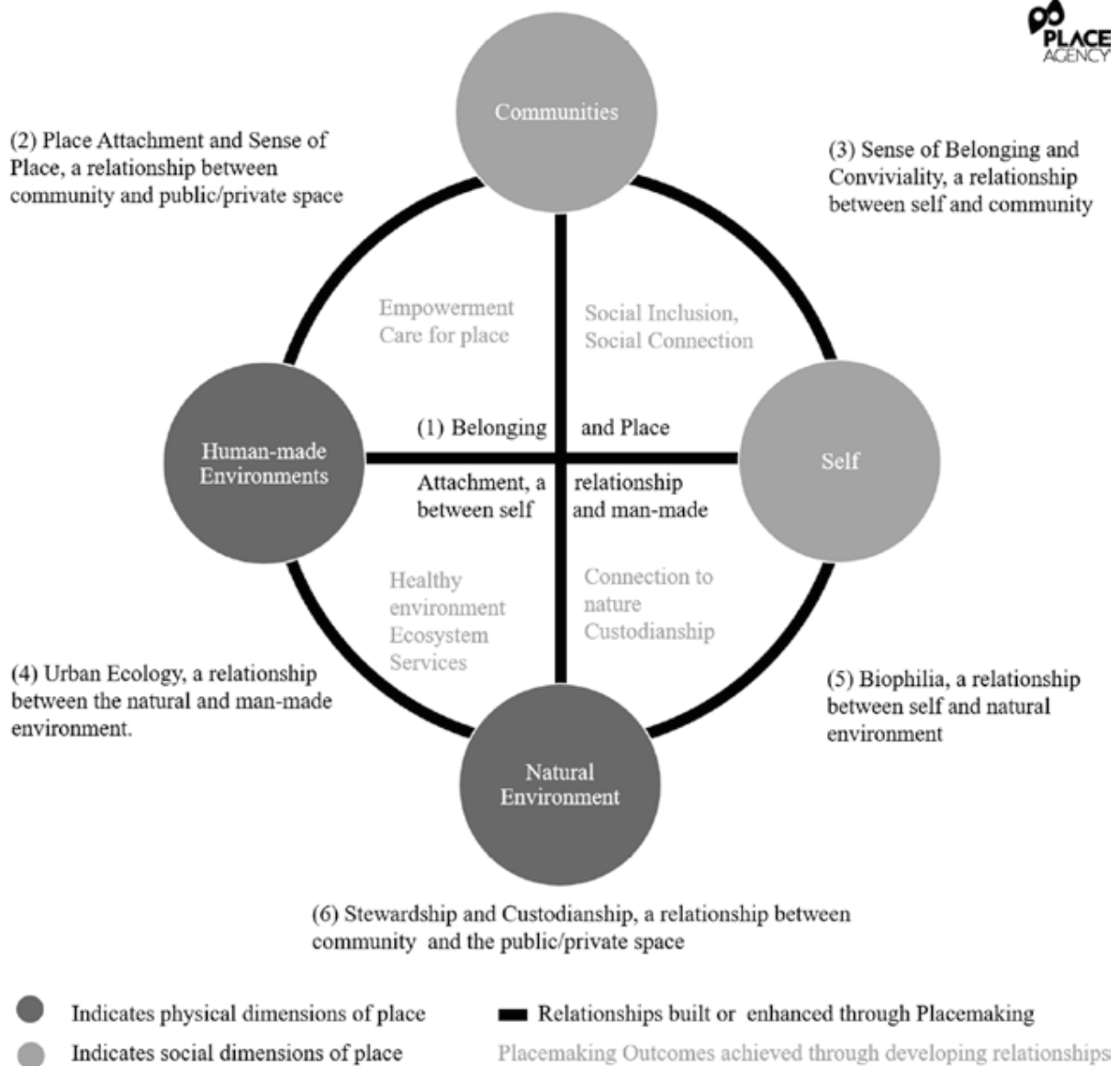


Figure 10: Framework for relationship-base evaluation of urban design (Hes et al. 2020)

### **NIMBY - not in my backyard**

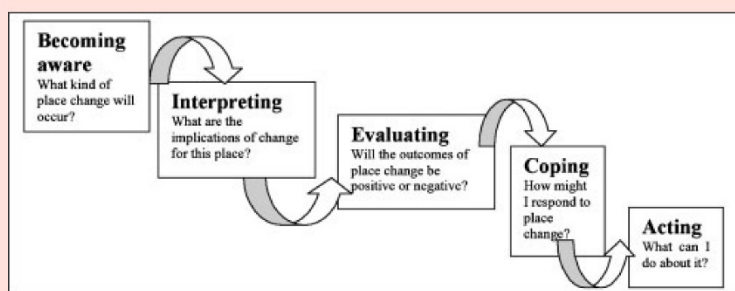
Considering the role of place attachment in the “NIMBY factor” (Bolleter and Ramalho 2014) “is of both conceptual and practical importance” (Devine-Wright 2009) because it contributes to suburban densification targets not being met (Duckworth-Smith 2015, McCrea and Walters 2012). Opposition arises when residents **feel left out** or have observed **poor quality** developments (Duckworth-Smith 2015). Place attachment has been found to be associated with **place-protective behaviour** – although not always – and Lewicka (2011) states that where this behaviour is evident “it may entail resistance to changes and protection of status quo”. It is important for designers to be aware of the underlying processes.

Devine-Wright (2009) proposes a communication guide for urban developers that focusses on “creating and **sustaining...symbolic meanings** [of] place”. He explains that experiences of place attachment are closely connected to individual and societal identities and an experience of “disruption” does not necessitate actual physical change to a place, [and] **psychological anxiety** or a sense of threat at the possible outcomes” is sufficient (Devine-Wright 2009). It is crucial that language and modes of communication are given careful attention so as to minimise negative interpretations of the change at hand. He proposes a framework based on social representation theory that recognises five stages of response to place change and suggests that communication

should **guide residents** through each phase (see figure below).

The importance of respecting place attachment during urban redevelopment is reiterated by Hester (2014) who calls “Do not detach!”. At the neighbourhood scale he finds that change to the physical urban environment will be accepted by residents if a **respect** of their most valued places is maintained. The first step in his design process is always to **map the “sacred structure”** of the area via community-based mapping that “makes place attachment explicit, spatial and legitimate” (Hester 2014). The recognition of community held values and meanings allows those meanings to remain and adapt even if the physical environment changes, and thereby “pre-existing emotional attachments” are not lost (Devine-Wright 2009).

Stedman (2003) explains that place attachment can remain intact during times of physical change because the drivers of the attachment can be modified without a resulting loss of overall attachment. He suggests this is because our attachment to physical places is mediated through the “indirect effects of symbolic meanings” and that we’re able to **maintain and modify** these meanings (Stedman 2003). In his study Stedman finds that the social dimensions of place attachment can uphold place meaning during physical change indicating the value of recognising and supporting the social ties surrounding place during times of urban change.



*Psychological response to place change over time (Devine-Wright 2009).*

*Figure 11: The role of place attachment in NIMBY responses.*

### **6.2.2.2 Neighbourhood and community**

Urban design studies, liveability assessments and 70% of place attachment studies centre on the idea of ‘neighbourhood’ – conceptually and/or spatially (Lewicka 2010). Neighbourhood has emerged as an “optimal level of abstraction” for place researchers” but is rarely explicitly defined despite it being “not at all certain that it has the same meaning for residents” (Lewicka 2011). There are two reasons why

designers should consider the concept more carefully: (1) there is no reason that urban residents will have the same spatial conception of neighbourhood that they do and (2) there are scale-dependent variations in place attachment that affect conceptions of community.

Often little distinction is made between the terms 'community' and 'neighbourhood', however Kusenbach (2008) presents a hierarchy of communities, in which neighbourhood constitutes only one specific level (see Figure 12). Kusenbach (2008) defines community as "the presence of a shared territory, significant social ties, and meaningful social interaction" (recognisably, place attachment processes) (Kusenbach 2008). Their model includes nested scales of community associated with different components of place attachment: microsettings (buildings), street blocks, walking distance neighbourhoods and enclaves. Kusenbach (2008) describes enclaves as "any intentional cluster of residents who share a significant social status or identity".

Kusenbach (2008) identifies neighbourhoods as being walkable spatial extents in which residents are familiar with the space and others within it. This fits well with planning documents promoting walkable neighbourhoods (WAPC 2009). But, what of the other levels of community?

