



IS THE ROAD THERE TO SHARE? SHARED SPACE IN AN AUSTRALIAN CONTEXT

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Abstract

Shared space is an urban design and traffic engineering concept that integrates pedestrians, vehicles and other road users through the removal of traditional street elements such as signs, traffic lights, pedestrian barriers, road markings and kerbs. This can paradoxically improve safety as the increase in risk and ambiguity forces all road users to behave more cautiously. However shared space is more than just a way to design a street; it is about reclaiming the public realm from the dominance of the car and achieving a better balance between the street's social and movement roles. Recent shared space schemes have demonstrated benefits such as lower vehicle speeds, reduced congestion, fewer accidents and injuries, and more vibrant and attractive streets. However concerns have been raised about the impacts that shared spaces have on more vulnerable road users such as children, the elderly and people with a disability (particularly the blind and partially sighted). This thesis looks at existing and proposed examples of shared spaces, 'shared zones' and 'quasi-shared spaces' both overseas and within Australia. The issues associated with shared space are explored through the examination of case studies and relevant legislation, plans and guidelines. Recommendations are made on how shared space schemes could be implemented in the context of Australia's built environment and regulatory frameworks.

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Chapter 1 - Introduction

1.1 Preface - What is shared space?

Shared space is an urban design and traffic engineering concept that integrates pedestrian, vehicles and other road users through the removal of traditional street elements such as signs, traffic lights, pedestrian barriers, road markings and kerbs (Shared Space 2005). This stripping away of street furniture has led to the concept's alternate name: 'naked streets'. However shared space is more than just a way to design a street; it is about reclaiming the public realm from the dominance of the car and achieving a better balance between the street's social and movement roles.

British architect and urban designer Benjamin Hamilton-Baillie coined the term 'shared space' in 2003, but the concept is nothing new. Sharing the streets in an informal way has always been the de facto mode of travel and still is in many parts of the world today. However in the last half century, the idea that vehicles and other road users should be separated has become the accepted norm. The 'rebirth' of shared space grew out of the *woonerf* concept developed in the Netherlands in the late 1960s and early 1970s, and was later expanded by Dutch traffic engineer Hans Monderman to many towns and villages in the Netherlands.

A key theoretical component of shared space is that it introduces an element of risk in the street. Paradoxically, this improves road safety as the increase in uncertainty and danger forces all road users to behave more cautiously. Drivers must slow, and all road users have to interact with each other through eye contact and hand signals, in order to negotiate their way through the space.

Recent shared space schemes have demonstrated benefits such as lower vehicle speeds, reduced congestion, fewer accidents and injuries, and more vibrant and attractive streets. However concerns have been raised about the negative effects

that shared space has on more vulnerable road users such as children, the elderly and people with a disability (particularly the blind and partially sighted).

This thesis looks at existing and proposed examples of shared spaces, 'shared zones' and 'quasi shared spaces' both overseas and within Australia. Through the examination of these case studies as well as relevant legislation, plans and guidelines, the issues associated with shared space are explored, and recommendations are made on how shared space schemes could be implemented in the context of Australia's built environment and regulatory frameworks.

1.2 Problem setting - The rationale for shared space

Figure 1.1 Road sign on General Holmes Drive, Mascot



Source: Gillies 2009

“The urban environment should again become a place favourable to human encounter... Streets and squares should once again be treated as outside rooms within the city, as places where the opportunity of contact between people is the primary consideration.”

- Jan Tanghe et al., *Living Cities* (1984)

For many years, a favourite slogan of the NSW Roads and Traffic Authority (RTA) has been “the road is there to share”. This motto aims to encourage cooperation and consideration between different road users - drivers, cyclists, motorcyclists, pedestrians and public transport users. Nevertheless, conflict over increasingly congested road space continues to grow.

In addition to this conflict, there is "growing local, national and international concern about the declining state of streets and streetscapes" (Hamilton-Baillie 2008a, 163), which has mainly been caused by excess traffic. Cars were initially just expensive toys of the rich, but over the past century they have evolved to become the de facto

mode of transport for people in developed countries (Urry 2004). While the car has revolutionised access and convenience, the increase in traffic has also had major adverse effects such as accidents and injuries, air and noise pollution, social isolation and urban sprawl and decay (Kay 1998). These problems affect everyone because as Sloman (2006, 18) points out, “there is no way to opt out of a car dependent society.”

Engwicht (1999) explains that public spaces in cities have been the epicentre of the social, cultural and economic life of towns and cities for thousands of years. Streets traditionally served two functions - movement and exchange. They were “the centre of community life, a place for socialising, children’s play, drama, education, celebrations, social events and economic activity” (Engwicht 1999, 87). They were a place for everyone; children learnt to play and cooperate with others by playing in the street, watched over by the older generation.

However in most countries today, this rich diversity of uses has been eroded by increased traffic, and moving vehicles has become the primary function of streets. Now most parents believe the street is a dangerous place for children, despite their natural ability for ‘place making’ (Engwicht 1999). Older people have also been marginalised, driven off the streets by the dangers of fast moving cars. As a result, the street is no longer part of a person's 'home territory'. Home used to be not only the house, but also the surrounding streets, landmarks, squares and parks. Appleyard (1981) showed that traffic has a ‘zone of influence’ that intimidates and takes over space psychologically and erodes this territory.

While the movement of vehicles has come to dominate the public realm (Dowdy 2007), this need not be the case. The street can be reclaimed for its traditional uses, and shared space can play a part in this movement. By its inherent nature, shared spaces induce lower vehicle speeds and restore the human scale to streets. It reduces accidents, improves the visual appearance of streets and encourages interaction. In doing so, shared spaces can become what CABI (2008) has termed ‘civilised streets’ - places which reconcile the conflict between different users and functions of the street, and thus become more pleasant places for everyone.

1.3 Research question and objectives

The research question for this thesis is:

What are the benefits and problems associated with shared space, and how can shared space schemes be implemented in an Australia?

The aims of this thesis are to explain the shared space concept, and identify the general benefits and problems associated with it. This thesis looks at examples of 'quasi shared spaces' and 'shared zones' in Australia as well as the issues which need to be addressed to create more such spaces in Australia's cities.

The specific objectives of this thesis are:

1. Describe the historical background and theory behind the shared space concept
2. Identify the benefits that current shared spaces have demonstrated
3. Analyse problematic issues that have become evident
4. Examine issues specific to the Australian context that need to be addressed in implementing shared spaces in this country
4. Analyse local examples of 'shared zones' and 'quasi shared spaces' to gain insight into the reality of behaviour and characteristics of shared spaces
5. Make recommendations on how shared spaces can be implemented in the context of Australia's built environment and regulatory frameworks

1.4 Research methodology

The majority of research for this thesis involved a literature review on the topics of: shared space and specific case studies, urban design, traffic engineering, car use, road safety and behavioural psychology. The type of literature included journal articles, news articles, reports, traffic engineering/road design manuals and guidelines, road safety legislation, websites, blogs and online videos.

It became evident that there has only been minimal in depth research done into the concept of shared space and the most detailed articles on the concept have been written by either proponents or opponents of the concept - rather than more objective observers. Comments posted on news sites, blogs, articles and videos were also useful in getting a first-hand account from people who use shared spaces.

I think language was one barrier to a more comprehensive exploration of this topic. Nearly all the literature I studied came out of the UK, which is to be expected given that it is the only English-speaking country where shared space has really caught on. However there was some English-language literature out of the northern European countries like the Netherlands where shared spaces are more numerous. My German language skills and online translation tools enabled me to study some German and Dutch websites, reports and news articles, but I think a further examination of literature from these non English-speaking countries would be valuable to ascertain the level of support and criticism of the concept.

Many articles and news reports quoted statistics on various shared spaces, but these were usually quantitative measures such as speeds, vehicle numbers, accidents and injuries/deaths before and after the creation of a shared space. It was harder to find in depth research on the qualitative aspects of the space, such as people's opinions on the spaces. I found a few in-depth studies of specific shared spaces that proved useful, as did reports on the problems for visually impaired people. Still, I believe more detailed research needs to be done on shared space, especially in regards to harder to measure things such as people's behaviour and feelings in these spaces.

As far as I could find, little has been written on shared space from an Australian perspective. This is understandable given the lack of shared spaces here, but this limited how much I could examine the concept from an Australian perspective. Thus in visiting and observing various shared spaces, zones and quasi shared spaces here, I was able to gain valuable insight into how these sites function in practice, which is something that could not be achieved through a simple literature review.

1.5 Structure of thesis

Chapter 1 - Introduction

Introduces the thesis topic and the context for shared space. Identifies the research question and objectives and details the research methodology used.

Chapter 2 - The concept of shared space

Describes the historical background to shared space, types of urban space and explains the theory behind the concept.

Chapter 3 - The benefits of shared space

Analyses the benefits of shared space generally by looking at various European case studies of shared spaces.

Chapter 4 - Problems associated with shared space

Explores the issues that pose a challenge to the shared space concept, also using case studies of existing and proposed shared spaces.

Chapter 5 - The Australian context

An analysis of shared space issues specifically related to Australia, and an examination of 'quasi shared spaces' and 'shared zones', which gives an idea into the reality of the shared space in Australian cities.

Chapter 6 - Recommendations

My recommendations on the issues that need to be addressed in the creation of further shared spaces in Australia.

Chapter 7 - Conclusion

A summary of the topic, which addresses the research question and objectives.

Chapter 2 - The concept of shared space

2.1 Historical background

Natural shared space

While most people today regard shared space as radical concept, it is in fact nothing new. Sharing the streets in an informal way has always been the de facto mode of travel in cities (Figure 2.1) and still is in many parts of the world today. The old centres of most European cities exhibit natural shared space; people came first and cars have been introduced slowly into streets where pedestrians have an established priority. The usually narrow, crowded streets also serve to constrain vehicle speeds and encourage free pedestrian movement (Adams 2008) (Figure 2.2). The cities of developing countries also exhibit natural shared space, as motorised vehicles are still a relatively new addition to the city streets, and the prevailing safety culture is different (Adams 2008). However since the 1950s, the idea that different road users should be segregated from one another has become a widely accepted notion. While this concept has only become the prevailing norm in the past 50 years, its origins can be traced back to before the era of motorisation.

Figure 2.1 Natural shared space in Elizabeth St, Melbourne c1900



Source: State Library of Victoria

Figure 2.2 Natural shared space in Madrid, Spain

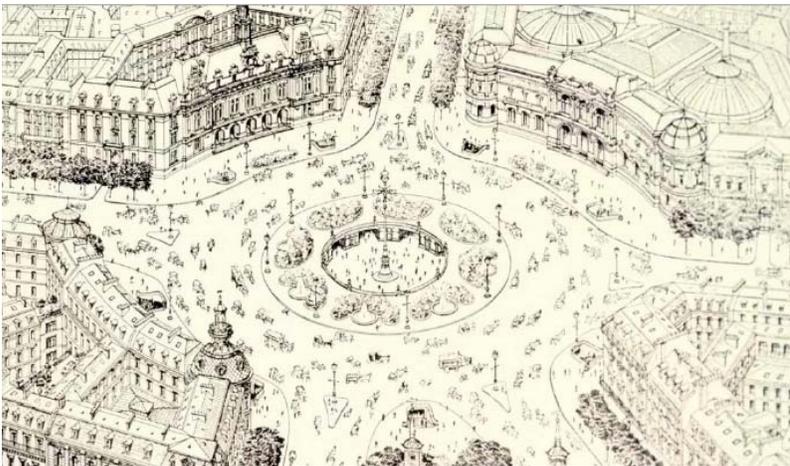


Source: P Gillies 2009

The road to segregation

As Hamilton-Baillie (2008a, 164) notes, “attempts to rationalise traffic movement in cities pre-date the arrival of the automobile.” In the late 19th century, French architect Eugene Henard produced many drawings and diagrams on street design and traffic movement (Figure 2.3). Few of Henard’s ideas were implemented in his lifetime, but his work inspired future generations of traffic engineers. It could be said that his work has had more influence on the shape of cities today than many great architects or planners (Hamilton-Baillie 2004).

Figure 2.3 Eugene Henard's 1895 proposal for a roundabout in Paris



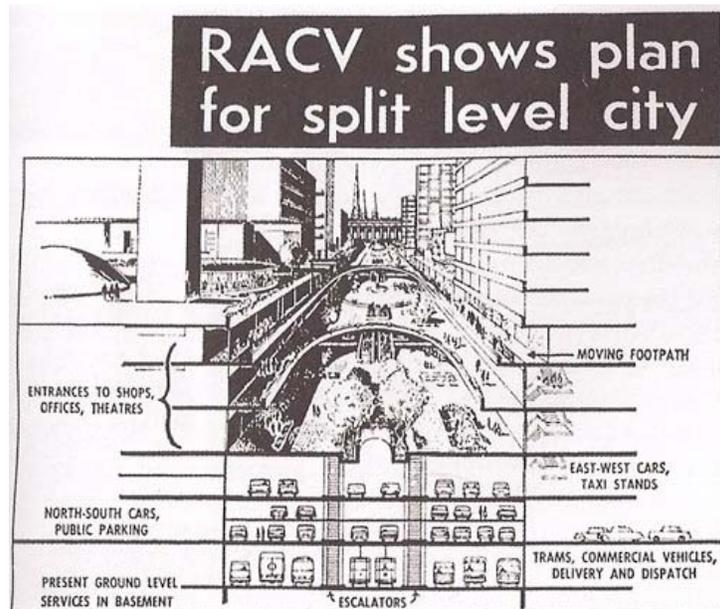
Source: From Hamilton-Baillie (2005)

In 1929, the concept of segregation was taken to its logical extreme with the founding of Radburn, New Jersey (McNichol 2004). Radburn was designed as “a town for the motor age” with the explicit intent of separating traffic by mode and contained a pedestrian network with no at-grade crossings of major roads (Radburn 2009). In following decades, many Radburn principles were written directly into traffic codes (McNichol 2004) and many suburbs and housing estates around the world were designed in the Radburn style. The Radburn style was initially thought of as a planned paradise (Woodward 1997), but the concept has not stood the test of time, and many Radburn public housing estates (including in Australia) have become riddled with many social problems (Cameron 2000). Nevertheless, Radburn was a significant step towards further segregation.

In the 1930s, the 1933 Athens Charter recommended that residential, work, transport and recreation should never be mixed (Dowdy 2007), and Le Corbusier further promoted separating all modes of transport with his urban design theories. By the 1950s, modernist ideas of the vertical city were being realised and public spaces began to deteriorate despite increasing criticism (e.g. Jacobs 1961).

Support for segregation firmed during the 1960s as it “matched the zeitgeist of 1960s town planning” (Hamilton-Baillie 2008a, 165). The ideas that the state should control and regulate activities and take responsibility for safety and order seemed like a rational response. It was believed that potential conflict “could be designed out through planning and regulation” and this “chimed with the social welfare aspirations of both the left and right of politics” (Hamilton-Baillie 2008a, 166). In the UK, the principle of segregation was formalised in government policy with Sir Colin Buchanan’s 1963 *Traffic in Towns* report (aka the Buchanan Report). The report concluded that traffic growth was a threat to the efficiency of towns and cities and vehicle traffic and pedestrians were fundamentally incompatible (Hamilton-Baillie 2004). Planners, engineers and governments in Australia were also grappling with the ever-growing numbers of cars clogging the streets, which spurred some radical proposals (Figure 2.4).