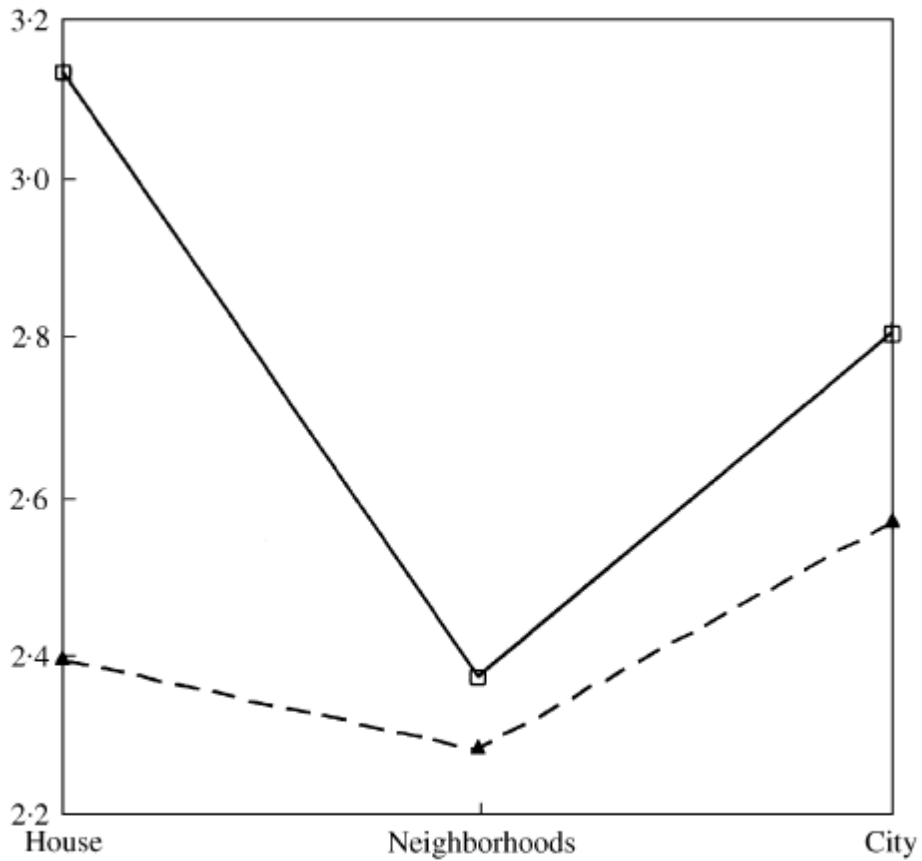
Designers and planners should consider greater specificity in the relationship between community and neighbourhood. Kusenbach finds that experiencing community at smaller scales does not (by accumulation) mean that a resident is engaged with community at a neighbourhood scale. In fact, "[w]hen a resident was strongly invested in one of the zones, the other local communities [tend] to take on less significance and distinction" and "close social ties in the two small communal zones appeared to coincide with little interest in cultivating relationships within the larger neighbourhood" (Kusenbach 2008). This means that assessing liveability at the neighbourhood scale is not always going to reveal the details of other types of community – or, alternately, a resident's expression of experiencing community may not correspond to the neighbourhood spatial extent that a researcher has in mind. The details are important.

**TABLE 1. Zones and Dimensions of Local Community**

Dimensions Zones	Practical Use	Sentiments	Neighborly Interaction and Relationships	Collective Events and Representations
Microsettings	Mutual visibility of private and semi-private routines	Trust, dependency	Passive contacts, sociability, proactive neighboring, friendships	Informal gatherings, nicknames, “reputation” of places
Street Blocks	Leaving and arriving, short outing, children’s play	Tolerance, responsibility	Friendly greetings, sociability, reactive neighboring	Block-based social events, defense in emergencies, block captains
Walking Distance Neighborhoods	Recreation (walking), daily needs	Familiarity	Recognizing others, nodding relationships	Formal organizations, newsletters, neighborhood events, names or nicknames
Enclaves	Lifestyle necessities, shopping, errands, leisure	Comfort, belonging	Identification of peers, assumed connection and understanding	Holidays, festivals, landmarks, area names or nicknames

*Figure 12: Framework of nested levels of community in urban environments (Kusenbach 2008)*

This tendency away from strong attachment to the neighbourhood scale is exhibited in other place attachment studies. Hidalgo and Hernández (2001) consider what happens with the physical and social dimensions at the neighbourhood scale. When they compare the strength of attachments at three scales (house, neighbourhood and city) they find that the neighbourhood scale holds the weakest expressions of both dimensions of attachment (Figure 13). Lewicka (2010) repeated this finding across a five-scale study (apartment, building, neighbourhood, city district and city). Lewicka (2011) suggests that as the “scale of place extends beyond a person’s social networks, attachment will be more heavily influenced by ecological (physical) factors”. The transition point appears to be somewhere near the scale of commonly conceptualised neighbourhood extent. It is important for designers to be cognisant of this effect – they need to support place attachment via different dimensions at different scales.



**Fig 2. Social and physical attachment to house, neighborhoods and city. DIMENSION; □ Social, ▲ Physical.**

*Figure 13: Place attachment reported at different scales (Hidalgo and Hernández 2001)*

The expression of lower place attachment at neighbourhood boundaries is also likely linked to boundaries (of concept and space) that are more “blurred” than at other scales (Lewicka 2010). Would we connect with neighbourhoods more if they were more homogenous and boundaries made explicit? The resounding answer is ‘no!’ It is more a matter of who is perceiving what.

At the city scale perceived complexity is a predictor of place attachment (Zenker and Petersen 2014). Environmental aesthetics research suggests that complexity “is a human need” (Zenker and Petersen 2014) and Geller notes that pedestrians “are able to handle more complexity and are likely to desire it to avoid boredom” (Geller 1980). Perhaps the downfall of the neighbourhood then lies in insufficient stimulation for a pedestrian. There just simply isn’t enough within a walkable area to constitute recognition of place, or alternately we are not walking enough to perceive what is there.

## Part 2: Key ideas

- Examining place attachment can help understand people's preferences, perceptions and connections.
- Place attachment can raise sense of wellbeing.
- Place attachment can encourage community participation and civic behaviour.
- Place attachment inspires a desire to maintain the attachment and protect the place (community or environment).
- Our norms and values are 'edited' by the built environment.
- Urban design in Perth is hard because there are narrow sets of values - eg. ocean views.
- Designing to cultivate diverse values could mean, later, a desire for diverse urban forms.
- Values can be considered expression of meaning.
- Designers always work with stakeholders' values and understanding these in detail is useful.
- Urban infill projects are often assessed for liveability without good definition.
- Satisfaction often used as measure of liveability, but there are reasons this is perhaps not best.
- A better relationship-based model involving place attachment might be better for assessing liveability.
- Residents' existing place attachment should be recognised when doing urban change projects.
- Communication with residents during project development is important, to manage NIMBY reactions.
- Place attachment can remain even if physical place changes.
- Researchers should be careful when using neighbourhood (conceptually and spatially).
- There are nested scales of community. Neighbourhood is one level.
- Neighbourhood is associated with walking distances and sense of familiarity.
- Place attachment is weakest at the neighbourhood scale.
- Experiences of community at smaller scales can prevent experience of community at larger scale.
- Considerations of neighbourhood and community scale are important for dense infill designs.
- Pedestrians like complexity and stimulation - perhaps this should be better considered at neighbourhood scale?

## **6.3 Part 3: Designing with place attachment and affordance processes**

### **6.3.1 Connecting place theory to urban design approaches**

Place attachment and affordance theories have, so far, exposed value in nuance within practice and evaluation in urban design. It is also important to consider how the built environment can be designed to facilitate place attachment processes. The designers and researchers considered here may not use place attachment or affordance terminology, but the intentions of their work are well aligned with those frameworks.

This section focusses on designers who prioritise the processes by which the built environment influences the social dimension of place attachment. The focus on the social dimension is for its role in supporting the sense of community, experience of vitality and high quality of life that is characteristic of resilient, adaptable societies. Such properties are important in times of urban change – like moves towards densification (Allen, Haarhoff, and Beattie 2018, Bolleter 2016a, Hes et al. 2020, McCrea and Walters 2012, Palazzo 2020). While not all the designers and examples presented in this section are about residential urban design, the principles behind their configurations of buildings and spaces remain applicable.

Via the social dimension of place attachment, the connection between environmental psychology, sociology and urban design practice lies in the following proposition: urban design should seek to raise the “quantity and quality of interpersonal interactions” towards creating a sense of “inclusion and conviviality” (Hes et al. 2020). In Hes et al.’s model of people-place relationships ‘inclusion and conviviality’ are a property of the community-individual relationship (Figure 10). The connection to the physical environment comes in via the fact that this relationship is spatially specific.

In this section we are considering the processes by which the built environment of a given space can (1) inspire individual conceptions of place and (2) facilitate intended (via shared place conceptions) and unintended interactions (via spatially coincident but different place conceptions). These are both processes of place attachment and are presented in the place attachment model (Figure 7).

### **6.3.2 Common themes**

These common ideas about seeding many conceptions of place offer responses to Lewicka’s call for a “diversity of places”, a nuance of place, and a strength and vibrancy of life through people’s relationships with those places and each other in them (Lewicka 2011).

#### ***6.3.2.1 Complexity, creativity and place potentials***

Despite drawing from different backgrounds Richard Sennett, Jan Gehl and Walter Hood agree on the proposition to maximise conceptions of place and interactions within spaces. They are motivated by desires to move away from over-determined design (Sennett 2017), modernist cities (Matan and



Newman 2016) and standardised typologies (Hood 2020). They share an intention to curate “place potentials” (Kyttä et al. 2013) – that is, possibilities of place. Spaces where form and function are not firmly locked together, and where passers by are encouraged to think creatively of potential uses. Sennett uses the term “underdetermined” (Sendra and Sennett 2020).

Many of the base characteristics that Kaplan ((1984) in Lewicka 2011) identified as drivers for place attachment appear in their thinking – a space’s “legibility; scale, enclosure and spatial diversity...and congruence between the person and the setting, i.e. the degree to which the setting can support personal goals”. There is also an intended emergence of complexity in form and function – a characteristic of spaces that preference possibilities over rigid determination. An ‘assemblage’ approach – “where different elements work together rather than individually” – coordinates the complexity by focussing on the “relationships between different actors in the urban space: people, material objects, forms of governance” (Sendra and Sennett 2020). Again the focus on relationships and process to dismiss the outdated people-environment duality.

### **6.3.2.2 *Coordination and infrastructure***

The three practitioners (and associates) use ideas of infrastructure to coordinate complexity. Pablo Sendra (whose designs are informed by Sennett’s approach) speaks of working with infrastructure to provide “initial interventions that create conditions for unplanned use of the public realm” (Sendra and Sennett 2020). An example of his use of water and power infrastructure is given in the following section. Gehl’s approach could be described as the coordination of pedestrian infrastructure because his spaces are configured around possibilities for pedestrians. Hood sees his spaces as social infrastructure to support the needs to the local community.

A focus on “infrastructure repositions landscape as a complex instrumental system”, an affective system of “services, resources, and processes that underpins contemporary urban” life (SWA 2013). This infrastructure is “as much about culture as about engineering” (SWA 2013) and positions landscape an actor, a coordinator, a participant.

Ideas of infrastructure extend to “softer, leaner infrastructures premised on ecology”, “knowledge infrastructure, program infrastructure, cultural infrastructure, virtual infrastructure” (Bélanger 2017). Interacting with these infrastructures is an approach that “‘instigates a regime of complexity’ that mobilizes the full intelligence of design, less dependent on ‘meticulous definition, the imposition of limits, but about expanding notions, denying boundaries’” (Rem Koolhaas in Bélanger 2017).

A useful analogy to how this ‘regime of complexity’ might be understood in an urban landscape is to propose the treatment of the city as a garden. If it is Catherine Mosbach’s garden then “the garden is generated by creating artificial situations by means of building significantly different conditions” and “vegetation is... distributed as each species searches for its optimal growing conditions” (Galí-Izard 2005). This approach “accommodates things that weren’t anticipated, leaves room for randomness,

provides porosities” (Mosbach 2017). Translated to the built environment the idea is about providing conditions for life (or infrastructure) in a way that is affective but not prescriptive. In response to these conditions a person is invited to engage in creative conceptions of place.

### **6.3.3 Richard Sennett - open cities**

The concept of open cities is central to Richard Sennett’s sociological and system-based approach to urban design. The primary goal is to move away from the long-held Western urban habit of “over-determination, both of the city’s visual forms and its social functions” (Sennett 2006). Such cities are considered as closed systems and may be “harmoniously balanced environments [but] are in fact stagnant” (Sennett 2017). They are cities with spaces so use-specific that they’re “regulating the meaning of place” and failing to “provide communities [with the means] to evolve” (Sendra and Sennett 2020). Sennett proposes that, in contrast, the open city (and open public realm within) is one that contains the properties of a “system in unstable evolution” and is therefore able to “respond to uncertainty and coordinate change” (Sennett 2017). This seems a proposition that’s useful to Perth urban designers involved in densification developments.

Sennett’s thinking applies over multiple scales and he focuses on the public realm because this is “where strangers meet...[where] people can access unfamiliar knowledge, expanding the horizons of their information” (Sennett 2017). Like the place attachment and liveability researchers, his focus is on designing for social interactions between people; Sennett’s central proposal is to “gather people, no matter how unruly their gathering” (Sendra and Sennett 2020). This is important in the context of changing suburban residential forms, where public spaces will need to cater for many more people and purposes.

Sennett is interested in the “kinds of physical forms [that] might resist the closed city and empower the open” – encouraging place attachment via mechanisms other than waiting while “time breeds attachment to place” (Sendra and Sennett 2020). He has proposed two sets of open forms which correspond well with the objectives of facilitating many conceptions of place and encouraging many social interactions. Just as these objectives are interrelated, so too are the forms. A combined summary of Sennett’s forms is given in Figure 15, with the place process emphasis noted against each. Sendra has developed a guide for initial approaches to opening an existing closed development, shown in Figure 14.

With respect to the misconception that density brings liveability Sennett notes that there are many examples of “high-density, low-energy areas...[with] no streets that have people on them”. Vital alive cities require more than just density - “[t]here are many other factors that enable spaces for social interaction” (Sendra and Sennett 2020).

## **Sendra: How to open up closed developments**

### ***Make porous***

Identify streets and spaces that can better facilitate movement and connection, and change them.

### ***Social exchange***

Identify where social interactions take place and enhance connections to and between.

### ***Detect barriers***

Identify physical barriers like walls and fences and find ways to change/remove them (eg. use steps of treed edges instead).

### ***Connect at the borders***

Connect neighbourhoods at their borders using inviting streetscapes.

### ***Avoid homogeneity***

Surfaces do not need to be homogenous - introduce "alternations, mutations and variations". Use materials and colours.

### ***Diversity of situations***

Provide a variety of "events, places, unexpected encounters and activities".

*Figure 14: Summary of Sendra's guide to initial opening steps from Designing Disorder: Experiments and Disruptions in the City (Sendra and Sennett 2020).*

## Sennett's open forms

### Passage territories

Passage territories are **zones of transition** between spaces. Sennett states that at all scales these territories need to function "much like cell membranes, both **porous** and resistant" (Sendra and Sennett 2020). They need to hold the form of the adjacent territories while letting people easily pass through.

These passage territories should take the characteristics of **borders** rather than boundaries. Again Sennett uses the biologists' distinction between these two conditions, noting that "borders are the places where organisms become more inter-active, due to the meeting of different...physical conditions" as opposed to boundaries which represent an absence of activity (Sendra and Sennett 2020). In urban planning there is a tendency to focus on the centre, the heart of a neighbourhood, however Sennett suggests that edges should not be treated as borders full of the "**complex interactions** necessary" to maximise the modes of engagement with a space (Sendra and Sennett 2020). (2)

### Incomplete objects

Incomplete forms are about how we **perceive objects** in urban environments. In situations when we can see a whole house that sits centred on a block, then we can take it in as a complete form. Incomplete forms, by contrast, are those which, by their **configuration** or conjoined nature, prevent us from easily perceiving their form or function. In this situation the objects (buildings or spaces) take their value from their **relationships** with each other. It's about "engineering the fragment" and the value of urban form coming from the **accumulation** of those fragments (Sendra and Sennett 2020).

Practically speaking, an example is "light architecture" – architecture that is intended to be added to or changed over time. In evolving spaces there is less obvious connection between form and function which sparks a creative individual response and conception of place.(1)

### Nonlinear narratives

Nonlinear narratives describe ways of working that do **not rigidly** produce predetermined outcomes. Sennett states that "in our small projects, we can **work reflexively**...[k]eeping possibilities intact, leaving conflictual elements in play". Accepting conflict, dissonance, cycles between equilibrium and disequilibrium and not shying away from the element that "sticks out, offends or challenges" (Sendra and Sennett 2020). Sennett's open cities are not necessarily easily designed nor easily smoothly interpreted, but there is great social value in explicitly designing for and **with complexity**. (1)

(1) Encourages many individual (and shared) conceptions of place.

(2) Encourages many interactions between people.

### Multiple forms

Multiple form planning is the idea of "**flexibility-seeking**, complexifying seed-planning" (Sennett 2018) and is closely related to the nonlinear approach to design process. The approach involves 'seeding' many of the same type of thing (either form or function) into a space so that there is a perceived order at a higher level but then allowing perceptible variation at a smaller scale. By introducing continuity there is a legibility to the space, however the "theme and variation" allows for "maximum variation and innovation" (Sennett 2018). This technique is particularly useful for bigger scales in the city. The intended outcome is that of a **rich collage** (not a sharp Lynch-like image) formed through "people exchanging and interacting" with the **local versions** of the seeded object (Sennett 2018). People are more likely to engage with these spaces because they are location and community-specific. (1)(2)

### Synchronous

Synchronous form describes the **density of use** of a space over time – or, more simply, **mixed-use** space. Sennett suggests that synchronous spaces are hard to design well and require coordination, but that they can be engaging and serve the purpose of encouraging unplanned **interactions** between people. Such spaces should offer very different types of uses and people visiting for different purposes should be invited but not forced to mix (Sennett 2018). (1)(2)

### Punctuated

Punctuation forms provide the means by which to "make places distinctive...instead of impossibly unique" (Sennett 2018). They provide legible **coordination** cues to a person moving through the space. Exclamation marks are offered by large **public art** works signifying "that a place is important" and are useful for navigation and encouraging interactions (Sennett 2018).

Walls are full stops, offering a passer-by nothing more. **Cross-roads** or corners are like semi-colons where a person experiences a "half-stop of flowing motion" and where we "take our bearings, reckoning where we are" – they often become zones of activity (Sennett 2018).

A **purposefully placed** bench or tree acts as a quotation mark. In written grammar quotation marks guide you to "question the value of the word" and in the street, objects can say "here's a **place of value** because you can rest here" (Sennett 2018). By using the resting affordance value of a bench, value is given to the space when it would otherwise be indistinguishable from any other. This punctuation guides people's **movement and pause** and influences their interactions. (1)(2)

Figure 15: Sennett's open forms, summarised from Building and Dwelling (Sennett 2018) and Designing Disorder: Experiments and Disruptions in the City (Sendra and Sennett 2020).