Figure 2.4 A 1965 proposal by the RACV for Melbourne



Source: Herald 1965

However at the time, the psychology of driver behaviour was largely unknown. Traffic engineers viewed vehicle movement like hydraulics engineers view water moving through a pipe - "to increase the flow, all you have to do is make the pipe fatter". Roads became wider and more 'forgiving'; road signs, rather than road design, became the main way to enforce behaviour; and for their own safety (and to maximise efficient traffic flow), pedestrians were kept out of the road and only allowed to cross it at designated points (McNichol 2004).

The USA and Britain in particular embraced the idea of segregation and during the 1950s and 60s, embarked on ambitious freeway building programs, most notable of which was the US Interstate Highway System. Many roads were built which sliced through residential streets, divided neighbourhoods, cut through and around town centres, and discouraged pedestrians by destroying the human scale of the urban environment (McNichol 2004). By the 1970s, it was clear that segregation was not working, and a new approach was needed.

The woonerf

The ‘rebirth’ of shared space grew out of the *woonerf* (pl. *woonerven* - meaning ‘living yard’) concept developed in the Netherlands in the late 1960s and early 1970s. A *woonerf* is a residential street where pedestrians and cyclists have legal priority over motorists. Cars are allowed, but Dutch law states that they are restricted to walking pace (MVW 2006).

One of the pioneers of the *woonerf* was Dutch engineer Joost Vahl (Van den Boomen 2002). In the 1960s, Vahl and his colleagues in the city of Delft were experimenting with the first traffic calming devices in quieter, residential streets. These were initially considered “a radical act of street theatre directed against the growing encroachment of cars in the city” (Vanderbilt 2008, 191). The aim of these innovations was to find ways to integrate cars into the city with people, and eventually led to the creation of the first *woonerf* in Delft.

Even today, *woonerven* may seem radical to outsiders, with children’s play equipment sitting right in the street (Figure 2.5). Today there are over 6000 *woonerven* in the Netherlands with similar examples found in other European countries. Although the UK was among the first countries to legally recognise *woonerf*-style streets, the concept has only blossomed more recently (Passmore 2005). In the late 1990s, the UK government began to encourage experiment with its own type of *woonerf* through a pilot *Home Zones* program and the publication of guidance on their creation. Dozens of existing residential streets have been converted to *Home Zones* in the decade since the pilot project was launched, and many developers are now incorporating the concept into residential areas.

In 1976, the Dutch government formally recognised the *woonerf*, defining it as a way to design low speed residential roads. However once the *woonerf* became simply another category in the standard road hierarchy, its use and popularity faded. *Woonerven* got their own sign, but Monderman (in Vanderbilt 2008) believes these signs defeat the purpose of a *woonerf*. They imply that one must drive carefully in the *woonerven*, but it is OK to drive less carefully everywhere else. Nevertheless, the *woonerf* was an important chapter in the history of street design as it challenged the

notion of segregation. The *woonerf* suggested that cities were for people and cars were guests in the city. Neighbourhood streets were like outdoor rooms to be driven through slowly, with drivers mindful of the furniture, décor, and most importantly, the residents (Vanderbilt 2008). This model would later be reflected in the new generation of shared streets.

Figure 2.5 Woonerf in Amsterdam



Source: Joel Mann (2007)

Hans Monderman and modern shared space

As the *woonerf* fad faded in the late 1970s, Dutch traffic engineer Hans Monderman began to expand on the concept of integration with experiments in towns and villages in his home province of Friesland. In the mid 1980s, Monderman was head of road safety for Friesland when he created his first shared space in the village of Oudehaske. Oudehaske's wide, straight main street was beset by large amounts of speeding vehicles which residents wanted to stop. The usual traffic engineer's approach would have been to deploy an arsenal of 'traffic calming' devices, but Monderman decided to try something different (Vanderbilt 2008). Monderman experimented with simple designs and landscaping which emphasised the 'distinctive history and context' of the village by deliberately removing or downgrading usual street elements such as signs, road markings, chicanes and road humps. Oudehaske was the first time Monderman tried to "make a village more like a village" (Engwicht 2006) and even he was surprised when speeds on the street

dropped by 40% (conventional 'traffic calming' was achieving reductions closer to 10%) (Hamilton-Baillie 2008a).

As Monderman himself said, “That experience changed my whole idea about how to change behaviour. It proved that when you use the context of the village as a source of information, people are absolutely willing to change their behaviour” (in Vanderbilt 2008). While the *woonerven* had been confined to quiet residential streets, Monderman showed its core principles could be applied in busier roads and intersections. Monderman died in January 2008 but his work has left a lasting legacy (NCE 2008a). Vanderbilt (2008) notes that Monderman’s experiments were significant steps towards the understanding of what would become known as 'psychological traffic calming' (Engwicht 1999).

As Vanderbilt (2008, 196) recognises, Monderman was thinking like an architect in a realm that had been handed over entirely to engineers. In constructing a building, “engineers are essential to making it function, but it is architects we call upon to determine how the building will be used, to organise the space.” Monderman integrated the fields of traffic engineering, urban design, landscape architecture and behavioural psychology (NCE 2001), emphasised the individual characteristics of the places he redesigned and thus recovered the social space of streets (Hamilton-Baillie 2008a). To understand the shared space approach, it is necessary to first understand the difference between different types of space in towns and cities.

2.2 Types of urban space

Segregation versus Integration

The core principle of shared space is that all road users should be integrated, rather than separated from one another, with each having equal right of way. To understand this principle, it is useful to examine Danish architect and urban designer Jan Gehl’s model Traffic and People (Figure 2.6). In this model, Gehl (1987) has developed a typology classifying the relationship between pedestrians and vehicles in the urban environment.

The model is a spectrum with four elements. At one end of the spectrum is a city where traffic dominates the environment, such as Los Angeles. At the other end is a city like Venice, which completely excludes traffic. Between these two points lies two parallel, contrasting approaches - segregation and integration. Gehl's model cites Radburn and Houten (a Dutch town) as examples of places where traffic is separated from pedestrians with separate infrastructure to serve each mode (Hamilton-Baillie 2005). As previously stated, traffic engineering and urban planning has generally followed this model since the 1950s.

The third model is integration - where vehicles and pedestrians share the street but vehicles do not dominate. This is the relationship epitomised by shared space. As demonstrated by the *woonerven* and Hans Monderman's designs, streets designed in this way utilise the principles of legibility and local context to influence the behaviour of all users of the space. However this leads to the next issue of determining when and where integration is a suitable approach.

Figure 2.6 Gehl's classification of the relationship between traffic and people

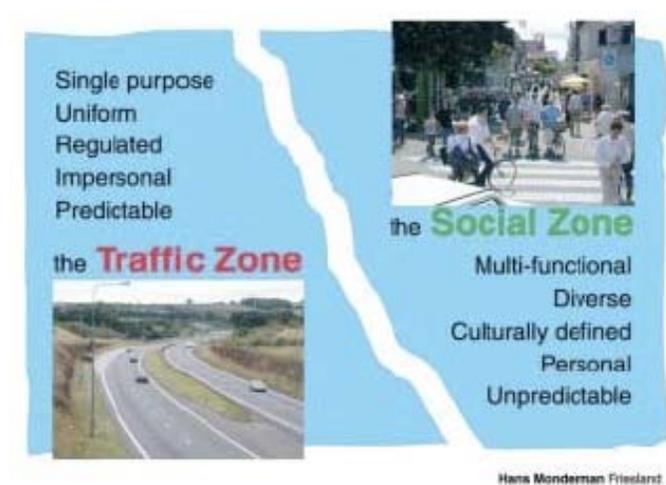


Source: Gehl, *Life Between Buildings* (1987)

The traffic zone and the social zone

According to Hamilton-Baillie (2005, 42), “traditional traffic engineering has a defined hierarchy of road types, suitable for various functions, speeds and traffic volumes.” Monderman believes that all roads can be more simply classified into two distinct categories - the traffic zone and the social zone. As Figure 2.7 demonstrates, the two zones have strongly contrasting characteristics.

Figure 2.7 The traffic zone and the social zone



Source: After a diagram by Hans Monderman (unpublished)

The traffic zone serves a single purpose - the movement of traffic. The freeway is the epitome of the traffic zone. The signs, lane markings and other characteristics of the traffic zone are all uniform and standardised. It is an environment that is impersonal, predictable and highly regulated by rules and legal enforcement. In designing this environment, a traffic engineer strives for unambiguous clarity, consistency and conformity. The same standards are applied everywhere, regardless of the location or surroundings. However this approach is completely at odds with the qualities we associate with an attractive and interesting public realm (Hamilton-Baillie 2005).

The social zone by contrast is multi-functional and diverse. As Engwicht (1999) notes, cities accommodate a multitude of simultaneous functions. They are personal,

unpredictable, highly diverse and governed by a complex web of ever-evolving social and cultural conventions. The social zone can also be called the 'public realm' (Hamilton-Baillie 2004). Thus while segregation may be appropriate in the traffic zone, integration is more desirable in the social zone. Traffic can coexist with other activities within the social zone but they become a guest in what Engwicht (1999) calls the 'outdoor living room'.

Monderman believes that traffic engineers have forced the traffic world upon the social world. Standardised signs and markings work in the traffic zone, but they have little or no place in the social zone. According to Monderman (in Vanderbilt 2008, 189), "When you built a street in the past in our villages, you could read the street in the village as a good book." Yet thanks to traffic engineers, instead of taking cues from the social life of the village, the village's main road becomes just another section of highway, with only a few small signs to say otherwise. Advocates of shared space believe this is the wrong approach. Rather than formal, standardised rules, behaviour in the social zone should be governed by local customs and informal human interaction - eye contact, gestures and hand signals (Hamilton-Baillie 2004).

Monderman acknowledges (in Lyall 2005) that shared spaces do not work everywhere; they can only thrive in conjunction with a well-organised, well-regulated highway system. Determining whether a road falls into the traffic or social zone underpins Monderman's work, as many roads fall into both categories. Thus for both zones to function properly, the transition between the two worlds needs to be made clear (Hamilton-Baillie 2005).

Definition between the traffic zone and social zone

Monderman and others believe it is essential to make explicit the transition between the traffic zone and the shared space (in Booth 2006). Historically, city walls marked the border between the highway and the city, and the city gate was the point of transition between the two worlds (Hamilton-Baillie 2008). There are modern examples of city gates present in our cities, but these are rare, especially in Australia. Supporters of shared space advocate the reintroduction of such definite

entry gateways. Public art, the road surface and patterns, pedestrian-scale lighting, alignments and drainage details can all be used to convey the message to drivers that they are in the social zone and thus signs and speed limits become unnecessary as drivers modify their behaviour accordingly (Hamilton-Baillie 2005).

Figure 2.8 shows a modern urban gateway in the town of Opeinde in Friesland. Once inside the arch the road surface changes and road markings and kerbs disappear. Lighting lowers to an intimate pedestrian level and alignments, surface patterns and drainage details highlight the principal buildings (Hamilton-Baillie 2005).

This approach is the key to the theory behind shared space - that environmental context has a greater influence on behaviour than legislation or formal rules (Hamilton-Baillie 2004).

Figure 2.8 Modern urban gateway in Opeinde, Netherlands



Source: Hamilton-Baillie (2005)

2.3 The theory behind shared space

Using environmental context to influence behaviour

Observers of shared space - especially in the media - have tended to focus on how such spaces are usually created by the removal of street furniture. While the removal of signs, traffic lights, pedestrian barriers, road markings and kerbs is an important part of creating a shared space, it involves more than just getting rid of street furniture. Shared space is about using the environmental context of the city and the street to influence the behaviour of all users of the space, and fully integrating traffic into the social and cultural context of communities (Hamilton-Baillie 2005).

To understand why environmental context influences road user behaviour, it is necessary to understand the counterintuitive nature of a shared space.

Reintroducing risk

A favourite motto of Vahl, Monderman and other proponents of shared space is, "The best way to make a street safe is to make it unsafe!" This motto sums up a core principle of the concept. In addition to maximising traffic flow, the ultimate goal of all traffic engineers has been to eliminate risk from the roads. However this is an unrealistic and undesirable expectation, as risk brings value to the environment and the way we use it (P Smith 2007). CABE (2007a) notes that "there seems to be no more good risks; all risks appear to be bad". Shared space proponents seek to challenge this assumption by arguing an element of risk is not only desirable, but also necessary to create a safe street and a convivial public realm. The reasons for this argument can be explained by the theory of risk compensation.

According to Ecenbarger (2009), "There has been lively debate over risk compensation, but today the issue is not whether it exists, but the degree to which it does." Risk compensation assumes that people adjust their behaviour in response to their perception of risk (Adams 1995). As Vanderbilt (2008) explains, the theory is that everyone has an ingrained risk tolerance level, and so as his or her perception

of safety increases, they behave less cautiously. Thus a 'safe' road actually becomes a 'permissive' road as it seduces a driver to drive fast, while one that feels dangerous encourages a driver to take greater care and slow down.

A traffic engineer installs countless road signs to make explicit a road's level of risk, but shared space does away with this excessive advice by being what Vanderbilt (2008) calls a 'self-explaining road'. In theory, every road is full of uncertainty and risk (Schulz 2006). But by creating uncertainty, roads actually become safer as people compensate for the perceived risk by being more alert and careful (Maryhofer 2009). As summed up by Vanderbilt (2008, 185), "When a situation feels dangerous to you, it's probably more safe than you know; when a situation feels safe, that is precisely when you should feel on guard." Thus the aim of shared space is to create an environment where drivers perceive the level of risk is such that they have to slow down and take greater care. This is why shared spaces aim to create ambiguity (Hamilton-Baillie 2005) by removing signs and other street furniture, which are not only unnecessary, but also dangerous.

Street furniture - Why less is more

The pioneering shared spaces showed that "road signs and markings, signals and barriers were not essential requirements for safe and efficient traffic movement". (Hamilton-Baillie 2008a, 168). Indeed, not only are signs and other street elements unnecessary, it has become evident that they actually make roads less safe.

According to Monderman the many rules imposed by the tools of the traffic engineer "strip us of the most important thing: the ability to be considerate. We're losing our capacity for socially responsible behaviour. The greater the number of prescriptions, the more people's sense of personal responsibility dwindles" (in Schulz 2006). Hamilton-Baillie (in Dowdy 2007) adds, "The whole system of conventional urban traffic planning is the systematic removal of civility."

The excessive over regulation of behaviour only creates resentment of authority and encourages inconsiderate and dangerous behaviour (Schulz 2006). Most road users develop a tunnel vision where they are in constant search of their own advantage; a

driver might stop at a pedestrian crossing, but that only makes him feel justified in preventing pedestrians from crossing the street at every other occasion (Schulz 2006). Thus advocates of shared space encourage the removal of signs, traffic lights, road markings, guardrails and kerbs - all of which have negative effects on the safety and character of streets.

Signs

Removing signs is one of the key features of shared space. Monderman believes signs "are an admission of failure, a sign - literally - that a road designer somewhere hasn't done his job" (in McNichol 2004). Roads are littered with countless signs even though studies have shown about 70% of them are ignored by drivers (Schulz 2006).

According to Monderman, (in McNichol 2004) "A wide road with a lot of signs is telling a story. It's saying, go ahead, don't worry, go as fast as you want, there's no need to pay attention to your surroundings. And that's a very dangerous message." Vanderbilt (2008, 187) adds, "traffic signs have become like placebos, giving false comfort to the afflicted", and most signs are often put up just to protect authorities from liability. This view is not necessarily a radical stance; even the traffic engineering profession recognises the dangers of excessive signage. For example, the Manual on Uniform Traffic Control Devices, the bible of American traffic engineers, contains a warning about warning signs: "The use of warning signs should be kept to a minimum as the unnecessary use of warning signs tends to breed disrespect for all signs" (in Vanderbilt 2008).

Monderman (in McNichol 2004) says, "the trouble with traffic engineers is that when there is a problem, they always try to add something. However this is due to a misguided culture of risk avoidance, and no one ever asks if these measures are effective. Monderman believes "it is much better to remove things" as it "forces you to look each other in the eye, to judge body language and learn to take responsibility - to function as normal human beings" (in Brunton 2008).

Traffic lights

One of the more seemingly radical aspects of shared space is the removal of traffic lights. It may seem irrational, but eliminating traffic lights is one of the most effective ways of increasing road safety. The rationale for lights is safety, but "it is a myth that signals guarantee safety" according to the Transport Research Laboratory, and the UK Department for Transport maintains, "traffic lights should be avoided" (in Cassini 2009).

As Vanderbilt (2008, 179) notes, "traffic lights have a pernicious effect in themselves." They promote inconsiderate and dangerous behaviour. A driver may stop at a red light but that will only encourage him to speed through every green (Schulz 2006). Green traffic lights engender a sense of entitlement - thus if a pedestrian crosses without the green man, a driver often feels he has the right to speed up or honk a pedestrian who dares to illegally enter the car's domain. The high placement of traffic lights also draws the driver's eyes upward, away from other cars and pedestrians. As a result, intersections are crash magnets.

Traffic lights also create unnecessary delay, congestion and pollution. They are inefficient (making us wait on red even when no one is using the green) and go against our common sense. Why stop at a light when it is safe to go? As demonstrated when a set of lights blacks out, drivers left to use their devices, enter the intersection slowly, and filter their way cautiously through the intersection. By installing traffic lights, traffic engineers are assuming people cannot negotiate their way through an intersection by themselves. This is a dangerous assumption because as Monderman says, "when you treat people like idiots, they'll behave like that" (in Vanderbilt 2008).

Pedestrian barriers

Another favourite tool of traffic engineers are pedestrian barriers such as guardrails, fences and railings, which are supposedly installed for safety reasons. But like traffic lights, these barriers go against our common sense and actually create more dangerous roads for two reasons.

Firstly, barriers condescendingly treat people like animals - fencing them in and channelling them like cattle. But as Vanderbilt (2008) notes, pedestrians who tire of being steered far out of their way in irrational, convoluted detours, are smart enough to rebel against these so-called safety measures, causing them to behave in more dangerous ways.

Secondly, by restricting people to designated crossing points, it send the message to drivers that they should only look out for people at those points, and do not have to worry anywhere else, giving drivers the confidence to speed up. Barriers can also be dangerous for cyclists, as they can get stuck between them and other vehicles. This combination of pedestrians circumventing poorly designed and irrational barriers, and drivers who are less aware of their surroundings is thus a recipe for accidents.

Awareness of these dangers is increasing (Lazell 2008); e.g. the County Surveyors' Society (CSS) - the professional membership organisation for local authority directors in the UK - has published a report acknowledging the dangers of pedestrian barriers. Nevertheless, most people still believe they have some merit. Shared space seeks to challenge this notion, as barriers promote the idea that the road is only for cars, and pedestrians are not welcome in that space. This is the wrong message to be sending and has no place in the social zone - the street is a place for everyone.

Road markings

Road markings are another characteristic of the traffic zone, which should be eliminated from the social zone, as their absence promotes safer driving. For example, in Wiltshire County Council in the UK, a study was conducted on centre line removal (Hamilton-Baillie 2005). The experiment involved removing the centre line markings in 30mph (48km/h) areas and found that across 12 sites, speeds dropped by 5% and the number of collisions decreased by 35% from 17 to 11 (BBC News 2004a). Drivers on roads without lines stayed 40% further away from oncoming vehicles than drivers on roads with a line and they also tended to slow down in the face of oncoming traffic (Winnet *et al.* n.d.).

What white lines do is enable drivers to drive faster and closer together. Similarly, several studies have found that drivers tend to give cyclists more space as they pass when they are on a street without a bicycle lane. The white marking seems to work as a subliminal signal to drivers that they need to act less cautiously, suggesting no bicycle lanes are better for cyclists than insufficiently wide bicycle lanes (Harkey and Stewart 1997). White lines and other markings are also often incredibly excessive and superfluous. They detract from the visual quality of the street, and create confusion and unnecessary distraction.

Kerbs

The removal of roadside kerbs is one of the most important parts of creating a shared space. Raised footpaths and kerbs have existed for many years but were originally conceived as a way to allow pedestrians easier passage out of the mud and dirt of the carriageway (Hamilton-Baillie 2008a). Today, they only serve to reinforce the division between different road users. According to Monderman (in Vanderbilt 2008, 193), when you isolate people from each other by a high kerb, like guardrails, it has the effect of saying, "This is my space, and that is yours, so the driver drives faster."

Thus all these street accoutrements send the message to drivers that they do not need to pay attention to their actual surroundings and, most importantly, the people in them. By removing such measures, drivers are compelled to change their behaviour. Instead of relying on prohibitions, restrictions and warning signs regulating us, shared space encourages people to interact in a free and humane way. As NCE (2001) advised, "never use fixed traffic calming devices or signs. Instead, rely on mobile traffic calmers - people. They are cheaper, better looking, more intelligent and adaptable, and are by far the most effective way of calming traffic". Removing these elements forces all road users to interact, which is the key to negotiating shared spaces.

The importance of speed, eye contact and interaction

Hamilton-Baillie (2004) notes that the use of social and physical context as a means to adapt traffic behaviour is critically dependent on speed and eye contact. As Richard Simmons, chief executive of the UK's Commission for Architecture and the Built Environment (CABE) says: "People tend to be less inclined to kill you if they have looked you in the eye" (in Gould 2006).

Research has long shown that the probability of a pedestrian being killed increases exponentially with the speed of the vehicle by which they are hit. Studies into driver behaviour have also shown that our ability to retain eye contact diminished above about 30km/h (Hamilton-Baillie 2004). As Vanderbilt (2008, 195) puts it, "the faster we drive, the less we see." Hamilton-Baillie (2004) suggests that this is related to our evolutionary biology. In theory our skull and frame are designed to withstand an impact at our maximum theoretical running speed - about 30km/h - and thus protection from impact above such speeds, and the ability to maintain eye contact, was evolutionary unnecessary.

However as Vanderbilt (2008, 30) asserts, eye contact "may be the most powerful human force we lose in traffic." Eyes are the original traffic signals. We look at eyes for emotions to predict intention or behaviour (Schulz 2006). But driving fast gives people a veil of anonymity and may explain why many people become so aggressive and inconsiderate when they get behind the wheel.

But with the ambiguity created by shared spaces, you do not know who has right of way and you thus need to make eye contact with other users. "You automatically reduce your speed, you have contact with other people and you take greater care" (Monderman in DW 2006). Thus lower traffic speeds are the key to enabling eye contact and encouraging drivers to engage with pedestrians and each other. However this raises the question of how do people who cannot or have an impaired ability to make eye contact negotiate the space. This issue is explored in section 4.1.

Taking responsibility and sharing the road

Shared space is more than just a way to design a street; it is about transferring power and responsibility from the state to the individual and the community (Lyll 2005). As Monderman (in Millward 2006) said "It shifts the emphasis away from the government taking the risk to the driver being responsible for his or her own risk."

Shared space treats all road users as equal, be it a driver in a car or a pedestrian on foot. As Simmons (in Gould 2006) states, "Redesigning streetscapes is all about changing the balance of power away from the motorist, slowing them down and putting them on the same level as other road users." Shared space promotes the notion that all people have a right to use the street, and no one user should dominate. "Cars are not banned, and thus motorists are expected to drive in a civilised way" (Sloman 2006, 97).

Shared space relies on interaction and drivers behaving well - which most usually do. "Given responsibility, they exercise meaningful self-control" (Cassini 2009). As Hamilton-Baillie (in Brunton 2008) summarises "You think this must be chaos, this must be dangerous, but then you watch it and use it for a while and realize that no, it's not. People are perfectly capable of manoeuvring around each other in the same way they are when they walk down the street."

There have been many shared spaces created in recent years, and the following chapters examine the benefits, but also problems, which these shared space have demonstrated.

Chapter 3 - The benefits of shared space

3.1 Health and Safety

Lower speeds, fewer accidents and injuries

Reducing vehicle speeds and accidents is one of the main arguments put forward by proponents of shared space. The World Health Organisation (WHO 2009) recently projected that traffic incidents will become the third-leading cause of injury and disability globally by 2020 if the traditional approach to road safety goes unchanged (in Hutsul 2005). According to the RTA, speeding is a factor in about 40% of road deaths and speed-related crashes result in an average of 200 deaths per year, with a further 4700 injured, costing \$780 million a year (RTA 2007). Pedestrian deaths account for 1 in 6 road fatalities (ATSB 2002) and in 2007, there were 68 pedestrians killed and 2119 injured on NSW roads (RTA 2007). Although these are record lows, Australia still has a higher road fatality rate than all the countries where most shared spaces are found (Table 1). While there are many factors which influence these statistics, it is clear that Australia's road toll can be lowered even further, and shared space is one tool that can be used to achieve this.

Table 1. Road fatalities per 100,000 population

| Country | Fatalities per 100,000 people |
|---------------|-------------------------------|
| Australia | 7.6 |
| Germany | 6.2 |
| Denmark | 5.6 |
| Great Britain | 5.4 |
| Sweden | 4.9 |
| Netherlands | 4.5 |

Source: RTA (2007)

As mentioned in section 2.3, it is known that pedestrian injury or death increases dramatically above 30km/h. From 5% fatalities at 32km/h, fatalities increase to 45% at 48km/h and 85% at 64km/h (Hamilton-Baillie 2004).

Monderman claims that there has never been a fatal accident on any of his roads, which generally record average speeds of 30km/h (in Lyall 2005). Australian statistics would seem to support this claim, as according to the RTA (2007), there were no fatal crashes on metropolitan roads with a speed limit of 30km/h or less and only 31 injury crashes on such roads.

Case Study - Kensington High St

The safety benefits of decluttering the street of excess street furniture was demonstrated in Kensington High St, a busy London route which carries about 40,000 vehicles per day (Hamilton-Baillie 2008a). In 2004, the Royal Borough of Kensington and Chelsea removed 600m of ubiquitous guardrails and other physical barriers (Webster 2007) in addition to removing kerbs at junctions and reducing the number of street signs along the street. Economics and aesthetics were the initial motivations behind the scheme. Shopkeepers were concerned about losing business to Westfield London, which was being planned at the time, so the Borough wanted to improve the appearance of the street without compromising traffic flow (Gould 2006).

However the scheme also had significant safety benefits. In the first two years after the removal, pedestrian casualties were down 43% against a Borough-wide reduction of 35% and a London-wide drop of 17% (Gould 2006). By 2007, figures showed injuries had dropped by 64% (Arnold 2007a), road accidents were down 40% and car traffic flowed more smoothly (White 2007). The results have discredited the belief that railings and fences prevent accidents, as it is theorised that drivers are now keeping a sharper eye out for pedestrians because they know that they may dart out to cross the road at any point (Swinburne 2005).

While conventional footpaths and pedestrian crossings were retained, the project demonstrated the benefits of simplified street schemes. The median strip is used for bicycle parking, which encourages informal cross-flows of pedestrians (Figure 3.1). Traffic lights are combined with lamp columns, so you have as few poles as possible, and the lamps have senior and junior lighting to light both the pedestrian and traffic areas. Road signs are small and minimalist to minimise visual clutter (Hamilton-Baillie in Sharedspace 2007c). All these small details have created a

coherent public space, which appears to promote informal interaction, considerate behaviour and improved road safety (Hamilton-Baillie 2008a). This success has prompted the Borough to produce a comprehensive streetscape design guide that codifies many of the key principles of shared space.

Figure 3.1 Kensington High St, London



Source: P Smith (2007)

Case Studies - Oosterwolde and Makkinga

Hans Monderman's projects in Friesland have also shown decreases in speeds and accidents. The two villages of Oosterwolde and Makkinga are two such examples.

In 1998, Monderman redesigned Oosterwolde's main junction, called de Brink, into a raised, paved square. All the old street furniture made way for the square, which reflects its history as the focal point and head of an ancient canal system (Figure 3.2). The space has been transformed into a lively focal point with rejuvenated cafés and shops around its perimeter, and speeds have been reduced significantly (Table 2) (Hamilton-Baillie 2008a). Monderman said (in Sharedspace 2007a) attitudes have changed in the past decade; people originally thought they were mad but now they

appreciate the quality of the space. This project proved that intricate detailing of a space is not always necessary, and a simple, quality design can be a good solution.

Makkinga became the first small town to remove every standard traffic sign and road marking in 1992. Monderman (in Sharedspace 2007b) recounted how the village had problems with speeding traffic, and so he decided to remove all signs. The only sign in the village now is at its entrance (Figure 3.3), which has the 30km/h speed limit, 'Welkom' and 'Verkeersbordvrij!' which means free of traffic signs. The streets in the town now reflect the environmental context, particularly landmarks, pedestrian routes or 'desire lines', which emphasise the links between schools, shops, the church and the village green (Hamilton-Baillie 2008a). As the table shows, vehicle numbers have dropped slightly, and average speeds have dropped by 20km/h.

Figure 3.2 De Brink in Oosterwolde



Source: Hamilton-Baillie (2005)

Figure 3.3 Entrance to Makkinga



Source: Knight (2007)

Table 2. Key statistics for Oosterwolde and Makkinga shared spaces

| | Oosterwolde | Makkinga |
|--------------------|--------------------|--------------------|
| Inhabitants | 10,000 | 10,000 |
| Reconstruction | 1998 | 1998 |
| Traffic (before) | 5,800 vehicles/day | 5,800 vehicles/day |
| Traffic (after) | 5,600 vehicles/day | 5,500 vehicles/day |
| Avg speed (before) | 53km/h | 57km/h |
| Avg speed (after) | 37km/h | 37km/h |

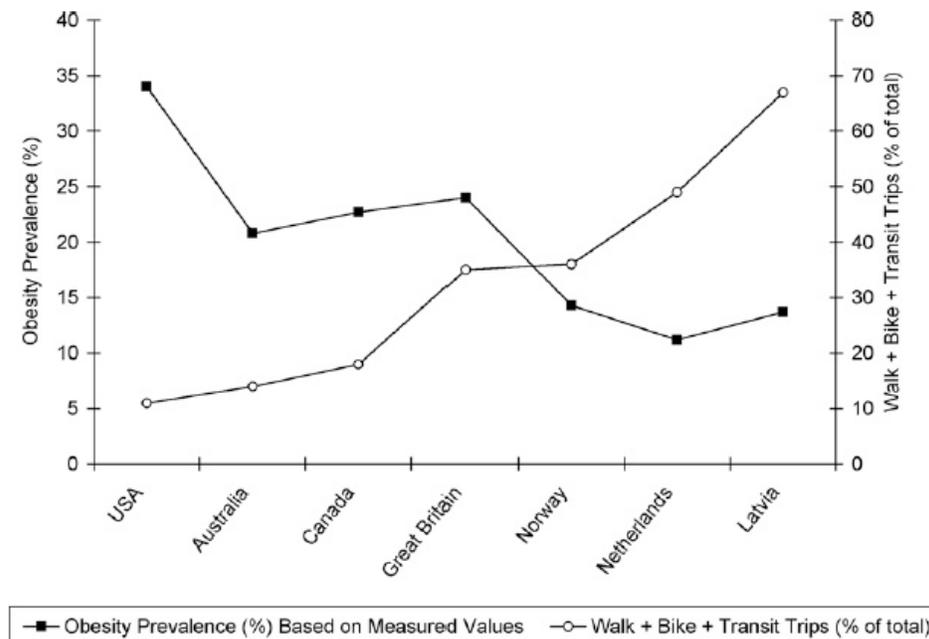
Source: Sharedspace (2007a; 2007b)

Indirect health benefits

Shared space can also have indirect health benefits, by helping to prevent certain health problems such as heart disease and obesity. In Australia for example, 62% of adults and 25% of children are overweight or obese (ABS 2009) and obesity costs Australia \$58 billion a year (in Ryan 2008).