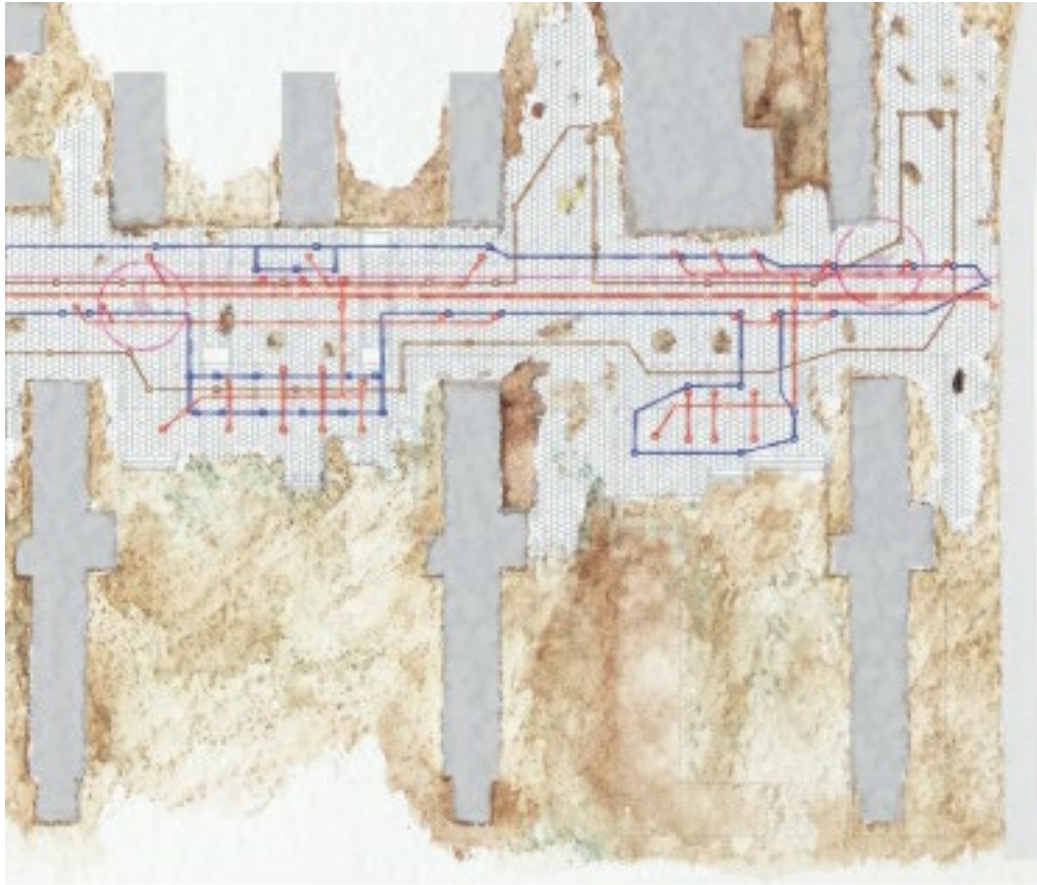
### **6.3.3.1 Case Study 1: Pablo Sendra – infrastructures of disorder**

Pablo Sendra presents a public space that responds to Sennett's open city forms and his own ideas around "infrastructures of disorder" by which he "creates conditions and provides possibilities" (Sendra and Sennett 2020). He uses technical infrastructure in recognition that it can become "tightly connected with...the social and cultural infrastructure of a place" (Sendra and Sennett 2020).

The hypothetical design (for an unnamed location) is structured around points of access to potable and non-potable water, power and data infrastructure (Figure 16). Sendra aims to "'unblackbox' infrastructure through...a process that further explores how infrastructural 'disruptions' can bring negotiation, interaction and diverse kinds of engagement with the built environment" (Sendra and Sennett 2020). Where there's a concentration of infrastructure access there is a "greater probability that activities will occur" (Sendra and Sennett 2020), and so the site use potentials are choreographed.

These infrastructure access points act as punctuation in the space, by coordinating the different combinations of activities a person is afforded. The different configurations of infrastructure facilitate synchronous uses via negotiations enacted spatially and temporally. The forms of infrastructure are not use-specific so many combinations are possible. For example, the "electricity supply can facilitate ... musical events, while drinking water supply and shelter can provide ... facilities for a community kitchen. Since each part of the surface provides different possibilities, this modular system achieves a continuous surface of diverse areas with different qualities" (Figure 17). Nothing is prescribed for the space but conditions for action and interaction potential are seeded (Sendra and Sennett 2020). The structures in the space are light and can easily be modified to suit a particular purpose (Figure 18). There are no impermeable walls in the space.

Alongside the seeding of place and action potential, exposing hidden infrastructure can "bring greater collective awareness of how the city works" thereby influencing the values and norms people associate with infrastructural systems (Sendra and Sennett 2020). In other proposals Sendra builds on this position and proposes alternate configurations of infrastructure provision and management such as community-managed (rather than municipally provided) systems (Sendra and Sennett 2020).



- Drinkable water supply
- ⊗ Drinkable water meter
- ⊙ Drinkable water terminal
- Low-voltage power supply
- ⊗ Electricity meter
- ⊙ Electricity terminal
- ⊙ Electricity register point
- Non-drinkable water supply
- ⊙ Non-drinkable water terminal
- Data supply

Figure 16: Using infrastructure networks to coordinate the space (Sendra and Sennett 2020).



Figure 17: Space form and function guided by the infrastructure networks (Sendra and Sennett 2020).

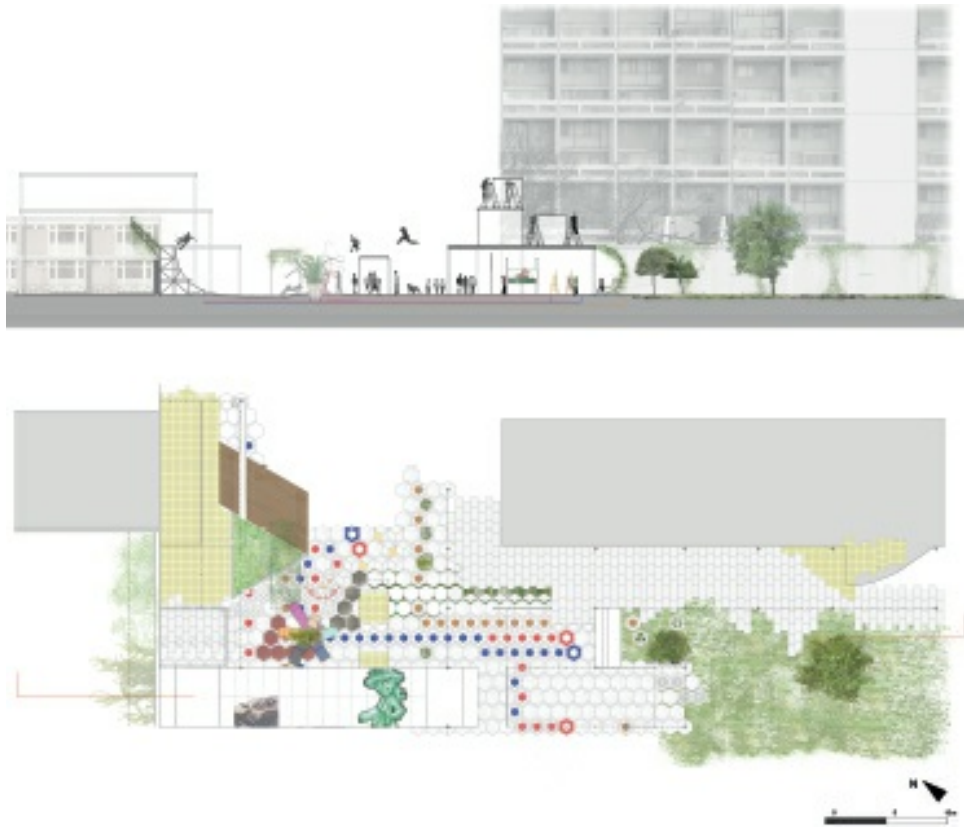


Figure 18: Light and adaptable architecture, and intensity of interaction around infrastructure confluence points (Sendra and Sennett 2020).

### 6.3.3.2 Case Study 2: WGV development

The WGV development in Fremantle is a local example of a development that has self-managed infrastructure networks. The development is designed as an “innovation through demonstration” project and there is on-site energy generation, water collection and distributed use and billing mechanisms for both (Low Carbon Living CRC 2019). The project includes high liveability goals and although shared infrastructure is not stated as an intended driver of sense of community, it is a likely contributor. Sennett states that that “for people to act effectively together they need to share a common purpose or goal” (Sennett 2018) and this development certainly provides that in many forms. See Figure 19.



Figure 19: WGV Development (Low Carbon Living CRC 2019).

### 6.3.4 Jan Gehl - cities for people

Jan Gehl’s approach to the public realm has developed in reaction to modernist urban design in which the city spaces became under-peopled and unattractive (Gehl 2010). Upon arrival in Perth in 1992 Gehl declared the city “an unrivalled example of a modernist city” and has twice provided recommendations for city centre improvements (Matan and Newman 2016). Gehl’s ‘cities for people’ principles are driven by the need to “strengthen the social function of city space as a meeting place” (Gehl 2011).

While Sennett sought to influence place attachment via the built environment (directly) *and* social interactions, Gehl’s approach very clearly emphasises a peopled space being the only way to place (and place attachment not suggested as a goal). The distinction lies in the way they explain their approaches: Sennett talks about what built forms should *be* (eg. incomplete), Gehl talks about what built forms should *do* for people (eg. invite). A great oversimplification of the underlying processes may be this:



Sennett: space affords someone something -> place identification (via physical predictors) (1) and/then social interactions (2) -> place attachment.

Gehl: space affords someone something -> social interactions (2) -> place identification (via social predictors) -> place attachment.

Perhaps because of this difference, Gehl's approach is more concerned with small scale details than Sennett's all-scale long-term theoretical frameworks. Gehl's focus is on location-based incidental interactions cumulatively leading to spaces becoming "meaningful and attractive" (Gehl 2011). The interactions Gehl most wants to cultivate are the unintended – or what he calls, "social" – as opposed to the "necessary" (functional) or "optional" (recreational) because these are the most under-represented in modernist city spaces (Gehl 2011).

Gehl works with knowledge of human sensory perception to increase the "possibilities and opportunities to see and hear others" (Gehl 2010) and facilitate "low-intensity contact" (Gehl 2011) via human-scaled pedestrian-friendly design. The overarching intent is to encourage more people to stay in public spaces for longer so that the "self-reinforcing process" of action-encourages-action increases interactions (Gehl 2011). From Gehl's perspective it is not the built environment that ought provide creativity-inspiring complexity but, rather, the people in a space that present "particularly colorful and attractive opportunity[ies] for stimulation" (Gehl 2011) and in turn. He does not aim for place attachment, although with both those processes in play it is likely cultivated.

Three of Gehl's sets of guidelines for public spaces are presented below. A summary of his four main principles is given in Figure 20 and a corresponding visualisation of those forms in Figure 21. More detail on the principle of 'invitation' is shown in Figure 22 and his twelve requirements for city quality at eye level are given Figure 23.

## Gehl's site planning principles

### **Assemble**

It is desirable to assemble people simply because the more people who gather in a single space, the more likely they are to interact. The limitations of how far a person comfortably walks and how far they can see sets **maximum space sizes**. The "radius of action" is usually 400 to 500m and a person can see up to 100m, although (optimally) squares should not be more than 60m in any direction (Gehl 2011). Spaces that are too big to facilitate assembly are described as "**overdimensioned**" and are characterised as "huge, open, nondescript areas devoid of people"—common due to a mistaken perception that more space is better space. In fact the reverse is generally true and Gehl suggests adopting the motto: "when in doubt, leave some space out" (Gehl 2011).

The **placement of buildings** around a site matters: if they are too far apart and/or facing away from each other then the space between them does not encourage assembly. The ground floor **building frontage** should be treated with care to provide stimulating and varied experiences for pedestrians. Blank walls do not encourage people to linger in or enjoy the adjacent space (Gehl 2011).

**Sight lines** into/out of/between spaces are vital because people will not go to somewhere they cannot see. Sunken open spaces are often not successful, and the heights of buildings adjacent to spaces matters. Very tall buildings do not allow for two-way sight between building and open space because looking high up is uncomfortable. It is best if high rise buildings have a **lower façade** where they open to public spaces (Gehl 2011).

### **Integrate**

This guideline relates to the uses and functions of city spaces. The best way to facilitate social activity is to encourage **different types of uses** and different sorts of people to coincide in a single space. Gehl uses the analogy of a living room to explain how a space can accommodate people engaged in multiple activities,

in various configurations, together or not. It opens up opportunities for people to become involved in activities other than what they expect to be involved with and thereby come into contact with **different sorts of people** (Gehl 2011).

### **Invite**

City spaces are best able to invite people in if they are bounded by **flexible zones of transition** that bridge between public space and private. People need to be encouraged to move into the public from their private environment, and they will not do so if they're faced with level changes (and stairs or lifts), fences or other clear barriers. Where the lines of **private and public** are blurred it becomes psychologically easier for people to move between the two zones. Alfresco café zones and children's playgrounds are good examples of transition zones because they give a person a reason to be in a public space in a private way (Gehl 2011).

### **Open up**

Related to public versus private demarcation, is the process of looking from one into the other. In this case the barrier is broken down when you are able to see what is happening in either space. For example, being able to see into shop, office or sports centre windows from a street offers a mode of exchange. Connections with people through glass has the same effect as in open air – **people simply enjoy watching people**.

There is a tendency to privatise (and close) spaces that could easily be publicly visible – such as playgrounds or outdoor spaces attached to hotels or shopping centres. Such spaces are missed opportunities for social interaction.

Figure 20: Summary of Gehl's four principles for working with the human dimension from Life Between Buildings (Gehl 2011).

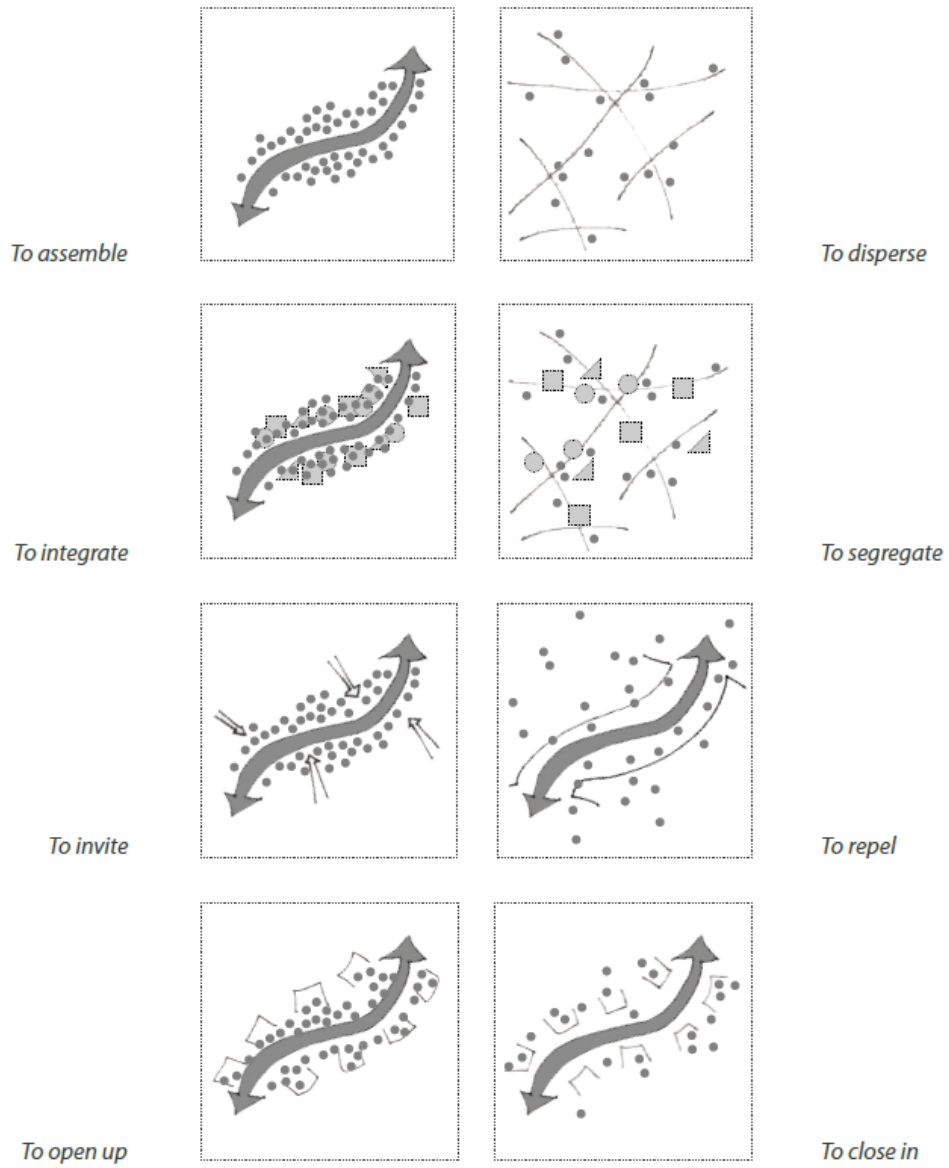


Figure 21: Four principles for working with the human dimension (Gehl 2010).