These sorts of health problems can be prevented through physical exercise, such as cycling and walking, which shared space schemes encourage. For example, it has been found that there is a direct correlation between levels of cycling, and decreased obesity levels. Figure 3.4 shows that the countries with the highest levels of cycling, have the lowest levels of obesity. The Netherlands, with its extensive cycling infrastructure and many *woonerven* shows how road design can help create a healthier population. Thus shared space, which discourages car use and promotes healthier alternatives such as walking and cycling, can play a role in addressing the obesity epidemic and other health problems preventable by exercise and physical activity.

Figure 3.4 Relationship between obesity and active transportation



Source: Bassett et al. (2008)

3.2 Environmental

Fewer vehicles, reduced congestion and emissions

Shared space can also bring about significant environmental benefits. As explained in section 2.3, removing traffic lights improves congestion, which in turn lowers vehicle emissions. For example, one study found that intersections with roundabouts, rather than traffic lights or stop signs, generated between 55 and 61% less carbon dioxide, depending on the time of day. Emissions of hydrocarbons dropped by more than two thirds (Maryhofer 2009). It has also been suggested that vehicle emissions cause 10 times as many deaths as road accidents (Cassini 2009). Lowering emissions can also help address climate change. While the Stern Review (2006) claims road transport only accounts for 11% of greenhouse gas emissions (cars and vans less than half that), vehicle emissions are still a significant contributor. Finally, many shared spaces have also shown a decrease in the number of vehicles using the space, of varying degrees.

Case Studies - De Kaden and Laweiplein, Drachten

Two 'naked intersections', in the Friesland town of Drachten designed by Monderman show the value of removing traffic lights. The first intersection reconstructed De Kaden, was reconstructed in 2001, and the second, known as Laweiplein, was Monderman's last Friesland project, completed in 2003. The following table outlines some significant statistics for the two projects.

De Kaden (Figure 3.5) is a genuine 'naked intersection', which contains no usual traffic engineering elements, except a pedestrian crossing that was put in as an afterthought following public pressure (Sutcliffe 2009).

Table 3. Key statistics for De Kaden intersection, Drachten

| | De Kaden |
|-------------------|------------|
| Reconstruction | 2001 |
| Traffic (before) | 12,200 vpd |
| Traffic (after) | 5,500 vpd |
| Avg speed (after) | 40km/h |

Source: *Sharedspace 2007d*

Figure 3.5 De Kaden intersection, Drachten



Source: *Fieets Beraad (2009)*

According to Monderman (in *Sharedspace 2007d*) questions were raised as to whether it was possible to change this intersection to a shared space, considering the high amount of vehicles which use it each day, but since the conversion there have been hardly any accidents, only some minor incidents involving bicyclists that have not resulted in any injuries. Traffic flow is much more organic, and it proves that the amount of traffic is not the most important thing and even with a busy intersection you can use shared space principles.

Laweiplein is the second 'naked intersection' in Drachten, located close to the town centre, theatre and bus station. The intersection was once an unattractive, signal-controlled intersection (Figure 3.6). According to Hamilton-Baillie (in 2008b) "The dismal surroundings of this busy junction, and the wide approach roads were congested, dangerous and did little to foster civic activity. Pedestrian and bicycle

routes were inconvenient and unattractive.” After many years of discussion, the junction was remodelled into its current form (Figure 3.7), which Monderman called a 'squareabout' - a cross between a roundabout and a square (Hamilton-Baillie 2008a). To approaching drivers, the intersection is ambiguous - it is unclear where the car zone ends and the pedestrian zone begins, which is obviously the point (McNichol 2004). The following table outlines some significant statistics for the intersection.

Table 4. Key statistics for Laweiplein intersection, Drachten

| | Laweiplein |
|--------------------------------|------------|
| Reconstruction | 2003 |
| Traffic volume | 22,000 vpd |
| Accidents 2000-02 | 23 |
| Accidents 2004-05 | 2 |
| Average crossing time (before) | 50 seconds |
| Average crossing time (after) | 30 seconds |

Source: Sharedspace 2007e

Figures 3.6 and 3.7 Laweiplein before and after conversion to a 'squareabout'



Source: Hamilton-Baillie (2005)

Water jets by the side of the road respond to traffic volume, and despite the high amount of traffic, traffic flows smoothly. The fountains attract human activity, especially children’s play, which helps to further slow traffic. Despite an increase in vehicle numbers, the time taken to cross the intersection has fallen by 20 seconds, and the many buses which use the intersection now move across it 50% faster (NHL 2007). Although the majority of users polled in local surveys felt the system was

more dangerous (NHL 2007) it has actually proven to be safer. After a few years of operation, the new arrangement has succeeded in creating a space that has not only reduced accidents and congestion but also created a high quality public space for the whole town (Hamilton-Baillie 2008b).

Less clutter and more attractive streets

Addressing the decline in the visual and spatial quality of the public realm has been one of the key motivators of shared space schemes (Hamilton-Baillie 2008a). Streets are the one public service we use all the time, yet most people have learnt to accept “the presence of traffic-engineering paraphernalia as a tiresome but necessary part of modern life” (Hamilton-Baillie 2005, 39). As Booth (2006) points out, public involvement in architectural decisions is taken for granted; yet debate about street design is virtually non-existent.

This is despite the fact that traffic engineers, who are responsible for designing most of our public realm, receive little or no training in urban design (Hamilton-Baillie 2004). The problem with applying typical highway solutions to cities “is that the same things that often signify ‘liveability’, are in the eyes of a traffic engineer, ‘hazards’” (Vanderbilt 2008, 209). But as outlined in section 2.3, these hazards themselves actually contribute to safety.

Rather than imposing uniform traffic engineering standards, shared space involves simpler, less cluttered designs, which emphasise the individual characteristics that make a place interesting and unique (Hamilton-Baillie 2008a). Two such examples are Skvallertorget and Bohmte.

Case Study - Skvallertorget, Norrköping

Skvallertorget (Gossip Square) in the Swedish university town of Norrköping shows how shared space designs can significantly improve the attractiveness of the urban realm. The space was remodelled in 2004 into a single, coherent plaza where all suggestion of priorities or linear emphasis has been removed (Hamilton-Baillie 2008a). Lighting columns have been placed around the square, which has a distinct, pedestrian-friendly paving pattern. Around 13,000 vehicles, including bendy-buses,

traverse the square each day. Pedestrian volumes and economic activity in the square has greatly increased and traffic speeds and congestion has also fallen.

Surveys of drivers, cyclists and pedestrians indicated that satisfaction and confidence with the new arrangements is increasing, although there remains unease and concern amongst some older citizens and amongst the blind and partially-sighted (Jaredson, 2002). Whatever its shortcomings, as an example of shared space, Skvallertorget in Norrköping demonstrates that a distinctive and integrated piece of public space can successfully serve the needs of passing traffic without the need for conventional traffic controls (Hamilton-Baillie 2008a). Since the conversion, speeds have dropped to 13km/h which more or less guarantees that there will be no severe accidents (Dowdy 2007).

Figures 3.8 and 3.9 Skvallertorget before and after conversion



Source: Hamilton-Baillie (2008a)

Case Study - Bohmte

The German town of Bohmte is another example of how shared space can improve the quality of the public realm. The town has a population of only 13,500, yet 12,600 vehicles travel along the town's main street Bremer Strasse, every day, one tenth of which are trucks (Bode and Deutler 2009). While this passing trade benefits shops and businesses along the street, the traffic had seriously eroded the spatial quality of the town.

A new highway bypassing the town presented an opportunity to address this problem. After many years of resident meetings, workshops and presentations, the project was completed in June 2008 (Shared Space 2008). The EU provided 0.55 of the 1.55million Euro cost as part of the Shared Space project (Bohmte 2009). As mayor of Bohmte, Klaus Goedejohann said (in DW 2006), the redesign aimed “to give the town back to the people. We don’t want cars alone to have precedence, we want to try and make the area pleasant for everybody.”

The scheme focused on redesigning a central intersection. The paving and lighting have been integrated with the shop fronts, and spaces between the surrounding buildings to achieve an integration of the streetscape with the built environment (Shared Space 2008). The scheme showed that shared space is more than just a few simple design principles. It can not only make the street look more attractive, but also addresses social divisions, makes streets safer and helps the local economy (Bohmte 2009).

One year after the project was completed, the effectiveness of the scheme was measured by traffic numbers and qualitative measures (Bohmte 2009). The report (Bode and Deutler 2009) found the vast majority (around 80% each) of pedestrians, residents and businesses judge the project as a success. The appealing design, improved traffic flow and reduction in air pollution have been welcomed, however the main issue is people feel less safe in the space - which is to be expected. The study found that most people stay largely behind the tactile guidance system. Cyclists also stay in the pedestrian zone, as they find it difficult using the carriageway, and have complained about the danger of slipping on the tactile strips. Cyclists seem to remain the most vulnerable road users.

Traffic volume on the street fell slightly to around 700-800 vehicles per hour (vph), but truck traffic decreased significantly. The number of car accidents increased slightly but they were mainly slight body damage to cars scraping the new lamp posts. No pedestrians have yet been involved in any accidents and overall accidents involving personal injury have dropped compared to the district as a whole.

Thus the conversion of Bremer Strasse to a shared space can be regarded as achieving its objectives. Even if the traffic volume has decreased only slightly, the improvement in traffic flow and increased attractiveness of the street has added to the living quality of the residents, and has been done so without being at the expense of road safety (Bohmte 2009). The issue remains how to increase users' feeling of safety without giving up the deliberate confusion necessary to moderate speeds.

Figures 3.10 and 3.11 Bremer Strasse, Bohmte before and after conversion



Source: Bohmte Municipality (2009)

3.3 Economic

Economic regeneration

Shared space can help to revitalise the economies of declined neighbourhoods, and encourage local investment through greater confidence and distinctiveness in the public realm (Shared Space 2008). Hamilton-Baillie (in Taylor 2005) notes that there is a “realisation that the quality of the public realm can attract investment to those areas” and recent research (CABE 2007b) has begun to quantify this long-recognised link between the quality of streetscapes and economic regeneration.

Shared spaces schemes emphasise the local context of a place, unlike the usual tools of the traffic engineer that seek uniformity and standardisation. Florida (2005) notes that such standardisation diminishes the particular qualities and identities of places and settlements, while distinctiveness and individual quality appear to attract

commercial investment. This has been demonstrated in the northern English city of Newcastle upon Tyne.

Case Study - Newcastle upon Tyne

Newcastle was devastated in the 1970s and 80s by the decline of its coal mining, shipbuilding and heavy engineering industries and the city centre underwent a severe decline, resulting in a deterioration of its urban fabric, increased traffic congestion and a poor quality public realm (Healey *et al.* 2002). In the late 1990s, the historic centre of the city, the Grey's Monument Area, was regenerated, transforming the area into an attractive and more accessible space (Akkar 2005).

Figure 3.12 Grey St and Grey's Monument pedestrian area in Newcastle



Source: Google (2009)

Figure 3.13 Shared space in Blackett St, Newcastle



Source: Hamilton-Baillie (2008b)

The project helped to improve the city's image and attract investment, bringing under-used buildings back into use, creating new jobs and improving the well being of the population (Akkar 2005). Retailers benefited from the increased pedestrian traffic and today the pedestrian only Northumberland St is the most expensive retail street in the UK outside of London (BBC 2004b). Many streets in the area are 30km/h pedestrian zones, with no kerb and modern stone surface (Figure 3.12). Blakett St (Figure 3.13), which runs through the city centre, shows how "shared space design principles have successfully resolved the relationship between busy bus corridors and pedestrian spaces" (Hamilton-Baillie 2008a). However despite measures such as tactile pavements, corduroy paving and ramps in other areas, the bus route is only distinguishable from the pedestrian zone by colour and pavement size, which poses accessibility problems for blind people (see section 4.1).

3.4 Sociocultural

Enhanced liveability and social qualities

Perhaps the most important benefits of shared space streets are those that are the hardest to measure. The primary rationale for shared space schemes to date have been aesthetic and safety reasons, which is understandable. It is immediately possible to assess the visual quality of a redesigned street, and relatively easy to measure things such as vehicle numbers, speeds or accident rates. But what is more difficult to establish are the social and cultural benefits of these shared spaces.

As discussed in section 1.2, shared space can be considered part of a broader concept of reclaiming the streets for more than just movement. What makes a city efficient and exciting is the diversity and density of potential exchanges - whether it is an exchange of goods, work, culture, knowledge, friendship or experiences. But as more space is devoted to movement, and traffic increases, the chance for spontaneous exchange is eroded (Engwicht 1999). Additionally, cars allow people to enter and pass through public spaces in 'privacy capsules', unlike walking, cycling and public transport, which offer greater chances for spontaneous exchange (Engwicht 1999). As Adams (in McNichol 2004) states, "Without opportunities for

informal, spontaneous contact, the street is a less friendly place, filled not with neighbours, friends and acquaintances but with strangers."

Shared space can play a part in rebuilding this 'social capital' (Putnam in Engwicht 1999). By putting all users on an equal level, shared spaces make more equal and inclusive streets that can serve purposes of both movement and exchange. When a street becomes slower and safer, it becomes more social and civilised, and it becomes a destination in its own right. This has been demonstrated with one of the most high profile shared schemes in the UK - Brighton's New Road.

Case Study - Brighton New Road

Brighton New Road - one of the town's main high streets - used to be an unattractive one-way road with narrow footpaths and the usual array of standard traffic engineering paraphernalia (Figure 3.14). In June 2007, the transformation of the street to a shared space was completed, led by the Council, Gehl Architects, Landscape Projects and Martin Stockley Associates. The design took into account the way people use the space, as well as the surrounding context of landmark historical buildings (UDC 2009).