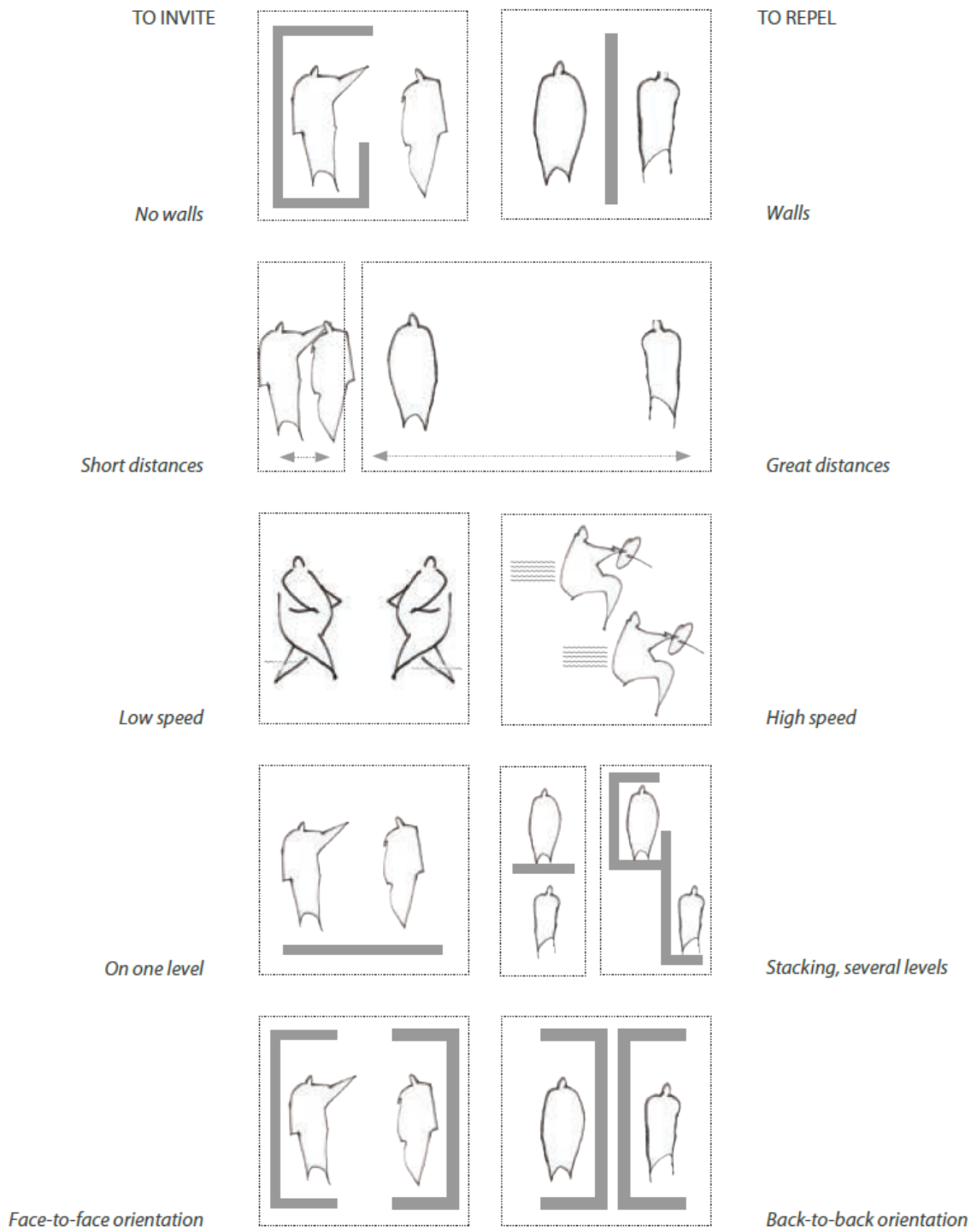


Figure 22: Forms that invite people into a space (Gehl 2010).













Protection	<p><b>PROTECTION AGAINST TRAFFIC AND ACCIDENTS — FEELING SAFE</b></p> <ul style="list-style-type: none"> <li>Protection for pedestrians</li> <li>Eliminating fear of traffic</li> </ul> 	<p><b>PROTECTION AGAINST CRIME AND VIOLENCE — FEELING SECURE</b></p> <ul style="list-style-type: none"> <li>Lively public realm</li> <li>Eyes on the street</li> <li>Overlapping functions day and night</li> <li>Good lighting</li> </ul> 	<p><b>PROTECTION AGAINST UNPLEASANT SENSORY EXPERIENCES</b></p> <ul style="list-style-type: none"> <li>Wind</li> <li>Rain/snow</li> <li>Cold/heat</li> <li>Pollution</li> <li>Dust, noise, glare</li> </ul> 
	<p><b>OPPORTUNITIES TO WALK</b></p> <ul style="list-style-type: none"> <li>Room for walking</li> <li>No obstacles</li> <li>Good surfaces</li> <li>Accessibility for everyone</li> <li>Interesting façades</li> </ul> 	<p><b>OPPORTUNITIES TO STAND/STAY</b></p> <ul style="list-style-type: none"> <li>Edge effect/ attractive zones for standing/staying</li> <li>Supports for standing</li> </ul> 	<p><b>OPPORTUNITIES TO SIT</b></p> <ul style="list-style-type: none"> <li>Zones for sitting</li> <li>Utilizing advantages: view, sun, people</li> <li>Good places to sit</li> <li>Benches for resting</li> </ul> 
	<p><b>OPPORTUNITIES TO SEE</b></p> <ul style="list-style-type: none"> <li>Reasonable viewing distances</li> <li>Unhindered sightlines</li> <li>Interesting views</li> <li>Lighting (when dark)</li> </ul> 	<p><b>OPPORTUNITIES TO TALK AND LISTEN</b></p> <ul style="list-style-type: none"> <li>Low noise levels</li> <li>Street furniture that provides "talkscapes"</li> </ul> 	<p><b>OPPORTUNITIES FOR PLAY AND EXERCISE</b></p> <ul style="list-style-type: none"> <li>Invitations for creativity, physical activity, exercise and play</li> <li>By day and night</li> <li>In summer and winter</li> </ul> 
Delight	<p><b>SCALE</b></p> <ul style="list-style-type: none"> <li>Buildings and spaces designed to human scale</li> </ul> 	<p><b>OPPORTUNITIES TO ENJOY THE POSITIVE ASPECTS OF CLIMATE</b></p> <ul style="list-style-type: none"> <li>Sun/shade</li> <li>Heat/coolness</li> <li>Breeze</li> </ul> 	<p><b>POSITIVE SENSORY EXPERIENCES</b></p> <ul style="list-style-type: none"> <li>Good design and detailing</li> <li>Good materials</li> <li>Fine views</li> <li>Trees, plants, water</li> </ul> 

Figure 23: Properties of spaces for people (Gehl 2010).

### 6.3.5 Walter Hood - hybrid typologies

Walter Hood is an urban designer who is motivated to design public spaces that can become meaningful places for many socially different groups of people. He notes that over time public spaces in the United States (and, I would suggest, Australia) have had "their flexibility diminished" and no longer successfully cater for a variety of "attitudes and values", appearing "invincible to change" (Hood 2004). It is interesting to consider this perspective in the context of urban infill in Perth and how the public spaces might cater for less homogeneous configurations of people and built form. Hood proposes a move away from formal public space typologies – "park, plaza, square, street, garden, yard and field" – and their prescribed uses towards a more "vernacular landscape [that] is rendered informal" and caters for diverse uses (Hood 2004). He suggests hybrid typologies that offer more to more people, acting as social infrastructure to

support the “idiosyncrasies” of the local community. He encourages conceptions of place and social interactions via “use, event, spectacle and the continuous practices of the everyday” (Hood 2004).

While Sennett, Sendra and Gehl’s approaches focus on bringing optimal built forms to a space with little (explicit) reference to what was there before. By contrast Hood’s approach is centred on responding to existing social groups and their needs. Just as affordance researchers describe how the accumulation of everyday movements through the city shapes our norms and values, Hood acknowledges the reciprocal process whereby “the common and the mundane practices” of life enacted in public can shape our spaces and “force us to learn more about one another” (Hood 2004). Hood facilitates designs that can reflexively emerge over time and values the “relationship between the formal and the informal city...[between which] there is a window of opportunit[y] for changing people’s attitude toward the unknown” (Sendra and Sennett 2020). This perspective also corresponds to Sennett’s seed planning form, by which like forms adapt to their local conditions.

Alongside inflexible use options Hood notes the role of nomenclature as a barrier to place identification because “communities attach themselves to certain words that get in the way of thinking creatively about what they really need” (Hood 2004). So why not talk about and create “plaza gardens, street yards, park fields”? (Hood 2004). A diagram of possible typology hybrids is show in Figure 24 . Hood states that “unconscious hybrids” can be even more “fertile” than his designed ones (Hood 2017). That is, spaces are likely meaningful if people assign their own typology terms. It would be interesting to assess place attachment in association with colloquial space names – a correlation seems likely.

Beyond park-like spaces, Gehl suggests of hybrid typologies whereby “schools can be located in the middle of a housing development...[c]lassrooms...can be placed around the city’s public streets...the café on the square doubles as the school’s cafeteria, and the city thus becomes a part of the educational process” (Gehl 2011). So many place possibilities once historic separations are deemed unnecessary.

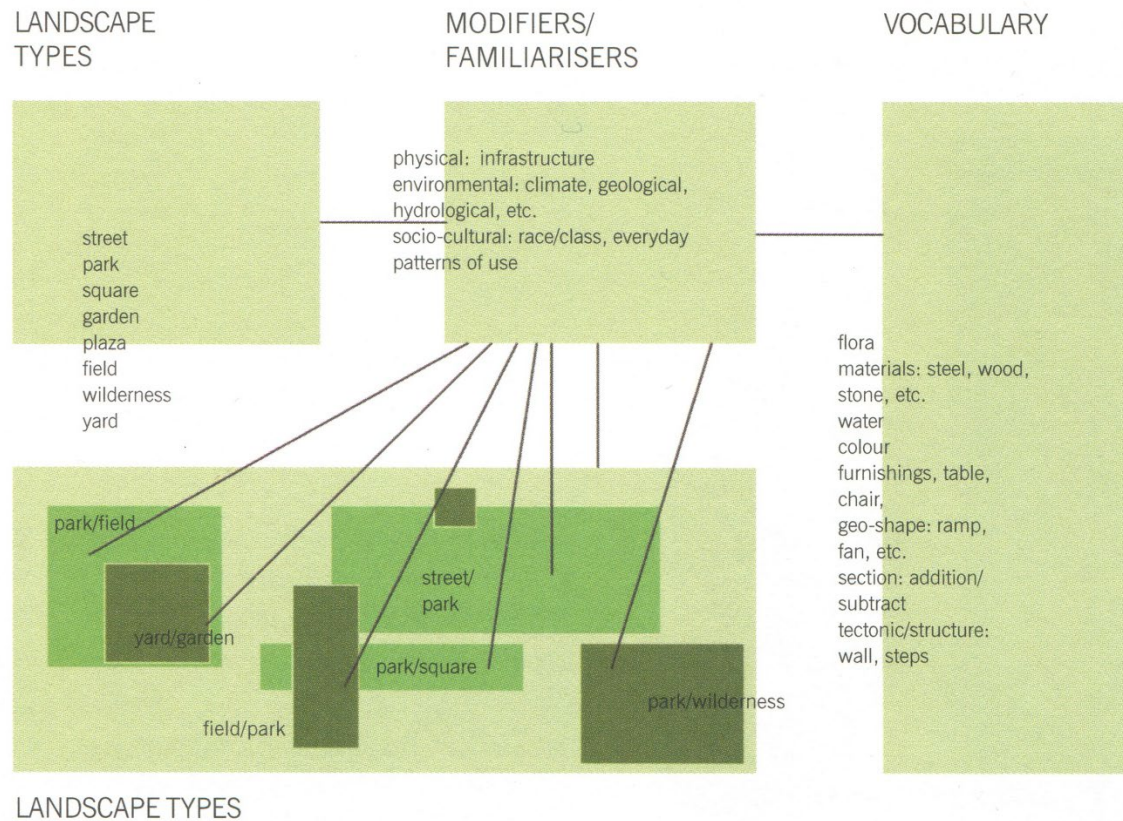


Figure 24: Hybrid modification diagram (Hood 2004).

### 6.3.5.1 Case Study 3: Park-garden hybrid public space

One of Hood's hybrid designs is for a park in Jackson, Wyoming. It is an relevant project to consider because the original park is a turf (and occasional tree) space where people sometimes play soccer – a common park type in Perth. The motivation to modify the park came from the construction of an adjacent performing arts centre, so the design is motivated by urban change.

Through community meetings and observations Hood identified the garden typology as the best to support various desired uses – performances, intimate gatherings and informal game space. Elements to support each of these uses were layered and a hybrid park-garden formed (see Figure 26 and Figure 27). The space includes a paved area for performances and gatherings, low wood and stone walls to define spaces, trees for shelter and lawn areas for sitting and recreation. Many conceptions of place via affordance are offered to users and the emphasis on gathering spaces encourages interaction between people.

The reoccurring reference to the garden as a mode of locally sensitive responsive design is interesting. Here Hood (2004) describes that the "garden typology affords a more diverse and idiosyncratic set of programmatic ideas that the park ...could not afford".



Figure 25: Jackson site – pre-development (Hood 2004).

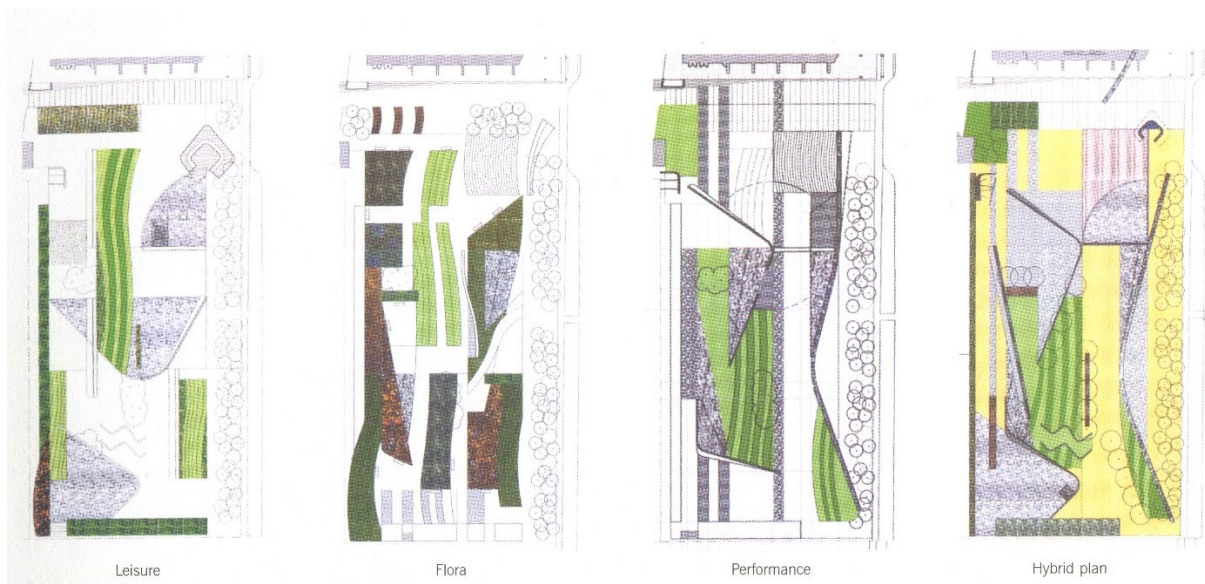


Figure 26: Jackson design layers (Hood 2004).



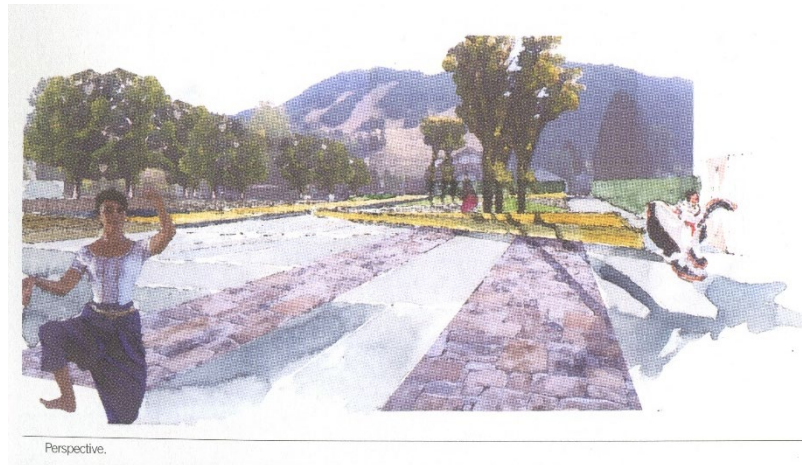


Figure 27: Jackson design perspective (Hood 2004).

#### **6.3.5.2 Case Study 4: Hybrid proposals for Perth**

Julian Bolleter proposes a hybrid street form that bares many similarities to Hood’s projects. Bolleter Suggests that “[g]iven that the density of traditional suburbs is changing dramatically ... it is timely that we reconsider what a streetscape could offer” (Bolleter 2016b). He engages directly with the two place attachment processes – encouraging multiple conceptions of place and many interactions – and demonstrates how these processes can drive design that is useful in the context of urban densification. The idea is to respond to the “lack of urban design visions for densification that capture the public’s imagination” by providing “a setting for social interaction, play and passive recreation for people of all ages [to enhance] both individual and community health and wellbeing” (Bolleter 2016b). These are, recognisably, the processes and outcomes of place attachment.

Bolleter’s proposed street is shown in Figure 28 and Figure 29.

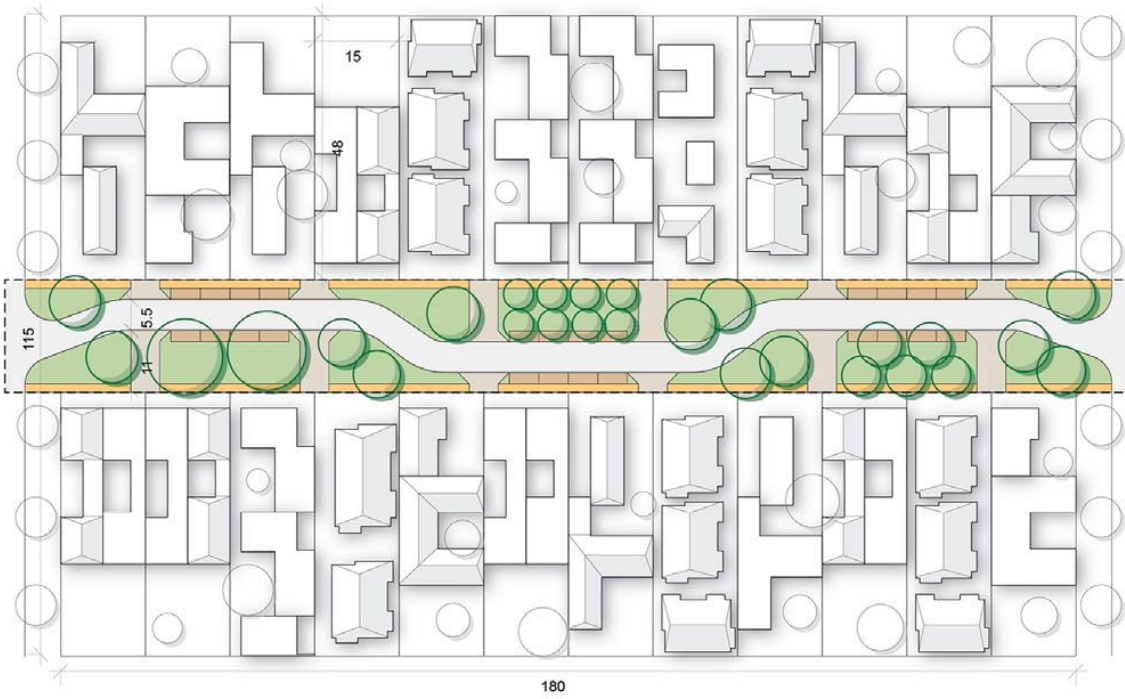


Figure 28: Proposed street in the 'woonerf' form (Bolleter 2016b).