Figure 3.14 Brighton New Road before it was converted into a share space



Source: Gehl Architects (2009)

The scheme's success is evident with the street now becoming a social hub (Figure 3.15). A recent safety audit of the scheme by consultant MVA found that there were 93% fewer cars on the street and the average driving speed had fallen drastically to around 16km/h. (Arnold 2007c). There has been a 62% increase in pedestrian traffic and a 22% increase in cycling traffic (Gehl Architects 2009). Most notably, there has been a 600% increase in staying activity - people stopping to shop, eat or simply sit and enjoy the new space (Figure 3.16) (Gaventa 2008).

The street now responds directly to the people using it, since they now choose what to do in the space and where, instead of being instructed by signage (Stockley 2009). New Road flips the traditional hierarchy of the street, putting pedestrians at the top of the pyramid, vehicles at the bottom, with cyclists and public transport users in between. Cars are allowed in the space, but they are now guests in the social zone.

Figures 3.15 and 3.16 **The Brighton New Road shared space**



Source: Landscape Projects (2009)

Chapter 4 - Problems associated with shared space

4.1 Access and usability

For the blind and partially sighted and other people with a disability

In my opinion the most problematic issue with shared space is its effects on the disabled, particularly blind and partially sighted people. The issue has attracted much debate and discussion, as well as protest from disability charities and other groups. The most vocal critic (at least in the UK) on this issue has been the UK Guide Dogs for the Blind Association (Guide Dogs). Guide Dogs is leading a campaign called 'Say No To Shared Streets', on behalf of 32 other British disability groups and charities. As Guide Dogs' access and inclusion manager Carol Thomas summarises (in Arnold 2007b), shared spaces "rely on negotiating priority and movement between vehicles and pedestrians through eye contact - this puts blind and partially-sighted people at an immediate disadvantage."

Guide Dogs have attacked shared space schemes as 'death traps', saying they pose a threat to the safety of visually impaired pedestrians, and have called for existing spaces to be retro-fitted to be more inclusive (Arnold 2007b). A report entitled *Shared Surface Street Design* gave the findings from 10 focus groups representing visually impaired people, which found concerns about increased safety risk, reduced confidence and independence in shared space as well as a lack of involvement in consultation. The charity claims there have already been several near misses in existing shared spaces (in Rose 2006).

The key element of shared space that presents problems for the blind and partially sighted is the elimination of the kerb marking the demarcation between the road and the footpath. As Simmons (in Gould 2006) explains, blind people have a mental map of the places they go, which is defined by tactile surfaces and edges. As one person commented online (BBC 2009), "Guide dogs are trained to stop at a kerb... If there is no change in height between the pavement and road, a Guide Dog could easily

lead its owner into the road". The kerb also provides a useful orientation clue for those who use a cane.

As a result of these issues, "A lot of blind people have simply chosen to avoid these areas, so they won't show up in before and after audits of accidents." (Carol Thomas in Rose 2006) Blind pedestrian Ken Rosser (in Arnold 2007b) supported this, saying said space environments become no-go areas for blind people like him. "If you make an environment hostile for us we will keep away." Another user (in BBC News 2004a) made the comment: "I don't use the area where these spaces are because I just don't feel safe. While cars don't speed, they do stream through often bumper to bumper and don't leave space for people to get through... a white cane isn't foolproof... more of these areas will decrease mobility and access to services for many disabled people."

In June, Manchester City Council announced it was to ban 'shared surfaces' in its new Street Design Manual, due to be published later this year. It claims shared surfaces would "not be accepted" in the city, as they tend to discriminate against some disabled people and other pedestrians (BD Online 2009a).

A key target of Guide Dogs' campaign has been Exhibition Road in London. Exhibition Road is the most ambitious and now controversial shared space planned to date (Figures 4.1 and 4.2). The street is in the affluent Royal Borough of Kensington and Chelsea, the same Borough that initiated the successful Kensington High Street project (see section 3.1). Exhibition Rd is home to a number of famous London institutions, including 3 museums (The Victoria & Albert, Science, and Natural History Museums) and various other cultural and educational establishments. With high pedestrian and vehicle traffic and traditional pedestrian controls, there have been over 100 accidents in the past three years alone (Owen 2008). The redesign and introduction of a 20mph speed limit hopes to address these safety problems, as well as improve accessibility. The project is supported by London Mayor Boris Johnson and was approved by the Borough in March 2008. Stage one of the work began that year, and stage two to begin the first stage of

streetscape improvements will begin in November 2009. The scheme is due for completion by the end of 2011, in time for the 2012 Olympic Games (Lazell 2009).

Figures 4.1 and 4.2 The proposed Exhibition Rd shared space



Source: RBKC (2009)

Guide Dogs have staged protests against the Exhibition Road plan (Figure 4.3) and in July, they succeeded in getting the scheme redesigned. It will now include two 60cm wide tactile corduroy strips and two 23cm wide grating-covered drains on either side to make a distinction between the road and the footpath (BD Online 2009b). While this will add an 'unspecified amount' to the scheme's £25million budget (BD Online 2009b), I believe it was a modification that needed to be made, and will set precedent for future schemes to address this issue of inclusion.

In addition to the kerb issue, shared space also presents problems in regards to 'hazards' - such as trees, bicycles and outdoor tables and chairs - which are encouraged in the space to calm traffic speeds. A survey by Guide Dogs found that such obstacles are of concern to blind and partially sighted people. This question of how to create a space that both includes blind and partially sighted people and is sufficiently random and ambiguous to slow traffic remains a key issue, which needs to be further explored.

Figure 4.3 Protestors from Guide Dogs at London City Hall



Source: BD Online (2009)

Other than the blind and partially sighted, shared space also creates accessibility issues for other disabled road users, such as the deaf and those with physical, sensory or cognitive impairments, who would have trouble negotiating their way around other road users independently (Thomas 2007). Deaf people for example may not hear cars coming from behind them, which could create potentially safety problems. Some users may have problem negotiating the various 'hazards' encouraged in shared space, in addition to negotiating their way around vehicles.

For children

Shared space also presents possible problems for children and the elderly. Many studies have highlighted that children progress through a number of developmental stages, and their ability to negotiate the road environment develops with these stages of development and age (OECD 2004). Although children in developed countries like Australia "approach adult levels of pedestrian performance by around 11 or 12 years of age... they cannot always be relied upon to use the appropriate road safety skills and strategies consistently" (di Pietro 2004, 3).

However Monderman was known for advocating that informal children's play even playgrounds and schools should be integrated with the road to act as what Engwicht (1999) calls 'mental speed bumps'. Children playing, or simply children's play equipment, can be much more effective at slowing traffic than a speed hump or a sign. This is because "the speed of traffic on residential streets is governed, to a large extent, by the degree to which residents have psychologically retreated from their street" (Booth 2006) and is related to the risk compensation effect described in section 2.3. This approach was followed in the village of Noordlaren, in the Netherlands, where the playground of the local primary school was integrated with the adjacent road (Figures 4.4 and 4.5).

Figures 4.4 and 4.5 Primary school in Noordlaren where the playground is integrated with the adjacent road, and the road before



Source: Shared Space (2008)

For the elderly

Older people also face challenges in shared space as statistics have shown that they are among the most vulnerable road users. According to the RTA (in 2007), 35% of pedestrians killed were aged 60 or over, even though only 19% of the population is represented by people this age. While overall pedestrian deaths in Australia have continued to fall, deaths for older pedestrians have slightly increased (ATSB 2002).

Road crossing is especially dangerous for the elderly; Gorrie *et al.* (2004) found that 81% of older pedestrians were killed while crossing a road. Older people may have problems with vision, hearing cognition and mobility, and thus may experience difficulty in seeing or hearing traffic, or accurately judging the speed and distance of oncoming vehicles (Oxley 1997). Furthermore, elderly people have an average walking speed of less than 1m/s, which is 75% slower than young people (Mori 1995).

These statistics are especially significant for Australia with its ageing population; in NSW alone, the number of people over 65 is expected to increase 144% between 1995 and 2041 (Gorrie and Waite 2005). But while older pedestrians are particularly vulnerable, shared space can offer some benefits to them. Studies have long noted that older pedestrians feel like they do not have enough time to cross at lights (Hoxie 1994), and thus shared space - which theoretically allows people to cross the road at any point - can offer the opportunity for older people to cross legally at their own pace, without worrying that they are holding up traffic.

Chapter 6 outlines some recommendations as to how all these groups can be better included in shared space designs.

4.2 Traffic volume and city size

Two related questions about shared space that have been raised are whether such informal traffic arrangements could only function in small villages, and/or only in places with low traffic volumes. Vanderbilt (2008) notes that people are more likely to behave more courteously in small towns, as they might know the other person, while in a city we will probably never see most people we see on the road ever again and thus can afford to behave less courteously.

However as discussed in chapter 3, recent schemes have begun to indicate that weaving traffic into the social and cultural fabric of the built environment might be suitable for busier town centre intersections and high streets in larger cities, not only

small towns (Hamilton-Baillie 2008a). The two 'naked intersections' in Drachten - De Kaden and Laweiplein - handle 5,500 and 22,000 vehicles per day respectively. While Laweiplein's vehicle numbers slightly increased after it was converted to a 'squareabout', the number of cars using De Kaden more than halved. This demonstrates that a true 'naked intersection' can actually work to decrease vehicle numbers, ameliorating these concerns. Kensington High St in London, which sees 2,500 cars stream through it and 3000 people use the nearby Tube station in a busy hour (Vanderbilt 2008), showed that even minimal shared space method could work in the centre of a large city. Nevertheless, Monderman believed a single lane, shared space junction could handle up to 25,000 vehicles per day, which is enough to rescue most streets in our biggest suburbs from the hegemony of the car (in Brunton 2008).

4.3 Cost

A significant issue with shared space is cost. Street surface is usually the most expensive component, but other elements can cost large sums as well. This was demonstrated with the Ashford shared space in the UK (see section 4.5). The project cost £15.9m, but what attracted particular controversy was the street furniture - stainless steel rubbish bins cost £1,500 each, one bench cost more than £4000, cycle racks nearly £400 each and the street's controversial lamp posts cost more than £7000 - seven times more than a conventional one (Kent Online 2009). Meanwhile the Exhibition Road project has been costed at £25million (NCE 2008b).

However shared space does not necessarily demand high costs - Brighton New Road cost only £1.45million (Landscape Projects 2009), but has had many wide-ranging benefits as outlined in section 3.4. Ashford's high costs are simply due to their decision to choose expensive 'designer' street furniture, which is not always necessary.

Although I believe the only option for a shared space street surface is anything other than bitumen (as bitumen is regarded as 'car surface', and sends the message that a

road is the car's domain), bitumen surface shared spaces can still be successful if the surrounding design is carefully considered. For example, Monderman's Rijksstraatweg in Haren has a conventional bitumen road surface, but the surrounding elements still work to create a feeling that the road is a social space, as well as a movement one (Figure 4.6).

Figure 4.6 Rijksstraatweg, Haren shared space street



Source: Gerlach et al. (n.d.)

Finally, as nearly all shared spaces to date have resulted in fewer accidents and injuries, a counter argument to this issue could be that shared space schemes are investments, and their initial costs can be offset by lower vehicle repair and medical costs. Furthermore, the long term economic benefits of creating a more attractive and pedestrian-friendly public realm, such as those detailed in Newcastle upon Tyne in section 2.3, may more than outweigh the original construction costs of shared space schemes.

4.4 Disconnect between professions

Hamilton-Baillie (2004; 2008a) notes that there is a stark separation between the various professions involved in the design and creation of streets. The most

significant gap is that between traffic engineering and urban design, but there is also separation between architects, landscape architects, town planners, civil and structural engineers. Sloman (2006) notes that people outside of the built environment, in fields such as psychology, behavioural science and marketing can also play a role in creating better streets generally, not just shared spaces.

However the main issue is the separation between traffic engineering and urban design. As Hamilton-Baillie (2004, 44) notes, traffic engineers are trained far away from design schools, and "the disciplines appear to have entirely disconnected sources and starting points." Urban design has been restricted to occasional traffic-free precincts and the peripheries of the streetscape, while most of the public realm has remained in the domain of the traffic engineer (Hamilton-Baillie 2008). This has significant implications for the city, as most of the public realm is roads and streets. In some American cities such as Houston and Detroit for example, over 70% of the urban space is made up of streets, while in the UK it is around 30-40% (Hamilton-Baillie 2004). If cities are to become more attractive, safer and liveable, common ground needs to be found between these two professions, and this is especially important for shared space. Monderman was one traffic engineer who thought outside the box. He showed that it is possible to design an attractive street, which is still safe and efficient and also reflects the individual characteristics of a place.

4.5 Lack of extensive research and studies

Hamilton-Baillie (2008a, 162) notes that "the lack of a formal theoretical framework or a coherent body of research examining alternative philosophies of traffic engineering limits the extent to which firm conclusions can be drawn", which is something I would agree with after researching this topic.

I found many online news articles and websites that mentioned statistics for shared spaces, such as accidents and casualty rates, but the source of these statistics were almost never mentioned. There seems to be few in depth reports or studies that have been done on shared spaces, at least that I could find. The most detailed

reports I found related to shared spaces in Bohmte, Drachten and Kensington High Street. As mentioned in section 1.4, I think language may be part of the reason for this, as the most shared spaces are in the Netherlands, Sweden, Denmark and Germany. As far as I could ascertain, no English-language books have been written, devoted to shared space and the few academic articles I found were written by the same few authors. It is this kind of lack of extensive literature on shared space, which I believe needs to be addressed, in order to further promote the concept.

4.5 Other issues - Theory versus reality and implementation

The final general problem with shared space is simply the practicality of the concept. I believe the concept in theory is a good one, but it needs to demonstrate that it works in practice. Shared space relies on people behaving considerately all the time, but this is not the reality; as Vanderbilt (2008) notes, some people do drive like idiots, and people violate conventions and social etiquette all the time. Even Monderman himself conceded that road design can only do so much; he said (in Lyall 2005) shared space does not change the behaviour of the 15% of drivers who will behave badly no matter what the rules are.

The reality of behaviour in shared space has been reflected by the Dutch cycle campaigning organisation Fietserbond, which says shared space leads to cyclists being bullied by motorists, a return of “might is right” to the roads and a reluctance of people to cycle as a result. Cyclists in the study of Bohmte's shared space reflected this, with riders saying they felt unsafe riding on the main part of the Bremer Strasse and thus used the footpath, which then creates conflict with pedestrians.

There are also other smaller issues to consider. What happens when windscreen reflections, tinted windows or sunglasses obscure a driver's eyes? How can users negotiate the space then? Eye contact can also give drivers confidence to proceed, as because they know they have been seen, they often assume right of way.

A final issue is in regards to less-than-ideal designs and implementation. In the southern English town of Ashford, the local council recently completed a large shared space scheme, which replaced the town's old ring road. Costing £15.6m and covering 1km of the old road (Kent County Council 2009), the scheme is no doubt an improvement in terms of its urban design, but I believe it has serious shortcomings from pictures and video I have seen. The speed limit is set at 20mph (32km/h) but average recorded speeds have been 25mph (40km/h). While this is still not very fast, as explained in section 3.1, the risk of pedestrian death or injuries increases exponentially above 30km/h.

Figures 4.7 and 4.8 Ashford shared space before and after



Source: Green Bristol Blog (2009)

The main problem I see is that the space still looks like a road, and still physically and psychologically allows speeding. There are too many sections that are far too wide and straight with no obstruction. There are few 'active uses' along the road, so there is little pedestrian or activity to act as 'mental speed bumps' to drivers. There is still separation in the surface colour used for the roadway and footpath, encouraging drivers to speed and discouraging pedestrians from freely moving across the road at any point. By including pedestrian crossings, it still sends the message to pedestrians that they should cross here and drivers should stop, and thus drivers will be less on the lookout everywhere else. While accidents have reportedly dropped by 44% (Kent County Council 2009), residents have expressed concerns about safety in the space and in my opinion the Ashford scheme demonstrates the dangers of a watered-down shared space design.

Chapter 5 - The Australian context

In addition to the general problems associated with shared space explored in the previous chapter, there are several more pertinent issues specific to Australia, which need to be addressed. The following chapter outlines these issues, which include current regulatory frameworks, urban morphology, cultural attitudes and other more general issues. The second section of this chapter outlines my observations in various shared zones and 'quasi shared spaces'.

5.1 Regulatory frameworks

Shared zones - Road rules, legislation and guidelines

The first key issue that needs to be addressed is the status of shared space in Australia's national and state regulatory frameworks. Currently there are no provisions in Australian legislation, regulations or road rules pertaining specifically to shared space or naked streets - the closest equivalent is 'shared zones'. The rules for shared zones are based on the Australian Road Rules (ARR), which while not legally enforceable, form the basis for the road rules of each state and territory (NTC 2009).

Sections 24 and 83 of the ARR define the speed limit and give way rules in shared zones, and are reflected by state and territory road rules (e.g. *NSW Road Rules 2008*). They state that the maximum speed limit allowed in a shared zone is 10km/h and drivers must give way to any pedestrians in the zone.

In NSW, the rules for shared zones are outlined in RTA *Technical Direction TD 2000/6 Shared Zones*:

1. The authorisation of shared zones is not delegated to Councils. Shared zones are speed limits and approval to install them must be obtained from the RTA prior to implementing this technical direction.

2. All shared zones in NSW must display a speed limit of 10km/h. No other speed limit is allowed.
3. A SHARED ZONE sign in combination with a GIVE WAY TO PEDESTRIANS sign must be installed on each entry road into the area.
4. An END SHARED ZONE sign must be installed on each exit road from the area. A relevant speed limit sign should also be displayed under this sign (eg 40 km/h) to indicate the speed limit that applies beyond the shared traffic zone
5. Under the ARR, a driver must not stop in a shared zone unless the driver stops in accordance with a parking control sign or in a parking bay, and a PARK IN BAYS ONLY sign must be displayed.

Figure 5.1 The standard shared zone sign



Source: Gillies 2009

In addition to these rules, several guidelines also advise on the appropriate location and design of shared zones. For example, the RTA guideline *Road environment safety: A practitioner's reference guide to safer roads* (RTA 2006) states:

Shared traffic zones must:

1. Clearly indicate pedestrian priority
2. **Be a self enforcing speed environment**
3. Have low traffic volumes

VicRoads gives detailed guidance in its *Traffic Engineering Manual Vol. 1 Section 4.8 - Shared Zones*, stating that shared zones are appropriate in:

- 1. Low volume streets where pedestrians outnumber cars and where pedestrian needs are best met by walking on a roadway**
- 2. Where the street has been constructed or reconstructed to a sufficient degree to ensure significant visual interruption and where speed is physically restrained,**
3. Where there is no cross motor traffic

Such locations include lanes, CBD streets, selected residential streets, shopping centres and caravan parks.

Inappropriate locations include:

1. On streets that carry over 200 vehicles per hour in peak periods, or over 1000 vehicles between 7am-7pm
2. On streets with a history of speed problems, and
3. In unprotected locations where approach speeds exceed 40-50km/h

It also outlines a number of design guidelines:

- 1. The road should be discontinuous and kerb should be removed to enhance the sense of equality between pedestrians and vehicles.**
2. Speed reduction devices should be installed at a spacing of approximately 40m and these devices should be staggered on opposite sides of the reserve to require weaving alignment through the shared zone.
3. A maximum design speed should be 20km/h
4. All entry and exit points to shared zones should be clearly signed
5. A minimum trafficable width of 2.8m should be maintained throughout the zone.
6. Straight lengths of roadway should not exceed 50m
7. Parking spaces should be provided to the trafficable paths
8. There should be no provision for traffic across the zone
- 9. It is desirable to create a surface texture difference between the shared zone and the surrounding road network**
10. Bollards with reflectors may be used to delineate the shape of the roadway from the approach side and to protect landscaping.

While some of these location suggestions and design guidelines (highlighted in bold) correspond with shared space principles, it is clear that they are much more conservative in regards to allowable speed, vehicle numbers and physical design than true shared spaces.

More general guidelines on road safety and design are also at odds with the concept of shared space. For example, in the RTA's *Road Environment Safety Practitioner's Guidelines*, the definition of a safe road environment is one that:

*"Incorporates numerous design principles, appropriate geometric design standards, **good delineation under all conditions, adequate surface skid resistance and a roadside free of unforgiving hazards**. It should serve the safety needs of all vehicles and road users."*

1. The road **should warn** road users of any possible hazards
2. The road **should inform** road users of the type of unexpected conditions that are likely to be encountered
3. The road **should guide** road users through sections of a route with sometimes unexpected conditions
4. The road **should control** road users through conflict points or areas of conflict
5. The road **should forgive** errant vehicles and behaviour of road users involved

The problems for shared space are immediately evident - it is almost diametrically opposed to this definition of a 'safe road'. The shared space philosophy believes a road should indeed warn users of any possible 'hazards', but do so through the design of the space and actual presence of such 'hazards', rather than excessive signage. This applies equally to unexpected conditions. A road should control users' behaviour, but not through so-called 'conflict points' but again through its overall design. And finally, as mentioned in section 2.3, a road should not be 'forgiving' as a 'forgiving' road is a 'permissive' road - it encourages more dangerous behaviour as a result of the risk compensation effect. This may be reasonable and appropriate definition of a 'safe road' in the traffic zone, however these standardised measures do not belong in the social zone.

Rules and guidelines such as these present challenges to the creation of shared spaces in Australia, and it is clear that greater flexibility is required. Shared space intersections such as De Kaden and Laweiplein - which handle 5,500 and 22,000 vehicles per day respectively - showed that shared zones need not be limited to areas with low traffic. Shared spaces such as Bremer Strasse in Bohmte and Rijksstraatweg in Haren showed that a relatively larger, faster and straighter street can also function well as a shared space. If rules and guidelines such as these are not changed, it could create liability issues for roads authorities if shared spaces are created here.

Liability issues

As has already been discussed, the number of shared spaces in Europe is expanding, despite fears that engineers or road authorities may be held liable for accidents if signs and other street furniture are removed. As the UK's CSS engineering committee chairman Matthew Lugg (in Arnold 2007a) said: "We are still wary about some of the legal aspects of this. Some local authorities may be liable if there is an accident after removing road signs and markings. Arrangements need to be put in place to guard against that. I'm a bit nervous about taking away things that were put there for a good reason in the first place."

Similar concerns would also pose obstacles to shared space in Australia. In NSW for example, under the *Civil Liability Act (NSW) 2002*, public authorities could be held liable for breaching their statutory duty. Although roads authorities have special non-feasance protection under section 45 of the *Act* (protecting them from liability resulting "from harm arising from a failure of the authority to carry out road works"), this only applies if they did not have knowledge of the particular risk that caused the harm. Thus this obviously raises the question of whether roads authorities (i.e. the RTA or local councils) could be held liable for accidents in shared space, considering they would have knowingly created a road that is inherently risky. This would be further complicated if the shared space created did not comply with the Road Rules or RTA guidelines pertaining to 'shared zones'.

Access for the elderly and disabled

As mentioned in section 4.1, access for the elderly and disabled is a key concern for shared space, as “an important part of making streets more liveable is ensuring that they are accessible to everybody” (Mackett *et al.* 2008, 80). According to the ABS, 41% of 65-69 year olds and 92% of those aged over 90 report some kind of disability, and the Commonwealth Department of Health and Ageing says that one in three people over 65 fall each year, with 10% of those sustaining serious injury (in Bibby 2009).

Despite these statistics and Australia's ageing population, there are virtually no laws in Australia compelling local councils, state governments or developers to ensure public spaces are easily accessible to old people (Bibby 2009). The Federal Government has moved to introduce minimum standards for access to buildings, but these regulations will not apply to the public realm. Thus this is an issue that would need to be carefully considered in the creation of shared space schemes here.

Figure 5.2 Access for elderly pedestrians is an important issue for shared spaces



Source: Gillies 2009

The legislative requirements for disabled people are more comprehensive, and would also need to be addressed. Under the Disability Discrimination Act, public places must be accessible to disabled people, unless this would involve 'unjustifiable hardship' (AHRC 2009). Similar legislation in the UK (known as the Disability

Equality Duty) required the London authorities to redesign the Exhibition Road shared space to make it accessible to disabled people.

5.2. Urban morphology

A second issue for shared spaces in Australia is urban morphology. This includes population densities, street width, size, surface and adjacent land uses.

Studies (e.g. Keeler 1994; Ewing *et al.* 2003) have shown that the less densely populated a place, the higher the risk of traffic fatalities. However the nonfatal crash rate is usually higher in more densely populated places, the theory being because there are more road users and thus more chances of having an accident. Thus in regards to density, the argument could be made that shared space is only appropriate in densely populated places like Dutch cities - where large amounts of people would constrain traffic speeds - while it would not work in the less densely populated cities of Australia. However the central parts of many Australian cities have population densities that are equal to or greater than places like Amsterdam; Amsterdam has a population density of 4,509/km² (GA 2009), while the City of Sydney has a density of 6,580/km² (City of Sydney 2009). The many towns where Monderman implemented shared space schemes were also small towns with population densities similar to Australian ones, thus I believe this issue is not a valid argument against shared space in Australia.

In my opinion the urban morphological characteristics that have the most relevance to shared space are the elements of the street itself, which is width, size, surface and adjacent land uses. Wide, open areas can still be converted to shared spaces (such as in Oosterwolde), but generally a shared space needs to be narrower so that speeds are physically constrained. Monderman himself recommended that the carriageway of a shared space street never be wider than 6m, as this is too narrow to allow two cars and a bicycle to pass each other, and so would force drivers to slow (in Vanderbilt 2008).

Street surface is in my opinion the most important design issue for shared space, as the surface needs to be a 'pedestrian surface', that sends the message to drivers that the road is not just for cars, and pedestrians could step into the road at any point. Indeed one Australian study (Hatfield 2004) found that 37% of people of all ages think that it is illegal for a car not to give way to a pedestrian in a paved section of road. Gorrie and Waite (2005) found that pedestrians often feel that vehicles should stop to let them cross in these sites because of their appearance, which is often what happens even if the site is not a shared zone, which requires drivers to give way to pedestrians.

Surfaces such as cobblestones or bricks provide motorists with visual and tactile signals to slow and watch for pedestrians. As Lockwood (in White 2007) says, "This gives drivers a totally different ride, and when they're going an inappropriate speed for that context, they can feel it," Changes in textures, paving materials, trees, or colours allow streets to dictate the rules of the road better than any sign can. Finally, as the Ashford shared space showed, shared space streets need to have the right surrounding land uses, to create sufficient human activity to be 'mental speed bumps' for drivers (Engwicht 1999). The observations I made in section 5.5 support these arguments.

5.3. Driving culture and status of different road users

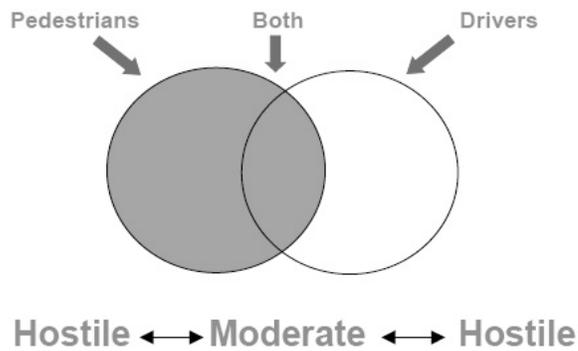
A third important issue to consider is what effect cultural attitudes and the relationship between road users has on behaviour. I have noticed that many observers of shared space from outside of the Netherlands have expressed the view that shared space will not work in their country because "the Netherlands is different". This may be partly true; for example, in the Netherlands there is a legal assumption that motorists are automatically considered liable to some extent, regardless of fault, in any crash between a vehicle and a pedestrian or cyclist (K Smith 2009). It has to be assumed that this has some influence on driver behaviour in that country, and may partly explain the low road fatality rate mentioned in section 3.1. But a frequent argument made is that drivers are too aggressive, and would not

accept the equal status shared space gives to pedestrians and cyclists. This may be an issue for Australian as well.

However Vanderbilt (2008, 218) notes "traffic culture can be more important than laws or infrastructure in determining the feel of a place". What is most important is the cultural norms, or accepted behaviour of a place. According to Cialdini (in Vanderbilt 2008), there are two different types of norms. An 'injunctive norm' is what people should do, while a 'descriptive norm' is what people actually do. Cialdini says descriptive norms usually have a greater influence on people's behaviour, thus if everyone else is speeding, it may be seen as socially acceptable (even though the injunctive norm - the speed limit - says it is not). Thus the key to changing how drivers drive is changing cultural norms of accepted behaviour.

A subcategory of this issue is the status of and relationship between different types of road users. As touched on in section 1.2, conflict almost always occurs when roads become congested. This has implications for behaviour, as it can result in drivers in particular behaving in inconsiderate and dangerous ways. For example, Gorrie and Waite (2005), in a survey of 740 older Sydney pedestrians found that 85% thought drivers were too impatient and only 56% believed that drivers are considerate of pedestrians. Many people also reported honking, verbal abuse or cars creeping forward to make them hurry up. In another survey, Rouse (2002) found evidence of a strong 'us and them' mentality, with participants who identified themselves as predominantly either drivers or pedestrians demonstrating a lack of consideration and empathy for, and even hostility towards, the other group. This conflict can be summarised by the following diagram:

Figure 5.3 Road user type and hostility



Source: Rouse (2002)

As Davison (2004) notes, the car holds a special place in the Australian psyche for many different reasons, and this special attachment could mean drivers will not drive with courtesy for other pedestrians like the Dutch seem to do. But I would not agree with this. Residents in the Dutch *woonerven* complain of never being able to find a parking space, and having to negotiate their way around cyclists and pedestrians (in Hamilton-Baillie 2001). Everyone everywhere loves their car. But the difference is, in these countries it has become an accepted norm to respect the status of pedestrians and cyclists, and recognise that the road belongs to them too. It may take time, but I believe there is no reason why this mindset cannot be replicated in Australia as well.

5.4. The barrier in the head

The final issue for shared space in Australia is simply the barrier in the head - the reluctance to accept a concept, which is so different at odds with current beliefs. I can understand this. Streets are very permanent features of the place we live in. Any changes, no matter how small, require changes in our mental maps and landmarks.