Figure 29: Proposed street that includes a community garden, playground, road and parking (Bolleter 2016b).

### Part 3: Key ideas

- Inspiring many conceptions of place and encouraging interactions between people are the ways designers work with place attachment processes.
- Curating 'place potentials' is a useful approach, rather than prescribing use and meaning options.
- Complexity in form and function can inspire more creative conceptions of place and encourage more interactions.
- Ideas of infrastructure can be used to coordinate complexity.
- An analogy of a garden is a good way to approach underdetermined design.
- Liveability is about more than density.
- Sennett's focus is on moving away from overdetermined cities where form prescribes function.
- Sennett's open forms are useful for raising quality of life during times of urban change (like densification).
- Sendra demonstrates using water and power infrastructure to coordinate social interactions in public spaces.
- Community-managed infrastructure can offer a means for encouraged interactions and sense of community via shared purpose.
- The WGV is an urban infill development where site-managed infrastructure and shared purposed may play a role in developing sense of community.
- Gehl proposes ways to encourage unintended interactions via configurations of elements in spaces.
- Hood proposes hybrid typologies that support creative responses and many conceptions of place.
- Hood reiterates importance of responding to existing behaviours in a space.
- Bolleter suggests that new (hybrid) street forms should be considered alongside densification.

## 7 Discussion

Enacting change in urban landscapes is challenging because tight cycles of societal norms and economic expectations are hard to modify. By examining place attachment and affordance perspectives, we reveal the nuance required to guide city actors through perceived and actual threats of urban change. There is a consensus that the “contestation of social norms [requires a] focus on personal identity and how city life influences it” (Sendra and Sennett 2020).

This study demonstrates of the value of connecting and comparing wide-ranging research and practice approaches through the lens of theoretical models. Urban design, necessarily, requires an interdisciplinary approach and by using models to break down complex interactions it becomes possible to recognise the mechanisms in others’ work, even if they are not using the same terms or disciplinary framework. In this way urban designers can ‘decode’ ideas from many sources, and enrich and diversify their design practice – useful where innovation is key to enacting change.

If designers can identify underlying mechanisms and processes (eg. that affordance processes influence place identification or that identification *with* a place is different to identification *of* a place) then they have a set of fine grained tools with which to inform their designs. Just as Sennett suggests that urban landscapes should arise from the accumulation of fragments, so too might good design approaches arise from the careful combination of fine-grained, nuanced ideas. With this approach designers can be flexible and contextually specific, working consciously and carefully with the knowledge of how urban landscapes “condition and direct human behavior” (Marcus 2018).

This study was not about extracting specific recommendations for how to do densification in Perth. Rather, it was about collating a set of relevant ideas and approaches that Perth designers might use to enrich their process and designs, towards intervening in that cycle of societal norms. The following is a summary of those ideas (or fragments).

- Encouraging people to experience place attachment should be a design goal. Attachment can improve a person’s health and well-being, sense of inclusion and safety, and drives the formation of communities to support social resilience. These are important supports during times of rapid urban change.
- Designers should be cognisant of the different timescales over which urban landscapes influence people. The processes of affordance describe our immediate (fast) responses to a space – contributing to place attachment alongside slower meaning-mediated processes – as well as cumulatively underpinning the formation of our individual and societal norms and values. The built environment remains affective long after the initial reactions and glossy photos have faded – it is useful to initiate small slowly cumulative interventions.
- Density (alone) does not equal liveliness or experiences of liveability – more is required. See Sennet, Gehl, Hes et al., Haarhoff, Beattie, and Dupuis.

- Urban designers should be concerned, primarily, with cultivating (1) 'place potentials' and (2) interactions between people (both subprocesses of place attachment) in public spaces. Designers cannot provide a sense of place or instil place attachment, they can only interact with the processes of formation and seed possibilities. This is important because as density increases public spaces play a bigger role in residents' lives.
- With respect to goal (1), a designer should coordinate complexity to encourage creative responses and individual conceptions of place. Space configurations and elements that afford use but do not determine use are best. See Sennett and Hood in particular.
- With respect to goal (2), a designer should encourage unintentional (without shared place conception) and intentional (place-based) interactions between people. The intentional is strongly linked with (1) but the unintentional is what designers should focus on. See Gehl and Sennett.
- Thinking of a space (at any scale) as a garden provides a useful approach to cultivating possibilities of place/place potentials/underdetermined space. Infrastructural elements can be used to provide varying conditions from which context-specific forms and activities can grow. Sendra considers using power and water infrastructure.
- Designers might use hybrid typologies to move away from prescribed spaces. For example park-gardens or street-playgrounds. See Hood and Bolleter.
- Place attachment (via physical or social dimensions) can support community formation. Sendra proposes community-managed infrastructure as a mode of community building in relation to the claim that "for people to act effectively together they need to share a common purpose or goal" (Sennett 2018).
- The form of 'passage territories' should be given particular consideration alongside new denser urban forms. The balance of private to public space changes and the transition between them is important to consider. People need to be invited out. See Sennett, Gehl, Bolleter.
- The scale at which place attachment is encouraged is important. Perhaps as density increases place attachment should be encouraged at larger scales - street/park/neighbourhood – to best support residents while their private residential spaces (and attachments) undergo change. Recall that experiences of community over different scales are not cumulative and do not involve the same types of interactions. See Kusenbach.
- Designers need to think carefully about ideas of neighbourhood (spatially and conceptually) because they are not universal. Empirically, place attachment is lowest at this scale – should designers be encouraging more attachment there as residences change? Neighbourhood is the scale at which people should be encouraged to walk, and a pedestrian desires greater complexity and stimulation – so perhaps it is useful to give walkers something to respond to. And consider the edges, not only the neighbourhood centre. See Lewicka, Hidalgo and Hernandez, Kusenbach, Sennett, Geller.

- Evaluation of urban design – including urban infill projects – should be done using a suite of people-place relationship measures. Assessments of ill-defined liveability via measures of satisfaction are perhaps not best to usefully assess a development. See Hes et al..
- Stakeholder values are what determine a design. Ultimately all place attachment and cumulative affordance processes inform our values and our values inform our preferences (and translate to ascription of economic value). Communicating via value descriptions is a valid and useful method of ascertaining place attachment. See Brown, Reed and Raymond.
- Designers should aim to increase diversity of city residents' values (via consciously designing for place attachment and affordance processes), and therefore enable diversity in preferences.
- Designers should pay careful attention to the language they use to describe spaces and how they communicate with communities. The first is to reduce determination of use and the latter influences people's ability to cope with and accept change (important for NIMBY reactions). See Hood and Devine-Wright.
- Designers should explicitly acknowledge and react to residents' existing place attachments. This is important for guiding communities through urban change. People's place attachments can remain intact even if the spaces change physically and residents' perceptions of a developments are linked to preservation of special places. See Hester and Stedman.
- Place attachment can be a predictor of pro-environmental (the physical dimension) and pro-community (the social dimension) behaviour. In these situations people are likely to want to be involved with decision-making that affects their places. So, by encouraging place attachment designers can influence willingness and ability for residents to participate in future collaborative design. This design mode has been "identified as [one of] the main approaches to achieve urban sustainability" (Palazzo 2020). See Hes et al. and Palazzo.

The success of moves toward greater suburban density revolve around our individual and societal values. Expressions of value have emerged as closely intertwined with place and affordance frameworks and the importance of aiming for a diversity of values amongst city residents has been noted. More detailed thinking that has not been included in this study considers other ways we can derive diverse values from urban landscapes. There are suggestions that "physical contact with the 'roughness, hardness and difficulty' of the environment has meaningful value" and that we should be retaining topographical variability in our suburbs (Kullmann 2015).

Equally important, "[e]cological infrastructure has been identified as a key strategy to achieve multifunctional land use in public urban space" (Palazzo 2020). There is also the proposition that there are positive values to be derived from exposing a city's infrastructure networks and encouraging a "greater collective awareness of how the city works" (Sendra and Sennett 2020). Not something most city residents are concerned with, and it would be interesting to imagine a world in which they were. Another related and important area of study is that of the quality of elements of spaces and how this impacts perceptions of place and value (Carmona 2019, Chiaradia, Sieh, and Plimmer 2017).

## 8 Conclusion

Design that can support resilient and adaptable urban systems requires nuance and an ability to embrace and work with complexity. That is the resounding message from environmental theorists, sociologists, liveability researchers and urban designers who aim for urban design that goes beyond average. There is the need for affective design that is able to stimulate place potentials, entice people into new experiences and broaden their conception of what and who is valuable. During moves towards greater density the public realm will necessarily cater for “many different and sometimes competing functions” (Palazzo 2020) and this is exactly what brings vitality and resilience building life to urban landscapes. A happy confluence that offers great potential to suburban living in future Perth.

The next phase of this study will translate the ideas presented here into locally-specific proposals for dense urban infill and greenfields design in Perth.

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