While education on this issue would give people a better understanding of the concept, changing behaviour would be harder to achieve. Ingrained attitudes and learned behaviour is hard to change, especially for pedestrians who may feel too intimidated in a shared space to assert their equal right of way over a car. The doing away with formal crossings and traffic lights would pose particular challenges. For

example, in Rouse's survey (2002), only 16.4% of people believed it was safe to cross when there was no marked crossing compared to 95.3% who felt safe crossing at traffic lights and 84.3% at zebra crossings. People believed the presence of traffic lights and good visibility were the two things that contributed most to their perception of safety when crossing the road, and thus they would like more crossings with lights. I would agree with these views. It was notable however that respondent believed the more dangerous the intersection, the more care people take, which is obviously the aim of 'naked intersections'.

Like anything new, shared space can be uncomfortable, but you get used to it. And while you will never feel totally safe in a shared space, that is the point. You need to feel at least a small amount of discomfort so that you are on your guard. But the more people who use a shared space, the more it will discourage the speed and amount of cars in the street, and thus the safer it will be. My observations of this effect are observed in the following section. Finally, shared spaces overseas such as Exhibition Rd have demonstrated the importance of support from decision makers, whether from those in local governments, politicians, planners or other professionals, and this support needs to be reflected in Australia.

5.5 Case Studies: Australian shared zones and quasi shared spaces

According to urban designer Allan Jacobs, improving streetscapes and urban design requires utilising the power of observation and questioning assumptions (PPS 2007). He notes, "Most modern street planning is based on assumptions, rather than real research and observation of existing places. Planners and designers should study what does and doesn't work in existing streets, and use these observations to better design great public streets - to copy the good examples." (in Hamilton-Baillie 2009).

Thus while it would have been useful to travel to Europe to examine the many examples of shared space mentioned so far in this thesis, I was not able to. The many pictures and videos of these spaces that I found online did compensate for this. Instead, to gain a first hand account of shared space principles generally, I visited a number of what I classify as 'shared zones' and 'quasi shared spaces' here in Australia. These observations gave me a better understanding of the effects that shared space-style street designs have on people's behaviour in such spaces.

Nearly all the places I visited were shared zones, in terms of the official definition under the Australian Road Rules, however some were not. The spaces that I believe that most closely resemble true shared space, I have classified as 'quasi shared spaces'.

The following section describes my visits and observations of these places, and reflects the issues addressed in the previous section. The final part is an overview of current shared space proposals, most notably Bendigo's shared space scheme, which is the first major modern shared space planned in this country.

1. Barrack St, Sydney

Barrack Street in Sydney's CBD is probably the most well known example of a 'quasi shared space' in Sydney. The street itself is classified as a shared zone, and exhibits the usual signage at both ends (Figure 5.4). West (2009) summarises that "Despite its appearance, the street is open to traffic. But its paving, street furniture, speed limit and general ambience causes most motorists to avoid it." It is interesting to note that it is marked as a mall/plaza in the street directory, the same as nearby Martin Place, which you obviously are not allowed to drive through. I believe this may partly explain why most people seem to think it is a space you are not allowed to drive in, in addition to its design.

Figures 5.4 and 5.5 The western entrance and fruit stall in the street



Source: Gillies 2009

The space contains a number of elements, such as the lampposts, trees, statues and even fruit stall (Figure 5.5), which all work to make the area look like a pedestrian only street. I have spent quite some time in the space and cars come through rarely, however it does seem to attract a number of cyclists (Figure 5.6), who no doubt appreciate a break from the usual congested CBD streets. Figure 5.7 shows one driver who was definitely going faster than the 10km/h speed limit. He sped right past the man in the photo, demonstrating the potential problem with shared spaces here. As Monderman has said, some people's behaviour can never be changed, and it is these sorts of people who pose a threat to users of spaces like this one.

Figures 5.6 and 5.7 Cyclist and speeding driver in the street



Source: Gillies 2009

2. Jack Munday Place, The Rocks

Jack Munday Place is the newest 'quasi shared space' I visited, having only been completed this year. The space was originally just a continuation of Argyle Street until it was remodelled and renamed (Figure 5.8). While its entrances are paving stones (Figure 5.9), the main surface is bitumen (Figure 5.10). This is a cost effective way of paving such spaces, as the entrance gives the impression that it is a pedestrian route and thus discourages through traffic - this is evident in the fact that I rarely saw any cars in the street. The street is closed each week for the Rocks Markets (Figure 5.11), which creates a nice atmosphere. It is only a short stretch of road, but demonstrates the potential for shared space in popular pedestrian areas.

Figures 5.8 and 5.9 Street name plaque and the entrance to the street



Figures 5.10 and 5.11 **The main part of the street and the Rocks Markets**



Source: Gillies 2009

3. Chapel Rd, Bankstown

This small section of Chapel Road near Bankstown station is one of the spaces most reminiscent of a true shared space in Sydney. It is a one-way street, and I noted while there was an 'End Shared Zone' sign at the end, there was no 'Shared Zone' sign at the entrance, which is a narrow corridor (Figure 5.12). However the sign is not really necessary anyway as any person driving into that space would be immediately made aware of the fact it is a shared space by the road surface, lack of kerb, people crossing and adjacent activity (Figure 5.13). The few cars that entered the space did so slowly, demonstrating the importance of designing a space that physically constrains speeds (Figure 5.14).

Figures 5.12, 5.13 and 5.14 **Chapel Rd, Bankstown 'quasi shared space'**





Source: Gillies 2009

4. King Street Place, Rockdale

King Street Place is a small 'quasi shared space' in Rockdale's town centre, just off the Princes Highway. Like Jack Munday Place, it was only converted to a shared zone earlier this year. The shared zone is quite small, as it only stretches to the gateway arch, beyond which it is a pedestrian only mall (Figure 5.15). The entrance to the street contains a slight upward slope and change of surface (Figure 5.16). A small alley runs perpendicular to the street, with attractive paving stones and lighting hung from wires (Figure 5.17). This promotes the 'outdoor living room' quality of the street and makes for a more intimate pedestrian environment. These elements create the feeling of a pedestrian only mall and discourages cars. It is interesting to note that there is a shallow drainage channel along the side (Figure 5.18). In addition to its drainage functions, this serves as a clear delineator between the street and the footpath, which could be useful to blind people who use the space.

Figures 5.15 and 5.16 **King Street place and the entrance surface treatment**



Figures 5.17 and 5.18 **The adjacent alley with distinctive street lighting and the drainage channel along the side of the street**



Source: Gillies 2009

5. UNSW, Kensington

UNSW itself is home to a number of shared zones, which provided useful insights on street design. Engineering Rd is one small access road with an attractive paving stone surface and a number of street trees, which can also be used to chain bikes to (Figure 5.19). These would normally be considered 'hazards' in a normal road, but pose little risk in such a low speed area such as this. A notable feature of this street is that it contains a regular kerb. This would be useful to blind people as discussed in section 4.1, and while it does create the division between the footpath and the roadway, by using the same surface it creates a space where pedestrians have priority and sends the message to drivers that they should drive slowly and carefully.

By contrast, other shared zones in the university just look like normal streets, such as College Rd. As Figure 5.20 shows, there is no footpath, so people have to walk in the road and drivers must negotiate their way around them. As it is a shared zone, you do have to give way to pedestrians, and I have tested the effectiveness of this injunctive norm many times by walking in the road to see how drivers react. While most went around me, one driver felt he had the right to drive right up in front of me,

forcing me to get out of his way even though he had plenty of space to go around me. It is this kind of behaviour that demonstrates the superiority that the bitumen road surface can engender in drivers, as well as the uselessness of putting up shared zone signs when the 'Give way to pedestrians' rule is clearly ignored. Incidents like this demonstrate the issue with driving culture discussed in section 5.3.

Figures 5.19 and 5.20 Kerb and trees in Engineering Rd and the regular bitumen surface and lack of kerb or footpath in College Rd



Source: Gillies 2009

6. Sydney Opera House

The approach road to the Sydney Opera House main entrance is a small but noteworthy example of a 'quasi shared space'. The uniform pedestrian surface encourages free movement, and pedestrians just treat the road as an extension of the footpath (Figure 5.21) The detailed, pedestrian scale lighting in the gutters (Figure 5.22) also act to create a more human-focused environment and demonstrate how very minimalist designs can still be effective. Drivers carefully made their way around all the people calmly, except for one driver who felt he was more important than a group of 30 odd tourists simply because he was in a car and thus honked them. This is despite the fact that at the entrance it is clearly signposted

as a shared zone. Again, this demonstrates how driving culture still has considerable need to evolve if shared spaces are going to be successful here.

Figures 5.21 and 5.22 The consistent road surface and pedestrian scale lighting shows how simple designs can effectively create a shared space

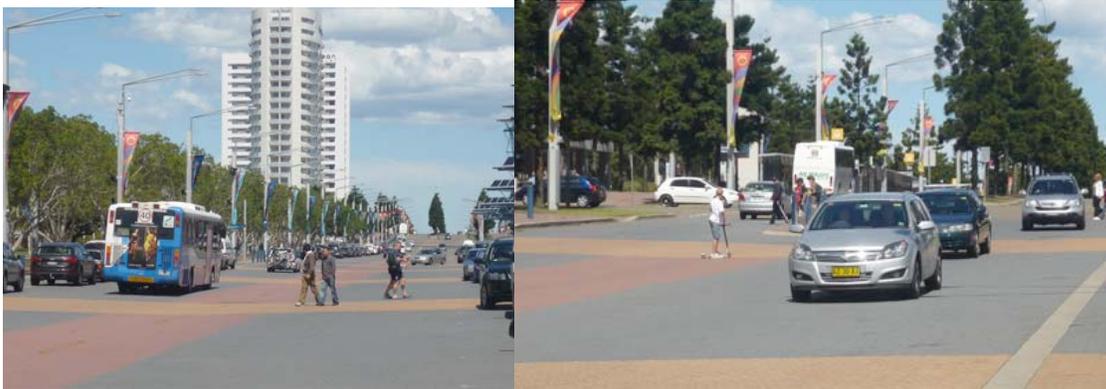


Source: Gillies 2009

7. Sydney Olympic Park

Sydney Olympic Park's main thoroughfare, Olympic Boulevard, is one very large example of a 'quasi shared space'. It is actually a normal road with a speed limit of 40km/h, although its design exhibits characteristics of a shared zone. It was interesting to observe people's behaviour in this space, as the lack of kerb and wideness of the road encouraged free and unpredictable pedestrian movement (Figure 5.23). The sheer vastness of the road allowed me to stop in the middle to take photos while cars went past, and the red paving in the middle acts as a sort of visual median strip, and many people would wait there for a car to go past until they would continue (Figure 5.24). This simple yet effective street surface design shows how it is possible to design a safe yet attractive street without using excessive, unnecessary and unattractive road markings, signage or barriers.

Figures 5.23 and 5.24 The wide road encouraged people to cross and the red paving acted as a visual median strip.



Source: Gillies 2009

There are two intersections which could be classified as 'naked intersections'. They are extremely simple, with only one line indicating that drivers coming from the side streets should stop and give way to cars on the main Boulevard (Figure 5.25). These examples show the potential for naked intersections as everyone approached them with caution and filtered their way through accordingly, as opposed to the inefficient and pointless waiting that would have been forced by a set of traffic lights. Finally it is interesting to note that the whole boulevard is lined with tactile warning paving to highlight the border between the footpath and roadway (Figure 5.26) and provide a tactile orientation clue to blind and partially sighted pedestrians.

Figures 5.25 and 5.26 A de facto naked intersection and the tactile warning paving along the length of both sides of the space



Source: Gillies 2009

8. Coogee and Erskineville

The following two examples of shared zones serve to highlight their shortcomings of such zones, but also their potential to be expanded. The Coogee shared zone is only a small section by the southern end of the beach, but despite its lack of kerb and raised profile, nobody actually does seem to treat it as a shared zone. I have spent a fair amount of time observing the space and I do not ever recall seeing one driver stop while a pedestrian was clearly about to cross. Indeed, every pedestrian always waited for the car (Figure 5.27), rather than asserting his or her legal right of way. In Figure 5.28, the two people in the top of the picture had just started crossing but pulled back to let the car driver through, who of course slowed down, but did not stop. This highlights cultural barriers as outlined in section 5.3, but also shows how bad design can render a shared zone effectively pointless. The dual shared zone and speed hump signage may also combine to create confusion for road users (Figure 5.29). The shared zone in Erskineville (Figure 5.30) is an even more pointless example of a shared zone as it is so small, it serves only to slow vehicles entering the street (the shared zone is one way but the street on both sides is not). Instead of creating this fairly useless 10m long space, it could have been expanded along the whole length of that street to create a *woonerf*-style residential street.

Figures 5.27 and 5.28 Pedestrians waiting and drivers not giving way



Source: Gillies 2009

Figures 5.29 and 5.30 Signage in the Coogee and Erskineville shared zones



Source: Gillies 2009

9. Eton St, Sutherland and Cronulla St, Cronulla

Eton Street in Sutherland and Cronulla Street in Cronulla highlight the importance of road surface, and its effect on people's behaviour. I have used these spaces for many years and very few people actually treat Eton St as a shared space. Because of the bitumen road surface (Figure 5.31), it still looks like a normal street, so people stop to give way to cars instead of the other way around, no one drives at 10km/h and most pedestrians only cross at the pedestrian crossing (Figure 5.32).

Figures 5.31 and 5.32 Eton St, Sutherland shared space and pedestrian crossing

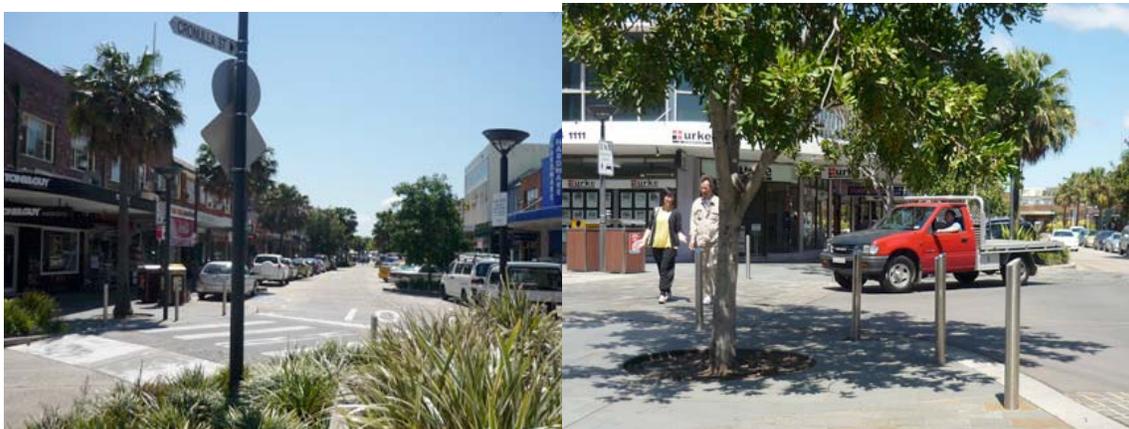


Source: Gillies 2009

Cronulla St on the other hand is a shared zone that works well, and a perfect example of a space that could be further designed along shared space principles.

There is a definite gateway to the one-way street (Figure 5.33), pointing out to drivers that they are entering a pedestrian and social zone. There are a number of raised crossings with paving stones, and it was interesting to see that nearly all drivers yielded in these places to let pedestrians walk across (Figure 5.34). However the remainder of the street is a bitumen road surface, and this discourages pedestrians from crossing away from the designated crossings. Because of this, the surrounding 'active' land uses and narrowness of the street, I believe this would be a perfect street to convert into a true shared space.

Figures 5.33 and 5.34 **The entrance to the street and pedestrian crossing**



Source: Gillies 2009

10. Melbourne CBD

The centre of Melbourne is home to quite a number of shared zones and 'quasi shared spaces'. Figure 5.35 shows the 'quasi shared space' Hardware Lane. While it is closed from 11am-11pm, cars are still allowed in at this southern end to access the adjacent car park, or park on the street it would seem. The street is lined with corduroy paving, which not only is useful for blind people, but also creates a border between the café furniture and the street. The paving stones further reinforce the pedestrian priority nature of this street.

Figure 5.36 is Degraives St, and while also lined with cafes, it has a bitumen surface and has no tactile paving. It is interesting to note that it is open to traffic 24 hours but I never saw a car drive through it during the day. The lack of kerb, narrowness of the

street and number of pedestrians show how shared space-style street designs can discourage, yet still allow vehicles in the space if absolutely necessary.

Figures 5.35 and 5.36 Hardware Lane and Degraeves Street



Source: Gillies 2009

The adjacent streets of Bourke St Mall and Swanston St highlight the effects of road surface, kerbs and street furniture on people's behaviour. Bourke St Mall is a shared zone between people and trams, and the granite road surface, with no kerbs except for the slightly raised tram stop platforms, and the predictability and slow speed of the trams encourage people to walk wherever they like in the space (Figure 5.37).

Swanston St (Figure 5.38) on the other hand represents the lost potential of what I believe could be a great shared space. The street is open to vehicles between 7pm and 7 am with a 30km/h limit, while during the day it is open only to taxis and trams. By allowing taxis, this robs the space of its potential to allow free pedestrian movement, as people still have to be on the lookout for cars. Indeed, I saw very few people cross away from the traffic lights, and even when there were no trams or cars coming, people still waited. I did this initially too until I realised I only needed to be on the lookout for trams, which are slower and more predictable than cars. This shows how ingrained cultural norms are, and the negative effect of traffic lights when people feel they still have to apply to cross a road with almost no cars. Furthermore, the regular bitumen surface and kerbs make this look like a normal road, which is why people rarely freely walk across or in the street.

Figures 5.37 and 5.38

Bourke St Mall shared zone and Swanston St



Source: Gillies 2009

McKillop Lane is a shared zone that essentially exhibits all the characteristics of a true shared space. The bollards, lampposts, bins, café furniture and street surface (Figure 5.39) all clearly portray the laneway as a pedestrian zone, even though cars are still allowed in the space (except from 11am-3pm Mon-Fri). The lampposts not only give the street a distinctive look, but at night its human scale lighting still highlights the social nature of this space (Figure 5.40).

Figures 5.39 and 5.40

McKillop Lane by day and by night



Source: Gillies 2009

Manchester Lane is another laneway that allows cars, despite its appearance as a pedestrian-only street with its street paving, narrow width and adjacent shops (Figure 5.41). It is closed during the day to traffic except those accessing the car park halfway along the lane. I was not the only one surprised as a car quietly emerged from the discreet car park entrance/exit and proceeded slowly towards the end of the lane (Figure 5.42). This is one example of how shared space can give pedestrians priority and influence driver behaviour through an attractive, pedestrian-friendly design, instead of the usual array of traffic engineering paraphernalia.

Figures 5.41 and 5.42 **Manchester Lane and a car leaving the car park**



Source: Gillies 2009

5.6 Future shared space proposals

In addition to these de facto examples of shared space, there are currently proposals for a number of new shared spaces in Australia, the most notable of which is in Bendigo. The City of Greater Bendigo is undertaking a \$16 million city shared space and city improvement scheme, to start later this year, in order to narrow spaces for cars and return the town's ultra wide streets to walkers and cyclists. "All visual signals that streets are for cars first - street signs and traffic lights - will be removed and footpaths dramatically expanded in a bid to turn Bendigo into Australia's first "walking city" (Lucas 2009).

The scheme aims to use both regular asphalt and Bluestone paving, improve street furniture, give pedestrians priority at crossings and rationalise the urban clutter. The

approach changes the city to a pedestrian dominated space, which allows more space for city life, but without excluding cars or decreasing car parking (City of Greater Bendigo). Some improvements to the main street have already been made, such as more pedestrian friendly crossings and wider footpaths (Figure 5.43), but the Council hopes to expand the concept from just the town's two main roads to the whole central part of the town (Figures 5.44 and 5.45). It will be interesting to see how the plans (Figure 5.46) eventuate.

Figure 5.43 Road improvements in Hargreaves Street, Bendigo



Source: City of Greater Bendigo (2009)

Figures 5.44 and 5.45 Bendigo Council's plan for its town centre



Source: City of Greater Bendigo (2009)

Figure 5.46 An artist's impression of the Bendigo shared space



Source: City of Greater Bendigo (2009)

In addition to Bendigo's scheme, I know that plans are also being considered in a number of other Australian towns and cities, including the Melbourne suburbs of Broadmeadows and Footscray, the Victorian town of Moe, and the Franklin Wharf area in downtown Hobart. In New Zealand, Auckland City Council has also proposed a number of shared zones in its CBD (Figures 5.47 and 5.48). All these schemes are still in the planning stages, and it remains to be seen if they will actually be built and if so, whether they will be a true shared space or just watered-down designs.

Figures 5.47 and 5.48 Elliott St, Auckland and the shared space proposal



Source: Auckland City Council (2009)

Chapter 6 - Recommendations

The following chapter outlines some brief recommendations on steps that need to be taken in order to facilitate the creation of more shared spaces in Australia.

6.1 Rationalise street furniture

The first recommendation is that excessive signage, road markings, barriers and fences, kerbs and inefficient traffic lights should be removed. There is a place in the road network for these things, but in most parts of the social zone, they are, as outlined in section 2.2, not only excessive but also dangerous. Excessive signage in particular (Figure 6.1) detracts from the visual quality of the streetscape, and erodes the distinctive qualities of individual places. All these features only serve to promote the dominance of the vehicle in the street, rather than emphasising the social qualities of streets. The streets of the city are there to be shared, and this needs to be made clear through their design. All streets need not be made into shared zones, but rationalising street furniture is something that can be done in most places.

Figure 6.1 There is a role for street furniture, but excessive and unnecessary signage such as this needs to be reduced



Source: Gillies 2009

6.2 Reassess guidelines and legislation

It is clear that there is a distinct disparity between the principles of shared space and currently accepted concepts of road safety. Road authority guidelines in particular, as outlined in section 5.1, still reflect the principle of segregation, and the desire to make a road as 'forgiving' as possible. While this is an appropriate objective for most major roads, in streets in the social zone the shared space approach clearly has merit. Authorities such as the UK Department for Transport has changed guidelines (*The Manual for Streets*), recommending that local authorities give recognition to the balance between streets as places as well as their role for movement and encourage local authorities to redesign streets along shared space principles (Arnold 2007d). Similar measures should be taken here. Furthermore, the laws relating to liability need to be further explored so and laws and standards relating to easy access for the elderly and disabled need to be reviewed and changed if necessary, in order to ensure these groups are not excluded in future shared space schemes.

6.3 Consult with stakeholders such as the blind and partially sighted

It is essential to involve the community in the creation of shared spaces, particularly those such as the blind and partially sighted, who may be disadvantaged and excluded in such spaces. Planners of future shared space schemes need to consult with these groups very early on in the process to understand their concerns and inform their designs. Additionally, these groups need to be offered the chance to comment on any such proposals at all stages of its creation, including after a space has been built, to assess whether the space works in practice.

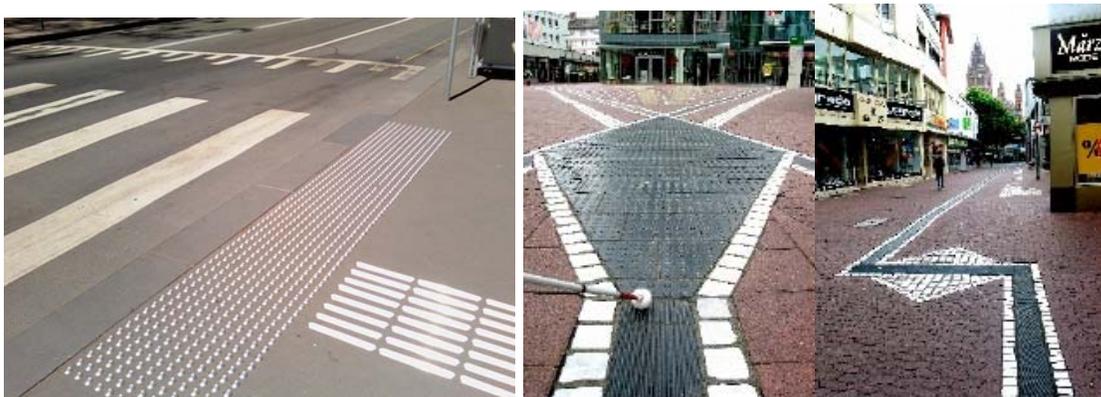
In the UK, Guide Dogs has undertaken studies and launched research projects to assess the needs of blind and partially sighted people and similar initiatives should be undertaken here. Finally, there is a danger that shared space could be looked at as a standard solution, defeating its purpose of highlighting the individual characteristics of a place. Thus local residents and businesses should play a key role in the design process of shared spaces to ensure that they reflect community desires and expectations, and are not just standardised designs imposed on a place.

6.4 Incorporate measures to make spaces accessible

It is clear that the biggest issue with shared space is the effect it has on disabled people, particularly the blind and partially sighted as well as the elderly. As discussed in section 4.1, shared spaces can create significant discomfort for these pedestrians, effectively excluding them from using the space. In the UK, Guide Dogs commissioned a report by Jan Gehl and Rambol Nyvig, that made recommendations on how to make spaces more accessible to blind and partially sighted people. This included the creation of a 'safe space' within the shared space is necessary, and suggested things such as lower kerbs, tactile paving, guidance paths (Figures 6.2 and 6.3) or white strips to delineate the boundary between the safe space and the main shared space. The need to provide a clear and consistent design language for the whole street and provides tactile clues and guidance for people with physical or visual disabilities was made clear (Arnold 2007c).

More detailed studies such as these should be undertaken to find solutions that retain the ambiguity of shared space for drivers, but still make it clear to pedestrians when they are entering the roadway in a shared space.

Figures 6.2 and 6.3 Tactile paving in the Rocks, Sydney and an example of a guidance path for visually impaired pedestrians in Mainz, Germany



Source: Gillies 2009 and Bohmte municipality (2009)

6.5 Pursue professional collaboration

The EU *Shared Space* project, involving places such as Bohmte and Noordlaren, showed that projects could not be delivered by engagement with just one local government department or sector. It requires engagement at several levels across different areas of local government and there was an implicit need to address organisational structures as well as design and implementation processes (Shared Space 2008).

Shared space requires an integration of skills and expertise. The distinction between the traffic engineering and urban design departments is the key division which needs to be bridged, but skills of landscape architecture, economic development officers, town planners, transport planners, arts officers, artists and those engaged with health, welfare, education and inclusion. Combining and integrating the inputs of these various professions is a key component needed to create successful shared spaces.

6.6 Undertake further research

I believe the most important issue for the advancement of shared space is simply gathering data and evidence on the success of current shared space schemes in order to overcome the barrier in people's heads. Further professional research needs to be undertaken, especially in depth studies of the qualitative and quantitative outcomes of existing shared spaces. By gathering statistics on the effectiveness and success of current shared space schemes, cultural attitudes and the accepted notion of segregation can be challenged with supporting in-depth evidence.

6.7 Create a new planning paradigm

In a news video (TV3 2009) I watched, residents of Bendigo expressed the fact that they felt quite unsafe in the town's main street, which has been redesigned into a simplified street scheme. I can understand this discomfort. I initially felt nervous just watching online videos of the naked intersections in Drachten, with helmet-less

cyclists, buses and cars, weaving all around one another, even though I know that there have been very few accidents in spaces such as this!

Most people believe that shared space sounds crazy and will not work, and I would have agreed with this before I started this thesis. However education is a simple but effective way to create greater community support and acceptance of the shared space concept. This can include marketing exercises by local authorities, such as in Ashford, where the local council created advertisements and other documents to educate the public about the scheme and its principles (Figure 6.4). Such initiatives are definitely needed in Australia as well to overcome the current lack of knowledge and scepticism of the shared space concept.

Figure 6.4 Advertisement for Ashford's new shared space



Source: Pillorybarn Creative (2009)

By educating people on the need for an element of risk in the public realm, a new paradigm on the design of streets can be created. As Hamilton-Baillie (2008b) states, a recognition of the risk compensation effect will give a fresh understanding of the dangerous and adverse effects of traffic signals, signs, barriers and fences, and their effect on safety human activity. It may seem irrational to argue that well-being can be improved through making spaces feel less safe, but that is the firm conclusion that has become evident from current examples of shared space.

Chapter 7 - Conclusion

“The street, in fact, is the most important thread in a city’s fabric. It knits the city together as a city. To kiss the street goodbye is the kiss of death for a city.”

- Roberta Brandes Gratz, *The Living City* (1989)

The above quote encapsulates the rationale for the shared space concept. The street is the one public service that we use every day, yet so little thought is given to its design (Gaventa 2008). However shared space represents more than just a way to design a street; it is a philosophy that aims to reclaim the street from the dominance of the car, reconcile the conflict between the street's conflicting social and movement roles, and give people back responsibility for their own behaviour.

As Adams (2008) states, “There are limits to the level of safety that can be achieved in the real world. The only way to achieve zero risk in a transport system is to ensure that nothing and nobody moves.” Vanderbilt (2008, 210) adds that “The pursuit of a kind of absolute safety, above all other considerations of what makes places good environments, has not only made those streets and cities less attractive, it has, in many cases, made them less safe” (Vanderbilt 2008, 210). By reintroducing this element of risk, existing shared spaces have exhibited many health and safety, environmental, economic and sociocultural benefits. Concerns have been raised about its negative impacts on more vulnerable road users, but I believe these can be overcome with planning and meaningful consultation and collaboration with those groups (especially the blind and partially sighted) that could be negatively affected.

Hans Monderman showed that even in a traditionally conservative and cautious profession such as traffic engineering, challenging long-held assumptions about the relationship between pedestrians and traffic is possible (Gould 2006). He respected people's common sense and intelligence, and recognised that increasing control and regulation by the state reduced individual and collective responsibility. His designs and many subsequent ones have shown that it is possible to integrate vehicles into the social fabric of communities, and I believe this is possible in Australia as well.

There are many more issues that need to be addressed - from modifying official guidelines and legislation to educating people about the shared space concept. But with creativity and determination, solutions to these problems can be found.

Hamilton-Baillie (2008a) notes that shared space is a concept still in its infancy and there remains many barriers to overcome, observations to be made, evaluations to be conducted, issues to be considered and experience to be gained. However it represents "an important step towards widening the opportunities for communities and individuals to shape and influence the built environment in ways that encourage diversity, distinctiveness, urban quality and civility." (Hamilton-Baillie 2008a, 162)

As Sloman (2006) points out, "Street space, like any other limited resource, has to be shared." Advocates of the shared space concept share this point of view, and as existing examples have proven, it is indeed possible for the road to be shared.

Chapter 8 - References

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